INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY

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SOLUBILITY DATA SERIES

Volume 22

SCANDIUM, YTTRIUM, LANTHANUM AND LANTHANIDE HALIDES IN NONAQUEOUS SOLVENTS

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1985

SOLUBILITY DATA SERIES

Editor-in-Chief A. S. KERTES

Volume 22

SCANDIUM, YTTRIUM, LANTHANUM AND LANTHANIDE HALIDES IN NONAQUEOUS SOLVENTS

Volume Editors

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INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY IUPAC Secretariat: Bank Court Chambers, 2–3 Pound Way, Cowley Centre, Oxford OX4 3YF, UK FOREWORD

If the knowledge is undigested or simply wrong, more is not better

How to communicate and disseminate numerical data effectively in chemical science and technology has been a problem of serious and growing concern to IUPAC, the International Union of Pure and Applied Chemistry, for the last two decades. The steadily expanding volume of numerical information, the formulation of new interdisciplinary areas in which chemistry is a partner, and the links between these and existing traditional subdisciplines in chemistry, along with an increasing number of users, have been considered as urgent aspects of the information problem in general, and of the numerical data problem in particular.

Among the several numerical data projects initiated and operated by various IUPAC commissions, the *Solubility Data Project* is probably one of the most ambitious ones. It is concerned with preparing a comprehensive critical compilation of data on solubilities in all physical systems, of gases, liquids and solids. Both the basic and applied branches of almost all scientific disciplines require a knowledge of solubilities as a function of solvent, temperature and pressure. Solubility data are basic to the fundamental understanding of processes relevant to agronomy, biology, chemistry, geology and oceanography, medicine and pharmacology, and metallurgy and materials science. Knowledge of solubility is very frequently of great importance to such diverse practical applications as drug dosage and drug solubility in biological fluids, anesthesiology, corrosion by dissolution of metals, properties of glasses, ceramics, concretes and coatings, phase relations in the formation of minerals and alloys, the deposits of minerals and radioactive fission products from ocean waters, the composition of ground waters, and the requirements of oxygen and other gases in life support systems.

The widespread relevance of solubility data to many branches and disciplines of science, medicine, technology and engineering, and the difficulty of recovering solubility data from the literature, lead to the proliferation of published data in an ever increasing number of scientific and technical primary sources. The sheer volume of data has overcome the capacity of the classical secondary and tertiary services to respond effectively.

While the proportion of secondary services of the review article type is generally increasing due to the rapid growth of all forms of primary literature, the review articles become more limited in scope, more specialized. The disturbing phenomenon is that in some disciplines, certainly in chemistry, authors are reluctant to treat even those limited-in-scope reviews exhaustively. There is a trend to preselect the literature, sometimes under the pretext of reducing it to manageable size. The crucial problem with such preselection - as far as numerical data are concerned - is that there is no indication as to whether the material was excluded by design or by a less than thorough literature search. We are equally concerned that most current secondary sources, critical in character as they may be, give scant attention to numerical data.

On the other hand, tertiary sources - handbooks, reference books and other tabulated and graphical compilations - as they exist today are comprehensive but, as a rule, uncritical. They usually attempt to cover whole disciplines, and thus obviously are superficial in treatment. Since they command a wide market, we believe that their service to the advancement of science is at least questionable. Additionally, the change which is taking place in the generation of new and diversified numerical data, and the rate at which this is done, is not reflected in an increased third-level service. The emergence of new tertiary literature sources does not parallel the shift that has occurred in the primary literature. With the status of current secondary and tertiary services being as briefly stated above, the innovative approach of the *Solubility Data Project* is that its compilation and critical evaluation work involve consolidation and reprocessing services when both activities are based on intellectual and scholarly reworking of information from primary sources. It comprises compact compilation, rationalization and simplification, and the fitting of isolated numerical data into a critically evaluated general framework.

The Solubility Data Project nas developed a mechanism which involves a number of innovations in exploiting the literature fully, and which contains new elements of a more imaginative approach for transfer of reliable information from primary to secondary/tertiary sources. The fundamental trend of the Solubility Data Project is toward integration of secondary and tertiary services with the objective of producing in-depth critical analysis and evaluation which are characteristic to secondary services, in a scope as broad as conventional tertiary services.

Fundamental to the philosophy of the project is the recognition that the basic element of strength is the active participation of career scientists in it. Consolidating primary data, producing a truly critically-evaluated set of numerical data, and synthesizing data in a meaningful relationship are demands considered worthy of the efforts of top scientists. Career scientists, who themselves contribute to science by their involvement in active scientific research, are the backbone of the project. The scholarly work is commissioned to recognized authorities, involving a process of careful selection in the best tradition of IUPAC. This selection in turn is the key to the quality of the output. These top experts are expected to view their specific topics dispassionately, paying equal attention to their own contributions and to those of their peers. They digest literature data into a coherent story by weeding out what is wrong from what is believed to be right. To fulfill this task, the evaluator must cover all relevant open literature. No reference is excluded by design and every effort is made to detect every bit of relevant primary source. Poor quality or wrong data are mentioned and explicitly disqualified as such. In fact, it is only when the reliable data are presented alongside the unreliable data that proper justice can be done. The user is bound to have incomparably more confidence in a succinct evaluative commentary and a comprehensive review with a complete bibliography to both good and poor data.

It is the standard practice that the treatment of any given solute-solvent system consists of two essential parts: I. Critical Evaluation and Recommended Values, and II. Compiled Data Sheets.

The Critical Evaluation part gives the following information:

- (1) a verbal text of evaluation which discusses the numerical solubility information appearing in the primary sources located in the literature. The evaluation text concerns primarily the quality of data after consideration of the purity of the materials and their characterization, the experimental method employed and the uncertainties in control of physical parameters, the reproducibility of the data, the agreement of the worker's results on accepted test systems with standard values, and finally, the fitting of data, with suitable statistical tests, to mathematical functions;
- (11) a set of recommended numerical data. Whenever possible, the set of recommended data includes weighted average and standard deviations, and a set of smoothing equations derived from the experimental data endorsed by the evaluator;
- (111) a graphical plot of recommended data.

The Compilation part consists of data sheets of the best experimental data in the primary literature. Generally speaking, such independent data sheets are given only to the best and endorsed data covering the known range of experimental parameters. Data sheets based on primary sources where the data are of a lower precision are given only when no better data are available. Experimental data with a precision poorer than considered acceptable are reproduced in the form of data sheets when they are the only known data for a particular system. Such data are considered to be still suitable for some applications, and their presence in the compilation should alert researchers to areas that need more work.

MIO-A*

The typical data sheet carries the following information:

- (1) components definition of the system their names, formulas and Chemical Abstracts registry numbers;
- (11) reference to the primary source where the numerical information is reported. In cases when the primary source is a less common periodical or a report document, published though of limited availability, abstract references are also given;
- (111) experimental variables;
- (1V) identification of the compiler;
 - (v) experimental values as they appear in the primary source. Whenever available, the data may be given both in tabular and graphical form. If auxiliary information is available, the experimental data are converted also to SI units by the compiler.

Under the general heading of Auxiliary Information, the essential experimental details are summarized;

- (v1) experimental method used for the generation of data;
- (v11) type of apparatus and procedure employed; (v11) source and purity of materials; (1x) estimated error;

 - - (x) references relevant to the generation of experimental data as cited in the primary source.

This new approach to numerical data presentation, formulated at the initiation of the project and perfected as experience has accumulated, has been strongly influenced by the diversity of background of those whom we are supposed to serve. We thus deemed it right to preface the evaluation/compilation sheets in each volume with a detailed discussion of the principles of the accurate determination of relevant solubility data and related thermodynamic information.

Finally, the role of education is more than corollary to the efforts we are seeking. The scientific standards advocated here are necessary to strengthen science and technology, and should be regarded as a major effort in the training and formation of the next generation of scientists and engineers. Specifically, we believe that there is going to be an impact of our project on scientific-communication practices. The quality of consolidation adopted by this program offers down-to-earth guidelines, concrete examples which are bound to make primary publication services more responsive than ever before to the needs of users. The self-regulatory message to scientists of the early 1970s to refrain from unnecessary publication has not achieved much. A good fraction of the literature is still cluttered with poor-quality articles. The Weinberg report (in 'Reader in Science Information', ed. J. Sherrod and A. Hodina, Microcard Editions Books, Indian Head, Inc., 1973, p. 292) states that 'admonition to authors to restrain themselves from premature, unnecessary publication can have little effect unless the climate of the entire technical and scholarly community encourages restraint ... ' We think that projects of this kind translate the climate into operational terms by exerting pressure on authors to avoid submitting low-grade material. The type of our output, we hope, will encourage attention to quality as authors will increasingly realize that their work will not be suited for permanent retrievability unless it meets the standards adopted in this project. It should help to dispel confusion in the minds of many authors of what represents a permanently useful bit of information of an archival value, and what does not.

If we succeed in that aim, even partially, we have then done our share in protecting the scientific community from unwanted and irrelevant, wrong numerical information.

A. S. Kertes

PREFACE

SCOPE OF THE VOLUME

This volume deals with the solubilities of the halides of scandium, yttrium, lanthanum, and lanthanides in nonaqueous solvents. The volume includes the solubilities of these "rare earth" halides in both organic and inorganic solvents, and in mixed solvents containing water where water is the minor constituent of the mixed solvent. The solubilities of rare earth halides in mixed water-organic solvents covering the entire composition range of 100 % water to 100 % organic component will be published in a forthcoming volume.

The literature on the solubilities of Sc, Y, La and the lanthanide halides in nonaqueous solvents has been covered through 1984, and only a few systems have not been compiled. The paper by Safonov et al. (1) dealing with the solubility of $NdCl_3$ in $SeOCl_2$ and $POCl_3$ has been rejected since it contains only qualitative limits of solubilities. Similarly we have rejected the data of Nikolaev et al. (2) who reported the solubilities of rare earth fluorides in water and liquid HF: the results were presented graphically. Data from (3) have also been omitted since the original data were reported in other publications which have been compiled in this volume. It is also noted that solubility data for didynium chloride in a number of ethers (4) have been rejected since didymium is a mixture of rare earths.

Most of the solubility data reported in the literature are either in mass % units or in units of mol kg⁻¹. A number of *Masters Theses* originating in the laboratory of Prof. Hopkins (University of Illinois) around 1930-1934 report solubilities in mol dm⁻³ units. Since density data are generally unavailable, direct comparisons of these early data with more recent results based on mass units are not possible. Hence we have not prepared critical evaluations for those systems for which two publications exist, and for which one publication reports solubilities in volume units and the other in mass units.

NATURE OF THE SOLID PHASE

For those researches which report analyses of equilibrated solid phases, we find considerable disagreement in the reported compositions. For example at 298.2 K Grigorovich (5) reports a solid phase of NdCl₃·3CH₃OH as opposed to NdCl₃·4CH₃OH reported by Merbach et al. (6). Since Grigorovich's solubility data are always significantly greater than those of all other workers, the evaluators assumed that Grigorovich's results might be based upon metastable equilibria. However it is always possible that errors exist in analyses of the solid phases which have escaped detection by the evaluators because of insufficient experimental descriptions in the source publications. Grigorovich's high solubilities could be due to a constant error in calculation. For example he reports a solubility of 32.04 mass % for PrCl₃ in 1-propanol at 298.2 K, and assuming this result to be based on the anhydrows PrCl₃ the evaluators calculated a solubility of 1.91 mol kg⁻¹. However if the solubility of 32.04 mass % is based on the solvate PrCl₃·2C3H₇OH, then the solubility calculated by the editors is 1.28 mol kg⁻¹ which is close to the result of 1.24 mol kg⁻¹ reported by Kirmse (7): note that Kirmse reports the solid phase to be PrCl₃·C₃H₇OH. Although all of Grigorovich's mass % results have been *assumed* by the evaluators to be based on the anhydrous salts, the reader should be aware that there is a high probability that Grigorovich's data are based upon mass % of the solvate, and that the reported compositions of the solvates may also be in error.

GENERAL COMMENTS

A major part of this volume consists of compilations from publications of Prof. E.M. Kirmse and her colleagues (in particular H. Dressler). Due to the fact that experimental details in Prof. Kirmse's publications are often incomplete, and due to the fact that her works form a principal part of this volume, it seems appropriate to combine the experimental details from all of her publications and present them in one place. The following therefore is a combined review of Prof. Kirmse's experimental techniques.

"Anhydrous salts were prepared from the oxide or directly from the halide by the method of Taylor and Carter. Saturated solutions were prepared isothermally by mechanical agitation either by thermostating at 298 \pm 0.2 K or at room temperature (291-298 K). Aliquots of saturated solution were treated with KOH solution to precipitate the rare earth hydroxide, and the rare earth content determined by complexometric titration. In several instances (e.g. with fluorides) the anion concentration was also determined. Anhydrous reagents were handled in a dry box containing P₂O₅, and the reported solubilities are mean values of 2-4 determinations. Solid phases were analysed from "wet" residues which were placed in a vacuum desiccator over P₂O₅ until constant mass was obtained. Both the rare earth content and the anion content of the solid phases were determined."

Noticeably absent in all of Prof. Kirmse's publications are the sources and purities of starting materials (oxides, halides, solvents). It is not clear why the rare earth fluorides prepared by Kirmse and Dressler by the wet method are not stoichiometric. It would appear that in spite of heating at around 580 K for 120 days, they obtained partially hydrated salts.

We conclude that the determination of the solubilities of anhydrous rare earth halides is subject to many sources of error. In spite of the large amount of data reported, significant disagreement exists, particularly with respect to composition of the solid phases. More rigorous thermodynamic treatment of these solublity data requires an exact knowledge of the compositions of the solid phases, and a precise determination of both stable and metastable equilibria. We hope that the present volume will serve as a useful guide in this respect.

The editors gratefully acknowledge the advice and encouragement of Prof. S. Siekierski. We also acknowledge the important comments by Prof. Kirmse, and her cooperation in sending us many reprints of her publications. Acknowledgements are also due Ms. Brenda Shanholtz, Reference Librarian, ERADCOM Technical Library, and Ms. Susanne Redalje, Assistant Chemistry Librarian, University of Illinois. Ms. Redalje kindly provided us with copies of numerous Theses on the solubilities of rare earth halides and nitrates.

REFERENCES

1. Safonov, V.V.; Fedorov, E.A.; Lebedev, V.G. Zh. Neorg. Khim. 1978, 23, 1981.

2. Nikolaev, N.S.; Abdurakhmanov, Sh.A.; Dzhuraev, Kh.Sh. Zh. Neorg. Khim. 1974, 19, 1133.

3. Zweitasch, K.J.; Kirmse, E.M. Wiss. Hefte, Paed. Inst. Kothen 1971, 1, 19.

4. Kirmse, E.M.; Dressler, H. Z. Chem. 1975, 15, 239.

5. Grigorovich, Z.I. Zh. Heorg. Khim. 1963, 8, 986.

6. Merbach, A.; Pitteloud, M.N.; Jaccard, P. Helv. Chum. Acta 1972, 55, 44.

7. Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov 1971, 200.

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INTRODUCTION TO THE SOLUBILITY OF SOLIDS IN LIQUIDS

Nature of the Project

The Solubility Data Project (SDP) has as its aim a comprehensive search of the literature for solubilities of gases, liquids, and solids in liquids or solids. Data of suitable precision are compiled on data sheets in a uniform format. The data for each system are evaluated, and where data from different sources agree sufficiently, recommended values are proposed. The evaluation sheets, recommended values, and compiled data sheets are published on consecutive pages.

This series of volumes includes solubilities of solids of all types in liquids of all types.

Definitions

A mixture (1,2) describes a gaseous, liquid, or solid phase containing more than one substance, when the substances are all treated in the same way.

A solution (1,2) describes a liquid or solid phase containing more than one substance, when for convenience one of the substances, which is called the *solvent* and may itself be a mixture, is treated differently than the other substances, which are called *solutes*. If the sum of the mole fractions of the solutes is small compared to unity, the solution is called a dilute solution.

The solubility of a substance B is the relative proportion of B (or a substance related chemically to B) in a mixture which is saturated with respect to solid B at a specified temperature and pressure. Saturated implies the existence of equilibrium with respect to the processes of dissolution and precipitation; the equilibrium may be stable or metastable. The solubility of a metastable substance is usually greater than that of the corresponding stable substance. (Strictly speaking, it is the activity of the metastable substance that is greater.) Care must be taken to distinguish true metastability from supersaturation, where equilibrium does not exist.

Either point of view, mixture or solution, may be taken in describing solubility. The two points of view find their expression in the quantities used as measures of solubility and in the reference states used for defini-

tion of activities and activity coefficients. The qualifying phrase "substance related chemically to B" requires comment. The composition of the saturated mixture (or solution) can be described in terms of any suitable set of thermodynamic components. Thus, the solubility of a salt hydrate in water is usually given as the relative proportion of anhydrous salt in solution, rather than the relative proportions of hydrated salt and water.

Quantities Used as Measures of Solubility

1. Mole fraction of substance B, x_p:

$$x_{\rm B} = n_{\rm B} / \sum_{i=1}^{\rm C} n_i$$
 (1)

where n_i is the amount of substance of substance i, and c is the number of distinct substances present (often the number of thermodynamic components in the system). Mole per cent of B is 100 x_B .

2. Mass fraction of substance B, w_B:

$$w_{\rm B} = m'_{\rm B} / \sum_{i=1}^{\rm C} m'_{i}$$
(2)

where m'_i is the mass of substance i. Mass per cent of B is 100 w_B . The equivalent terms weight fraction and weight per cent are not used.

3. Solute mole (mass) fraction of solute B (3,4):

$$x_{S,B} = n_B / \sum_{i=1}^{C} n_i = x_B / \sum_{i=1}^{C} x_i$$
 (3)

where the summation is over the solutes only. For the solvent A, $x_{S,A} = x_A$. These quantities are called Jänecke mole (mass) fractions in many papers.

L)

Introduction

4. Molality of solute B (1,2) in a solvent A: $m_{\rm B} = n_{\rm B}/n_{\rm A} M_{\rm A}$ SI base units: mol kg⁻¹ (4) where M_{A} is the molar mass of the solvent. 5. Concentration of solute B (1,2) in a solution of volume V: = [B] = $n_{\rm B}^{\rm V}$ SI base units: mol m⁻³ C_R (5) The terms molarity and molar are not used. Mole and mass fractions are appropriate to either the mixture or the solution points of view. The other quantities are appropriate to the solution point of view only. In addition of these quantities, the follow-ing are useful in conversions between concentrations and other quantities. SI base units: kg m⁻³ 6. Density: $\rho = m/V$ (6)7. Relative density: d; the ratio of the density of a mixture to the density of a reference substance under conditions which must be specified for both (1). The symbol d_{t}^{t} , will be used for the density of a mixture at t^oC, 1 atm divided by the density of water at t^oC, 1 atm. Other quantities will be defined in the prefaces to individual volumes or on specific data sheets. Thermodynamics of Solubility

The principal aims of the Solubility Data Project are the tabulation and evaluation of: (a) solubilities as defined above; (b) the nature of the saturating solid phase. Thermodynamic analysis of solubility phenomena has two aims: (a) to provide a rational basis for the construction of functions to represent solubility data; (b) to enable thermodynamic quantities to be extracted from solubility data. Both these aims are difficult to achieve in many cases because of a lack of experimental or theoretical information concerning activity coefficients. Where thermodynamic quantities can be found, they are not evaluated critically, since this task would involve critical evaluation of a large body of data that is not directly relevant to solubility. The following discussion is an outline of the principal thermodynamic relations encountered in discussions of solubility. For more extensive discussions and references, see books on thermodynamics, e.g., (5-10).

Activity Coefficients (1)

(a) Mixtures. The activity coefficient f_B of a substance B is given by

$$\operatorname{RT} \ln(\mathbf{f}_{\mathbf{B}}\mathbf{x}_{\mathbf{B}}) = \mu_{\mathbf{B}} - \mu_{\mathbf{B}}^{*}$$
(7)

where μ_B is the chemical potential, and μ_B^* is the chemical potential of pure B at the same temperature and pressure. For any substance B in the mixture,

$$\lim_{x_{B} \neq 1} f_{B} = 1$$
(8)

(b) Solutions.

(i) Solute substance, B. The molal activity coefficient $\gamma_{\rm B}$ is given

$$RT \ln(\gamma_B m_B) = \mu_B - (\mu_B - RT \ln m_B)^{\omega}$$
(9)

where the superscript $\stackrel{\infty}{}$ indicates an infinitely dilute solution. For any solute B,

 $\gamma_{\rm B}^{\infty} = 1 \tag{10}$

Activity coefficients y_B connected with concentration c_B , and $f_{x,B}$ (called the *rational activity coefficient*) connected with mole fraction x_B are defined in analogous ways. The relations among them are (1,9):

$$\gamma_{\rm B} = x_{\rm A} f_{\rm x,B} = V_{\rm A}^* (1 - \sum_{\rm s} c_{\rm s}) \gamma_{\rm B}$$
(11)

or

by

xiv

$$f_{\mathbf{x},\mathbf{B}} = (1 + M_{\mathbf{A}} \sum_{\mathbf{s}} m_{\mathbf{s}}) \gamma_{\mathbf{B}} = V_{\mathbf{A}} Y_{\mathbf{B}} / V_{\mathbf{m}}$$
(12)

or

$$y_{B} = (V_{A} + M_{A_{S}} \Sigma_{S} V_{S}) \gamma_{B} / V_{A}^{*} = V_{m} f_{x,B} / V_{A}^{*}$$
 (13)

where the summations are over all solutes, V_A^* is the molar volume of the pure solvent, V_i is the partial molar volume of substance i, and V_m is the molar volume of the solution.

For an electrolyte solute $B \equiv C_{\nu+}A_{\nu-}$, the molal activity is replaced by (9)

$$\gamma_{\rm B}m_{\rm B} = \gamma_{\pm}^{0}m_{\rm B}^{0}Q^{0}$$
(14)

where $v = v_+ + v_-$, $Q = (v_+^{\nu_+}v_-^{\nu_-})^{1/\nu}$, and Y_{\pm} is the mean ionic molal activity coefficient. A similar relation holds for the concentration activity y_{BCB} . For the mol fractional activity,

$$f_{x,B} x_{B} = v_{+}^{v_{+}} v_{-}^{v_{-}} f_{\pm}^{v_{+}} x_{\pm}^{v_{+}}$$
(15)

The quantities x_+ and x_- are the ionic mole fractions (9), which for a single solute are

$$x_{+} = v_{+}x_{B}/[1+(v-1)x_{B}]; \qquad x_{-} = v_{-}x_{B}/[1+(v-1)x_{B}]$$
(16)

(ii) Solvent, A:

The osmotic coefficient, ϕ , of a solvent substance A is defined as (1):

$$\rho = (\mu_A^* - \mu_A) / RT M_A \sum_{s=s}^{Sm}$$
(17)

where μ_A^* is the chemical potential of the pure solvent. The *hational* osmotic coefficient, ϕ_X , is defined as (1):

$$\phi_{\mathbf{x}} = (\mu_{\mathbf{A}} - \mu_{\mathbf{A}}^{*}) / \mathrm{RT} \ell \mathrm{n} \mathbf{x}_{\mathbf{A}} = \phi \mathrm{M}_{\mathbf{A}_{\mathbf{S}}} \mathrm{\Sigma} \mathrm{m}_{\mathbf{S}} / \ell \mathrm{n} (1 + \mathrm{M}_{\mathbf{A}_{\mathbf{S}}} \mathrm{\Sigma} \mathrm{m}_{\mathbf{S}})$$
(18)

The activity, a_A , or the activity coefficient f_A is often used for the solvent rather than the osmotic coefficient. The activity coefficient is defined relative to pure A, just as for a mixture.

The Liquid Phase

- 1

A general thermodynamic differential equation which gives solubility as a function of temperature, pressure and composition can be derived. The approach is that of Kirkwood and Oppenheim (7). Consider a solid mixture containing c' thermodynamic components i. The Gibbs-Duhem equation for this mixture is:

 $\sum_{i=1}^{c} x_{i}'(S_{i}'dT - V_{i}'dp + d\mu_{i}) = 0$ (19)

A liquid mixture in equilibrium with this solid phase contains c thermodynamic components i, where, usually, $c \ge c'$. The Gibbs-Duhem equation for the liquid mixture is:

$$\sum_{i=1}^{C} x_i (S_i dT - V_i dp + d\mu_i) + \sum_{i=C'+1}^{C} x_i (S_i dT - V_i dp + d\mu_i) = 0$$
(20)

Eliminate $d\mu_1$ by multiplying (19) by x_1 and (20) $x_1\,{}^\prime\,{}^\prime$. After some algebra, and use of:

$$d\mu_{i} = \sum_{j=2}^{\Sigma} G_{ij} dx_{j} - S_{i} dT + V_{i} dp$$
(21)

where (7)

$$G_{ij} = (\partial \mu_i / \partial x_j)_{T,P,x_i} + x_j$$
(22)

Introduction

where

$$H_{i}-H_{i}' = T(S_{i}-S_{i}')$$
⁽²⁴⁾

is the enthalpy of transfer of component i from the solid to the liquid phase, at a given temperature, pressure and composition, and H_i , S_i , V_i are the partial molar enthalpy, entropy, and volume of component i. Several special cases (all with pressure held constant) will be considered. Other cases will appear in individual evaluations.

(a) Sqlubility as a function of temperature. Consider a binary solid compound A_nB in a single solvent A. There is no fundamental thermodynamic distinction between a binary compound of A and B which dissociates completely or partially on melting and a solid mixture of A and B; the binary compound can be regarded as a solid mixture of constant composition. Thus, with c = 2, c' = 1, $x_A' = n/(n+1)$, $x_B' = 1/(n+1)$, eqn (23) becomes

$$(1/x_{B}^{-n}/x_{A}) \{1 + (\frac{\partial \ln f_{B}}{\partial \ln x_{B}})_{T,P}\} dx_{B} = (nH_{A}^{+}H_{B}^{-}H_{AB}^{*}) dT/RT^{2}$$
(25)

where the mole fractional activity coefficient has been introduced. If the mixture is a non-electrolyte, and the activity coefficients are given by the expression for a simple mixture (6):

$$RT \ln f_{\rm B} = w x_{\rm A}^2$$
 (26)

then it can be shown that, if w is independent of temperature, eqn (25) can be integrated (cf. (5), Chap. XXIII, sect. 5). The enthalpy term becomes

$$nH_{A} + H_{B} - H_{AB}^{*} = \Delta H_{AB} + n(H_{A} - H_{A}^{*}) + (H_{B} - H_{B}^{*})$$
$$= \Delta H_{AB} + w(nx_{B}^{2} + x_{A}^{2})$$
(27)

where ΔH_{AB} is the enthalpy of melting and dissociation of one mole of pure solid $A_{n}B$, and $H_{A}*$, $H_{B}*$ are the molar enthalpies of pure liquid A and B. The differential equation becomes

$$R d \ln\{x_{B}(1-x_{B})^{n}\} = -\Delta H_{AB} d(\frac{1}{T}) - w d(\frac{x_{A}^{2}+nx_{B}^{2}}{T})$$
(28)

Integration from x_B ,T to $x_B = 1/(1+n)$, T = T*, the melting point of the pure binary compound, gives:

$$\ell_{n} \{ x_{B}^{} (1-x_{B}^{})^{n} \} \approx \ell_{n} \{ \frac{n^{11}}{(1+n)^{n+1}} \} - \{ \frac{\Delta H_{AB}^{*} - T^{*} \Delta C_{P}^{*}}{R} \} (\frac{1}{T} - \frac{1}{T^{*}})$$

$$+ \frac{\Delta C_{P}^{*}}{R} \ell_{n} (\frac{T}{T^{*}}) - \frac{w}{R} \{ \frac{x_{A}^{*} + nx_{B}}{T} - \frac{n}{(n+1)T^{*}} \}$$

$$(29)$$

where ΔC_p^* is the change in molar heat capacity accompanying fusion plus decomposition of the compound at temperature T*, (assumed here to be independent of temperature and composition), and ΔH_{AB}^* is the corresponding change in enthalpy at T = T*. Equation (29) has the general form

$$\ln\{x_{B}(1-x_{B})^{n}\} = A_{1} + A_{2}/T + A_{3}\ln T + A_{4}(x_{A}^{2}+nx_{B}^{2})/T$$
(30)

If the solid contains only component B, n = 0 in eqn (29) and (30). If the infinite dilution standard state is used in eqn (25), eqn (26) becomes

 $\operatorname{RT} \ln f_{x,B} = w(x_A^2 - 1)$ (31)

and (27) becomes

$$nH_{A} + H_{B} - H_{AB} = (nH_{A} + H_{B} - H_{AB}) + n(H_{A} - H_{A} +) + (H_{B} - H_{B}) = \Delta H_{AB} + w(nx_{B}^{2} + x_{A}^{2} - 1)$$
(32)

where the first term, ΔH_{AB}^{∞} , is the enthalpy of melting and dissociation of solid compound A_nB to the infinitely dilute state of solute B in solvent A; H_B^{∞} is the partial molar enthalpy of the solute at infinite dilution. Clearly, the integral of eqn (25) will have the same form as eqn (29), with $\Delta H_{AB}^{\infty}(T^*)$, $\Delta C_p^{\infty}(T^*)$ replacing ΔH_{AB}^* and ΔC_p^* and x_A^2 -1 replacing x_A^2 in the last term.

Introduction

If the liquid phase is an aqueous electrolyte solution, and the solid is a salt hydrate, the above treatment needs slight modification. Using rational mean activity coefficients, eqn (25) becomes

$$Rv(1/x_{B}-n/x_{A}) \{ 1+(\partial lnf_{\pm}/\partial lnx_{\pm})_{T,P} \} dx_{B} / \{ 1+(v-1)x_{B} \}$$
$$= \{ \Delta H_{AB}^{\infty} + n(H_{A}-H_{A}^{*}) + (H_{B}-H_{B}^{\infty}) \} d(1/T)$$
(33)

If the terms involving activity coefficients and partial molar enthalpies are negligible, then integration gives (cf. (11)):

$$x_{\rm B}^{\rm V}(1-x_{\rm B})^{\rm n} = x_{\rm B}\{\frac{n}{(n+\nu)}^{\rm N} + \nu\} = x_{\rm B}\{\frac{n}{(n+\nu)}^{\rm N} + \nu\} - \{\frac{\Delta H_{\rm AB}^{\infty}(T^{\star}) - T^{\star}\Delta C_{\rm P}^{\star}}{R}\} (\frac{1}{T} - \frac{1}{T^{\star}}) + \frac{\Delta C_{\rm P}^{\star}(T^{\star})}{R}x_{\rm B}(T^{\star}) + \frac{\Delta C_{\rm P}^{\star}(T^$$

A similar equation (with v=2 and without the heat capacity terms) has been used to fit solubility data for some $MOH=H_2O$ systems, where M is an alkali metal; the enthalpy values obtained agreed well with known values (11). In many cases, data on activity coefficients (9) and partial molal enthalpies (8,10) in concentrated solution indicate that the terms involving these quantities are not negligible, although they may remain roughly constant along the solubility temperature curve.

The above analysis shows clearly that a rational thermodynamic basis exists for functional representation of solubility-temperature curves in two-component systems, but may be difficult to apply because of lack of experimental or theoretical knowledge of activity coefficients and partial molar enthalpies. Other phenomena which are related ultimately to the stoichiometric activity coefficients and which complicate interpretation include ion pairing, formation of complex ions, and hydrolysis. Similar considerations hold for the variation of solubility with pressure, except that the effects are relatively smaller at the pressures used in many investigations of solubility (5). (b) Solubility as a function of composition.

(b) Solubility as a function of composition. At constant temperature and pressure, the chemical potential of a saturating solid phase is constant:

$$\mu_{A_{n}B}^{*} = \mu_{A_{n}B}(sln) = n\mu_{A} + \mu_{B}$$

$$= (n\mu_{A}^{*} + \nu_{+}\mu_{+}^{\infty} + \nu_{-}\mu_{-}^{\infty}) + nRT \ln f_{A}x_{A}$$

$$+ \nu RT \ln \gamma_{\pm}m_{\pm}Q_{\pm}$$
(36)

for a salt hydrate $A_n B$ which dissociates to water, (A), and a salt, B, one mole of which ionizes to give v_+ cations and v_- anions in a solution in which other substances (ionized or not) may be present. If the saturated solution is sufficiently dilute, $f_A = x_A = 1$, and the quantity $K_{S_0}^{\circ}$ in

Δ

$$G^{\infty} \equiv (\nu_{+}\mu_{+}^{\infty}+\nu_{-}\mu_{-}^{\infty}+n\mu_{A}^{*}-\mu_{AB}^{*})$$
$$= -RT \ln K_{s0}^{0}$$
$$= -RT \ln Q^{\nu}\gamma_{\pm}^{\nu}m_{+}^{\nu}m_{-}^{\nu}$$

is called the *solubility product* of the salt. (It should be noted that it is not customary to extend this definition to hydrated salts, but there is no reason why they should be excluded.) Values of the solubility product are often given on mole fraction or concentration scales. In dilute solutions, the theoretical behaviour of the activity coefficients as a function of ionic strength is often sufficiently well known that reliable extrapolations to infinite dilution can be made, and values of K_{00}° can be determined. In more concentrated solutions, the same problems with activity coefficients that were outlined in the section on variation of solubility with temperature still occur. If these complications do not arise, the solubility of a hydrate salt $C_{V,A_{V}} \cdot nH_2O$ in the presence of other solutes is given by eqn (36) as

$$v \ln\{m_{B}/m_{B}(0)\} = -v \ln\{\gamma_{\pm}/\gamma_{\pm}(0)\} - n \ln(a_{H_{2}O}/a_{H_{2}O}(0))$$
(38)

where a_{H_2O} is the activity of water in the saturated solution, m_B is the molality of the salt in the saturated solution, and (0) indicates absence of other solutes. Similar considerations hold for non-electrolytes.

(37)

The Solid Phase

The definition of solubility permits the occurrence of a single solid phase which may be a pure anhydrous compound, a salt hydrate, a nonstoichiometric compound, or a solid mixture (or solid solution, or "mixed crystals"), and may be stable or metastable. As well, any number of solid phases consistent with the requirements of the phase rule may be present. Metastable solid phases are of widespread occurrence, and may appear as polymorphic (or allotropic) forms or crystal solvates whose rate of transition to more stable forms is very slow. Surface heterogeneity may also give rise to metastability, either when one solid precipitates on the surface of another, or if the size of the solid particles is sufficiently small that surface effects become important. In either case, the solid is not in stable equilibrium with the solution. The stability of a solid may also be affected by the atmosphere in which the system is equilibrated.

Many of these phenomena require very careful, and often prolonged, equilibration for their investigation and elimination. A very general analytical method, the "wet residues" method of Schreinemakers (12) (see a text on physical chemistry) is usually used to investigate the composition of solid phases in equilibrium with salt solutions. In principle, the same method can be used with systems of other types. Many other techniques for examination of solids, in particular X-ray, optical, and thermal analysis methods, are used in conjunction with chemical analyses (including the wet residues method).

COMPILATIONS AND EVALUATIONS

The formats for the compilations and critical evaluations have been standardized for all volumes. A brief description of the data sheets has been given in the FOREWORD; additional explanation is given below.

Guide to the Compilations

The format used for the compilations is, for the most part, selfexplanatory. The details presented below are those which are not found in the FOREWORD or which are not self-evident.

Components. Each component is listed according to IUPAC name, formula, and Chemical Abstracts (CA) Registry Number. The formula is given either in terms of the IUPAC or Hill (13) system and the choice of formula is governed by what is usual for most current users: i.e. IUPAC for inorganic compounds, and Hill system for organic compounds. Components are ordered according to:

(a) saturating components;

(b) non-saturating components in alphanumerical order;

(c) solvents in alphanumerical order.

The saturating components are arranged in order according to a 18-column, 2-row periodic table:

Columns 1,2: H, groups IA, IIA;

- -3,12: transition elements (groups IIIB to VIIB, group VIII, groups IB, IIB);
- 13-18: groups IIIA-VIIA, noble gases.

Row 1: Ce to Lu;

Row 2: Th to the end of the known elements, in order of atomic number. Salt hydrates are generally not considered to be saturating components since most solubilities are expressed in terms of the anhydrous salt. The existence of hydrates or solvates is carefully noted in the texts, and CA Registry Numbers are given where available, usually in the critical evaluation. Mineralogical names are also quoted, along with their CA Registry Numbers, again usually in the critical evaluation.

Original Measurements. References are abbreviated in the forms given by Chemical Abstracts Service Source Index (CASSI). Names originally in other than Roman alphabets are given as transliterated by Chemical Abstracts.

Experimental Values. Data are reported in the units used in the original publication, with the exception that modern names for units and quantities are used; e.g., mass per cent for weight per cent; mol dm⁻³ for molar; etc. Both mass and molar values are given. Usually, only one type of value (e.g., mass per cent) is found in the original paper, and the compiler has added the other type of value (e.g., mole per cent) from computer calculations based on 1976 atomic weights (14). Errors in calculations and fitting equations in original papers have been noted and corrected, by computer calculations where necessary.

Method. Source and Purity of Materials. Abbreviations used in Chemical Abstracts are often used here to save space.

Estimated Error. If these data were omitted by the original authors, and if relevant information is available, the compilers have attempted to

estimate errors from the internal consistency of data and type of apparatus used. Methods used by the compilers for estimating and reporting errors are based on the papers by Ku and Eisenhart (15).

Comments and/or Additional Data. Many compilations include this section which provides short comments relevant to the general nature of the work or additional experimental and thermodynamic data which are judged by the compiler to be of value to the reader.

References. See the above description for Original Measurements.

Guide to the Evaluations

The evaluator's task is to check whether the compiled data are correct, to assess the reliability and quality of the data, to estimate errors where necessary, and to recommend "best" values. The evaluation takes the form of a summary in which all the data supplied by the compiler have been A brief description of the evaluation sheets is given critically reviewed. below.

Components. See the description for the Compilations.

Evaluator. Name and date up to which the literature was checked. Critical Evaluation

The evaluator produces text evaluating all the (a) Critical text. published data for each given system. Thus, in this section the evaluator review the merits or shortcomings of the various data. Only published data are considered; even published data can be considered only if the experimental data permit an assessment of reliability.

(b) Fitting equations. If the use of a smoothing equation is justifiable, the evaluator may provide an equation representing the solubility as a function of the variables reported on all the compilation sheets.

(c) Graphical summary. In addition to (b) above, graphical summaries are often given.

(d) Recommended values. Data are recommended if the results of at least two independent groups are available and they are in good agreement, and if the evaluator has no doubt as to the adequacy and reliability of the applied experimental and computational procedures. Data are reported as tentative if only one set of measurements is available, or if the evaluator considers some aspect of the computational or experimental method as mildly undesirable but estimates that it should cause only minor errors. Data are considered as doubtful if the evaluator considers some aspect of the computational or experimental method as undesirable but still considers the data to have some value in those instances where the order of magnitude of the solubility is needed. Data determined by an inadequate method or under ill-defined conditions are *nejected*. However references to these data are included in the evaluation together with a comment by the evaluator as to the reason for their rejection.

(e) References. All pertinent references are given here. References to those data which, by virtue of their poor precision, have been rejected and not compiled are also listed in this section.

(f) Units. While the original data may be reported in the units used by the investigators, the final recommended values are reported in S.I. units (1,16) when the data can be accurately converted.

References

Whiffen, D. H., ed., Manual of Symbols and Terminology for Physico-1.

- chemical Quantities and Units. Pure Applied Chem. <u>1979</u>, 51, No. 1. McGlashan, M.L. Physicochemical Quantities and Units. 2nd ed. Royal Institute of Chemistry. London. 1971. Jänecke, E. Z. Anorg. Chem. <u>1906</u>, 51, 132. 2.
- з.
- Friedman, H.L. J. Chem. Phys. 1960, 32, 1351. 4.
- Prigogine, I.; Defay, R. Chemical Thermodynamics. D.H. Everett, transl. 5. Longmans, Green. London, New York, Toronto. 1954. Guggenheim, E.A. Thermodynamics. North-Holland. Amsterdam. 1959. 4th ed.
- 6. Kirkwood, J.G.; Oppenheim, I. Chemical Thermodynamics. McGraw-Hill, New 7. York, Toronto, London. 1961.
- Lewis, G.N.; Randall, M. (rev. Pitzer, K.S.; Brewer, L.). Thermodynamics 8.
- McGraw Hill. New York, Toronto, London. 1961. 2nd ed. Robinson, R.A.; Stokes, R.H. Electrolyte Solutions. Butterworths. London. 9. 1959, 2nd ed.
- 10. Harned, H.S.; Owen, B.B. The Physical Chemistry of Electrolytic Solutions Reinhold. New York. 1958. 3rd ed.
- Cohen-Adad, R.; Saugier, M.T.; Said, J. Rev. Chim. Miner. <u>1973</u>, 10, 631.
 Schreinemakers, F.A.H. Z. Phys. Chem., stoechiom. Verwandschaftsl. <u>1893</u>, 11, 75.
- Hill, E.A. J. Am. Chem. Soc. <u>1900</u>, 22, 478.
 IUPAC Commission on Atomic Weights. Pure Appl. Chem., <u>1976</u>, 47, 75.

15.	Ku, H.H., p. 73; Eisenhart, C., p. 69; in Measurement and Calibration. NBS Special Washington 1969	n Ku, H.H., ed. Precision Publication 300. Vol. 1.
16.	Washington. <u>1969</u> . The International System of Units. Engl. Le Système International d'Unités. H.M.S	transl approved by the RIDM of
		R. Cohen-Adad, Villeurbanne,
		France J.W. Lorimer, London, Canada M. Salomon, Fair Haven, New
		Jersey, U.S.A.

COMPONENTS:	ORIGINAL MEASUREMENTS:		
<pre>(1) Scandium chloride; ScCl₃; [10361-84-9]</pre>	Kirmse, E. M.		
(2) Methanol; CH40; [67-56-1]	Z. Chem. <u>1961</u> , 1, 332–4.		
VARIABLES:	PREPARED BY:		
One temperature: T/K = 298.2	T. Mioduski		
EXPERIMENTAL VALUES:			
The solubility of ScCl ₃ in methanol at 25° C w	as reported to be		
4	5.5 mass %		
The corresponding molality calculated by the	compiler is		
5	.52 mol kg ⁻¹		
The solid phase was reported to be ScCl ₃ .3CH ₃ ScCl ₃ .2CH ₃ OH (see discussion below).	OH which could be further dehydrated to		
5 5			
COMMENTS AND/OR ADDITIONAL DATA:			
Since in the saturated solution there are almost 6 moles of solvent per mole of salt, the author suggests that ScCl ₃ has a coordination number of 6.			
AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE: Isothermal method. About 10-15 cm ³ alcohol and ScCl ₃ placed in glass stoppered bottles and mechanically rotated at 200 rpm in a thermostat for 14-15 days. After allowing the equilibrated slns to settle for 3 days, aliquots were removed for analyses. Sc determined gravimetrically by evaporation of solvent followed by ignition to Sc20 ₃ . Identical results obtained by centrifuging the equilibrated slns prior to analyses.	SOURCE AND PURITY OF MATERIALS: Anhydrous ScCl ₃ prepared by heating Sc_2O_3 and activated charcoal in a stream of chlorine at 900-1000°C (1). Source and purity of Sc_2O_3 not specified. Methanol was purified by fractional dis- tillation from CaSO ₄ .0.5H ₂ O.		
Solid phase composition determined by analysis of wet residues. Samples dried in vacuum (l1 \pm 1 mm Hg) over P ₂ O ₅ at 18 \pm 1°C and weighed every 24 hours until the mass was constant. Sc and Cl analysed gravimetrically as Sc ₂ O ₃ and AgCl. It is not clear if ele- mental C and H analyses were also carried out. After 28 days of drying, the solid phase composition was found to be ScCl ₃ .3CH ₃ OH. Additional drying in a desic- cator or in a dry box yielded a solid phase of composition ScCl ₃ .2CH ₃ OH.	ESTIMATED ERROR: Soly: nothing specified. Temp: precision <u>+</u> 0.2 K. REFERENCES: 1. Petru, F.; Hajek, B.; Prochazka, V.; Vit, J. Collect. Czech. Chem. Comm. <u>1957</u> , 22, 1534.		

ORIGINAL MEASUREMENTS:			
Kirmse, E. M.			
Z. Chem. <u>1961</u> , 1, 332-4.			
PREPARED BY:			
T. Mioduski			
as reported as follows:			
aliquot 2			
soly/mass %			
37.3			
37.4			
corresponding (mean) molality calculated by			
$_{3}$ CH $_{2}$ OH which could be further dehydrated to			
Since in the saturated solution there are almost 6 moles of solvent per mole of salt, the author suggests that ScCl ₃ has a coordination number of 6.			
INFORMATION			
SOURCE AND PURITY OF MATERIALS: Anhydrous ScCl ₃ prepared by heating Sc ₂ O ₃ and activated charcoal in a stream of chlorine at 900-1000°C (1). Source and purity of Sc ₂ O ₃ not specified. Ethanol was dried with metallic sodium and distilled.			
ESTIMATED ERROR: Soly: std deviation about 0.2 mass % (compiler). Temp: precision <u>+</u> 0.2 K. REFERENCES: 1. Petru, F.; Hajek, B.; Prochazka, V.; Vit, J. Collect. Czech. Chem. Commn. <u>1957</u> , 22, 1534.			

Scandium Chloride			3	
COMPONENTS :		ORIGINAL MEASUREM	ŒNTS:	
 Scandium chlorid. [10361-84-9] 1-Propanol; C₃H₈ 	,	Kirmse, E. M. Z. Chem. <u>1961</u> ,	1, 332-4.	
VARIABLES:	<u></u>	PREPARED BY:		
One temperature: T/K	= 298.2	T. Mioduski		
EXPERIMENTAL VALUES: The solubility of ScCl ₃ in 1-propanol at 25 ⁰ C was reported as follows				
	Run 1	Ru	n 2	
	aliquot l	aliquot l	aliquot 2	
	soly/mass %	-	soly/mass %	
first analyses	26.1	25.7	26.3	
second analyses	26.2	26.1		
third analyses	26.1			
The solid phase was reported to be $ScCl_3.4C_3H_7OH$ which could be further dehydrated to $ScCl_3.2C_3H_7OH$. COMMENTS AND/OR ADDITIONAL DATA: Since in the saturated solution there are almost 6 moles of solvent per mole of salt, the author suggests that $ScCl_3$ has a coordination number of 6.				
	AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE: Isothermal method. About 10-15 cm ³ alcohol and ScCl ₃ placed in glass stoppered bottles and mechanically rotated at 200 rpm in a thermostat for 14-15 days. After allowing the equilibrated slns to settle for 3 days, aliquots were removed for analyses. Sc determined gravimetrically by evaporation of solvent followed by ignition to Sc20 ₃ . Identical results obtained by centrifuging the equilibrated slns prior to analyses.		and activated c chlorine at 900 purity of Sc ₂ 0 ₃	prepared by heating Sc ₂ O ₃ harcoal in a stream of -1000°C (1). Source and not specified. dried with freshly prepared	1
Solid phase composition analysis of wet residu in vacuum (ll \pm 1 mm H 1°C and weighed every mass was constant. So gravimetrically as Sog not clear if elemental also carried out. Aft the solid phase compos SoCl ₃ .4C ₃ H ₇ OH. Additi desiccator or in a dry phase of composition S	tes. Samples dried (g) over P ₂ O ₅ at 18 ± 24 hours until the and Cl analysed O ₃ and AgCl. It is C and H analyses were ter 28 days of drying, dition was found to be conal drying in a box yielded a solid	Temp: precision REFERENCES: 1. Petru, F.; H	ajek, B.; Prochazka, V.; llect. Czech. Chem. Commun.	
not clear if elemental also carried out. Aft the solid phase compos ScCl ₃ .4C ₃ H ₇ OH. Additi desiccator or in a dry	Č and H analyses were er 28 days of drying, dition was found to be onal drying in a box yielded a solid	1. Petru, F.; H Vit, J. Co	llect. Czech. Chem. Commu	in.

COMPONENTS:		ORIGINAL MEASUREME	NTS:
(1) Scandium chloride [10361-84-9]	; ScCl ₃ ;	Kirmse, E. M.	
(2) 1-Butanol; C ₄ H ₁₀ 0	; [71-36-3]	Z. Chem. <u>1961</u> , 1,	, 332-4.
VARIABLES:		PREPARED BY:	
One temperature: T/K •	- 298.2	T. Mioduski	
EXPERIMENTAL VALUES:			
The solubility of ScCl ₃	in l-butanol at 25°C v	as reported as fol	llows:
	Run 1	I	Run 2
	aliquot l	aliquot l	aliquot 2
	soly/mass %	soly/mass %	soly/mass %
first analyses	27.9	23.6	23.7
second analyses	27.7	23.7	
third analyses	27.8		
<pre>the compiler is 2.23 mol kg⁻¹. The solid phase was reported to be ScCl₃.3CLHgOH which could be further dehydrated to ScCl₃.2CLHgOH. COMMENTS AND/OR ADDITIONAL DATA: Since in the saturated solution there are almost 6 moles of solvent per mole of salt, the author suggests that ScCl₃ has a coordination number of 6.</pre>			
	AUXILIARY	INFORMATION	
METHOD/APPARATUS/PROCED Isothermal method. Abo and ScCl ₃ placed in gla and mechanically rotate thermostat for 14-15 da the equilibrated slns t aliquots were removed f determined gravimetrica solvent followed by ign Identical results obtai the equilibrated slns p	but 10-15 cm ³ alcohol ass stoppered bottles at 200 rpm in a ays. After allowing so settle for 3 days, for analyses. Sc ally by evaporation of attion to Sc203. aned by centrifuging	and activated cha chlorine at 900-1 purity of Sc ₂ 03 r	prepared by heating Sc ₂ O ₃ arcoal in a stream of LOOO ^O C (1). Source and
Solid phase composition analysis of wet residue vacuum (ll \pm 1 mm Hg) o and weighed every 24 ho constant. Sc and Cl an as Sc ₂ O ₃ and AgCl. It mental C and H analyses out. After 29 days of phase composition was f H ₀ OH. Additional dryin in a dry box yielded a position ScCl ₃ .2C ₄ H ₉ OH.	s. Samples dried in over P_2O_5 at $18 \pm 1^{\circ}C$ ours until the mass was halysed gravimetrically is not clear if ele- s were also carried drying, the solid cound to be ScCl ₃ .3C _h ag in a desiccator or solid phase of com-	(compiler) Temp: precision REFERENCES: 1. Petru, F.; Ha;	± 0.2 K. Jek, B.; Prochazka, V.; Zect. Czech. Chem. Commun.

Scandium Chloride		
COMPONENTS:		ORIGINAL MEASUREMENTS: Kirmse, E. M.
<pre>(1) Scandium chloride; ScCl₃; [10361-84-9] (2) 1-Pentanol; C₅H₁₂0; [71-41-0]</pre>		Z. Chem. <u>1961</u> , 1, 332-4.
VARIABLES:		PREPARED BY:
One temperature: T/K = 298.2		T. Mioduski
EXPERIMENTAL VALUES: The solubility of ScCl ₃ in 1-pentanol at 25 [°] C was reported as follows:		
	aliquot l	aliquot 2
	soly/mass %	soly/mass %
first analyses	23.9	23.7
second analyses	23.7	23.6
third analyses		23.5
The solid phase was reported to be $ScCl_3.4C_5H_{11}OH$ which could be further dehydrated $ScCl_3.2C_5H_{11}OH$. COMMENTS AND/OR ADDITIONAL DATA: Since in the saturated solution there are almost 6 moles of solvent per mole of salt the author suggests that $ScCl_3$ has a coordination number of 6.		
	AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method. About 10-15 cm ³ alcohol and ScCl ₃ placed in glass stoppered bottles and mechanically rotated at 200 rpm in a thermostat for 14-15 days. After allowing the equilibrated slns to settle for 3 days, aliquots were removed for analyses. Sc determined gravimetrically by evaporation of solvent followed by ignition to Sc ₂ O ₃ . Identical results obtained by centrifuging the equilibrated slns prior to analyses.		
Solid phase composition determ analysis of wet residues. Sam vacuum (ll \pm l mm Hg) over P ₂ O l ^O C and weighed every 24 hours mass was constant. Sc and Cl gravimetrically as Sc ₂ O ₃ and A not clear if elemental C and H also carried out. After 57 da the solid phase composition wa ScCl ₃ .4C ₅ H ₁₁ OH. Additional dr desiccator or in a dry box yie phase of composition ScCl ₃ .2C ₅	mples dried in 5 at 18 ± 5 until the analysed gCl. It is 1 analyses were ys of drying, s found to be ying in a blded a solid	ESTIMATED ERROR: Soly: std deviation about 0.15 mass % (compiler). Temp: precision ± 0.2 K. REFERENCES: 1. Petru, F.: Hajek, B.; Prochazka, V.; Vit, J. Collect. Czech. Chem. Commun. <u>1957</u> , 22, 1534.

ORIGINAL MEASUREMENTS:			
Kirmse, E. M.			
Z. Chem. <u>1961</u> , 1, 332-4.			
$2. \text{ crem}. \underline{1901}, 1, 332-4.$			
PREPARED BY:			
T. Mioduski			
1. HOUDKI			
was reported as follows:			
aliquot 2			
soly/mass %			
22.2			
21.1			
21.1			
corresponding (mean) molality calculated by			
H_{13}^{OH} which could be further dehydrated to			
Since in the saturated solution there are almost 6 moles of solvent per mole of salt, the author suggests that ScCl ₃ has a coordination number of 6.			
INFORMATION			
SOURCE AND PURITY OF MATERIALS:			
Anhydrous ScCl ₃ prepared by heating Sc ₂ O ₃ and activated charcoal in a stream of chlorine at 900-1000°C (1). Source and purity of Sc ₂ O ₃ not specified. 1-Hexanol was purified by fractional distillation.			
ESTIMATED ERROR: Soly: std deviation about 0.5 mass % (compiler). Temp: precision <u>+</u> 0.2 K. REFERENCES: 1. Petru, F.; Hajek, B.; Prochazka, V.; Vit, J. Collect. Czech. Chem. Commun. <u>1957</u> , 22, 1534.			

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ORIGINAL MEASUREMENTS: Kirmse, E. M.			
Z. Chem. <u>1961</u> , 1, 332-4.			
PREPARED BY: T. Mioduski			
1. HIGUSKI			
5 ⁰ C was reported as follows:			
aliquot 2			
soly/mass %			
19.4			
19.7			
The mean solubility is 19.3 mass %, and the corresponding (mean) molality calculated by the compiler is 1.58 mol kg ⁻¹ . The solid phase was reported to be $ScCl_3$. ⁴ C ₇ H ₁₅ OH which could be further dehydrated to $ScCl_3$.3C ₇ H ₁₅ OH.			
Since in the saturated solution there are almost 6 moles of solvent per mole of salt, the author suggests that $ScCl_3$ has a coordination number of 6.			
RY INFORMATION			
SOURCE AND PURITY OF MATERIALS: Anhydrous ScCl ₃ prepared by heating Sc ₂ O ₃ and activated charcoal in a stream of chlorine at 900-1000°C (1). Source and purity of Sc ₂ O ₃ not specified. 1-Heptanol was purified by fractional of distillation.			
ESTIMATED ERROR: Soly: std deviation about 0.3 mass % (compiler). Temp: precision <u>+</u> 0.2 K. REFERENCES: 1. Petru, F.; Hajek, B.; Prochazka, V.; Vit, J. Collect. Czech. Chem. Commun. <u>1957</u> , 22, 1534.			

COMPONENTS:		ORIGINAL MEASUREMENTS:	
		Kirmse, E. M.	
<pre>(1) Scandium chloride; ScCl₃; [10361-84-9]</pre>		Z. Chem. <u>1961</u> , 1, 332-4.	
(2) 1-Octanol; C ₈ H ₁₈ 0; [111-87-5]			
VARIABLES:		PREPARED BY:	
One temperature: $T/K = 298.2$		T. Mioduski	
EXPERIMENTAL VALUES:			
The solubility of ScCl ₃ in 1-od	ctanol at 25 ⁰ C	was reported as follows:	
	aliquot l	aliquot 2	
2	soly/mass %	soly/mass %	
first analyses	16.9	16.9	
second analyses	17.0	17.0	
The mean solubility is 16.9 mass %, and the corresponding (mean) molality calculated by the compiler is 1.34 mol kg ⁻¹ . The solid phase was reported to be $ScCl_3.4C_8H_{17}OH$ which could be further dehydrated to $ScCl_3.3C_8H_{17}OH$.			
COMMENTS AND/OR ADDITIONAL DATA: Since in the saturated solution there are almost 6 moles of solvent per mole of salt, the author suggests that ScCl ₃ has a coordination number of 6.			
	AUXILIARY	INFORMATION	
METHOD/APPARATUS/PROCEDURE: Isothermal method. About 10-15 and ScCl ₃ placed in glass stopp and mechanically rotated at 200 thermostat for 14-15 days. Aft the equilibrated slns to settle aliquots were removed for analy determined gravimetrically by e solvent followed by ignition to Identical results obtained by o the equilibrated slns prior to	pered bottles o rpm in a cer allowing e for 3 days, vses. Sc evaporation of o Sc ₂ O ₃ . centrifuging	SOURCE AND PURITY OF MATERIALS: Anhydrous ScCl ₃ prepared by heating Sc ₂ O ₃ and activated charcoal in a stream of chlorine at 900-1000°C (1). Source and purity of Sc ₂ O ₃ not specified. 1-Octanol was purified by fractional distillation.	
Solid phase composition determined by analysis of wet residues. Samples dried in vacuum (ll \pm 1 mm Hg) over P ₂ O ₅ at 18 \pm 1°C and weighed every 24 hours until the mass was constant. Sc and Cl analysed gravimetrically as Sc ₂ O ₃ and AgCl. It is not clear if elemental C and H analyses were also carried out. After 114 days of drying the solid phase composition was found to be ScCl ₃ . ⁴ CgH ₁₇ OH. Additional drying in a desiccator or in a dry box yielded a solid phase of composition ScCl ₃ .3C ₈ H ₁₇ OH.		ESTIMATED ERROR: Soly: std deviation about 0.1 mass % (compiler). Temp: precision <u>+</u> 0.2 K. REFERENCES: 1. Petru, F.; Hajek, B.; Prochazka, V.; Vit, J. Collect. Czech. Chem. Commun. <u>1957</u> , 22, 1534.	

Scandium Chloride			
COMPONENTS:	ORIGINAL MEASUREMENTS:		
(1) Scandium chloride; ScCl ₃ ;	Kirmse, E. M.		
[10361-84-9]	Z. Chem. <u>1961</u> , 1, 332-4.		
(2) 1-Nonanol; C ₉ H ₂ O; [143-08-8]			
VARIABLES:	PREPARED BY:		
One temperature: $T/K = 298.2$	T. Mioduski		
EXPERIMENTAL VALUES:	······		
The solubility of ScCl ₃ in 1-nonanol at 25°C	was reported as follows:		
first analyses 13.6 mass %			
second analyses 13.4 mass %			
The mean solubility is 13.5 mass %, and the corresponding (mean) molality calculated by the compiler is 1.03 mol kg ⁻¹ .			
The solid phase was reported to be $ScCl_3.3C_9$	н ₁₉ он.		
the author suggests that ScCl ₃ has a coordin	ation number of 6.		
AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE: Isothermal method. About 10-15 cm ³ alcohol and ScCl ₃ place in glass stoppered bottles and mechanically rotated at 200 rpm in a thermostat for 14-15 days. After allowing the equilibrated slns to settle for 3 days, aliquots were removed for analyses. Sc determined gravimetrically by evaporation of solvent followed by ignition to Sc ₂ O ₃ . Identical results obtained by centrifuging the equilibrated slns prior to analyses.	SOURCE AND PURITY OF MATERIALS: Anhydrous ScCl ₃ prepared by heating Sc ₂ O ₃ and activated charcoal in a stream of chlorine at 900-1000°C (1). Source and purity of Sc ₂ O ₃ not specified. 1-Nonanol was purified by fractional		
Solid phase composition determined by analysis of wet residues. Samples dried in vacuum (ll \pm 1 mm Hg) over P ₂ O ₅ at 18 \pm l°C and weighed every 24 hours until the mass was constant. Sc and Cl analysed gravimetrically as Sc ₂ O ₃ and AgCl. It is not clear if elemental C and H analyses were also carried out. After 146 days of drying the solid phase composition was found to be ScCl ₃ .3C ₉ H ₁₀ OH. Additional drying in a desiccator or in a dry box did not change the composition of this solvate.	ESTIMATED ERROR: Soly: std deviation about 0.1 mass % (compiler). Temp: precision ± 0.2 K. REFERENCES: 1. Petru, F.; Hajek, B.; Prochazka, V.; Vit, J. Collect. Czech. Chem. Commun. <u>1957</u> , 22, 1534.		

COMPONENTS :	ORIGINAL MEASUREMENTS:
<pre>(1) Scandium chloride; ScCl₃; [10361-84-9]</pre>	Kirmse, E. M. Tr. II Vses. Konf. po Teor. Rastvorov
(2) 2-Ethoxyethanol; C ₄ H ₁₀ O ₂ ; [110-80-5]	<u>1971</u> , 200-6.
[110-00-0]	
VARIABLES:	PREPARED BY:
One temperature: T/K = 298	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of ScCl ₃ in C ₂ H ₅ OCH ₂ CH ₂ OH at 2	5° C was reported to be
2	5.3 mass %
The corresponding molality calculated by the	compiler is
2	.36 mol kg ⁻¹
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Nothing specified. On the basis of previous	SOURCE AND PURITY OF MATERIALS: Nothing specified. Presumably, the
papers by the author, it appears that	anhydrous chloride was prepared by the method of Taylor and Carter (1).
reaction mixtures were equilibrated for sev- eral days and that Sc was determined by com-	method of raylor and carter (1).
plexometric titration using xylenol orange indicator.	
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES: 1. Taylor, M.D.; Carter, C. P.
	J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.
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Scandium Chloride 1'				
COMPONENTS: (1) Scandium chloride; ScCl ₃ ; [10361-84-9] (2) 1,2-Diethoxyethane; C ₆ H ₁₄ O ₂ ; [629-14-]]	ORIGINAL MEASUREMENTS: Kirmse, E. M.; Zwietasch, K. J. Z. Chem. 1967, 7, 281.			
VARIABLES: One temperature: T/K = 298	PREPARED BY: T. Mioduski			
EXPERIMENTAL VALUES:				
The solubility of ScCl ₃ in C ₂ H ₅ OCH ₂ CH ₂ OC ₂ H ₅ at 1	t 25 ⁰ C was reported to be .22 mass %			
The corresponding molatity calculated by the	compiler is			
	.0816 mol kg ⁻¹			
AUXILIARY INFORMATION				
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The reaction mixtures were equilibrated in a dry atmos- phere with frequent shaking. The solid phase was dried in a vacuum desiccator over P ₂ O ₅ . Sc was determined by complexometric titration using xylenol orange indicator. Cl ⁻ deter- mined by the Volhard titration method. In the solid phase the Sc:Cl:ether ratio was found to be 1:3.00:1.13.	SOURCE AND PURITY OF MATERIALS: Sources and purities of materials not given. The anhydrous chloride was prepared by the method of Taylor and Carter (1). The solvent was prepared by the Williamson synthesis: i.e. by reaction of C_2H_5I with the monoethylether of ethylene glycol.			
	ESTIMATED ERROR: Nothing specified. REFERENCES: 1. Taylor, M.D .; Carter, C. P. J. Inong. Mucl. Chem. <u>1962</u> , 24, 387.			

COMPONENTS:	ORIGINAL MEASUREMENTS:	
(1) Scandium chloride; ScCl ₃ ; [10361-84-9]		
[10361-84-9]	Kirmse, E.M.; Dressler, H.	
(2) 1-Methoxybutane (butyl methyl ether); C ₅ H ₁₂ 0; [628-28-4]	Z. Chem. <u>1975</u> , 15, 239-40.	
VARIABLES:	PREPARED BY:	
Room Temperature : T/K = 293-298	T. Mioduski	
EXPERIMENTAL VALUES:		
The solubility of ScCl ₃ in CH ₃ (CH ₂) ₃ OCH ₃ at 3	20-25°C was reported to be	
6.5	mass %.	
0.5		
	an-dlan da	
The corresponding molality calculated by the		
0.4	6 mol kg^{-1} .	
······································		
AUXILIARI	INFORMATION	
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:	
The solute-solvent mixtures were isothermal-	Nothing specified.	
ly agitated (at room temperature) until	Nothing Specificat	
equilibrium was attained. The anhydrous		
reagents were handled in a dry box contain-		
ing P ₄ 0 ₁₀ . Sc was determined by complexo- metric fitration using Xylenol Orange indi-		
cator.		
	ESTIMATED ERROR:	
	Nothing specified.	
	DEFEDENCIE .	
	REFERENCES :	

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Scandium Chloride			
COMPONENTS:	ORIGINAL MEASUREMENTS:		
	Finke, A.; Kirmse, E. M.		
<pre>(1) Scandium chloride; ScCl₃; [10361-84-9]</pre>	Z. Chem. <u>1965</u> , 5, 193-4.		
(2) Tetrahydrofuran; C ₄ H ₈ 0; [109-99-9]			
VARIABLES:	PREPARED BY:		
One temperature: T/K = 298	T. Mioduski		
EXPERIMENTAL VALUES:	L		
The solubility of ScCl ₃ in tetrahydrofuran a	at 25 ⁰ C was reported to be		
1	0 mass %		
The corresponding molality calculated by the	e compiler is		
C	0.067 mol kg ⁻¹		
AUXILIARY INFORMATION			
ME THOD /AP PARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:		
Nothing specified. The compiler assumes that the method was similar to that des-	Nothing specified except that anhydrous components were used.		
cribed in ref (1). The equilibrated solid phase was dried at			
reduced pressure and it was found to be			
ScCl ₃ .2THF with ScCl ₃ .3THF and ScCl ₃ .2.5THF being intermediate products of drying.			
IR spectra of the solution and the dry ad-			
dition products are discussed. They indi- cate the formation of coordinate bonds of ScCl ₃ with oxygen of THF.			
	ESTIMATED ERROR:		
	Nothing specified.		
	REFERENCES :		
	1. Kirmse, E. M. Z. Chem. <u>1961</u> , <i>1</i> , 332.		

COMPONENTS :	ORIGINAL MEASUREMENTS:		
	Finke, A.; Kirmse, E. M.		
<pre>(1) Scandium chloride; ScCl₃; [10361-84-9]</pre>			
[10301-64-9]	Z. Chem. <u>1965</u> , 5, 193-4.		
(2) Ethyl acetate; C ₄ H ₈ O ₂ ; [141-78-6]			
[141-78-6]			
VARIABLES:	PREPARED BY:		
One temperature: T/K = 298	T. Mioduski		
EXPERIMENTAL VALUES:			
The solubility of ScCl $_3$ in ethyl acetate at 25 $^{\circ}$ C was reported to be			
3	9.2 mass %		
The corresponding molality calculated by the			
14	.26 mol kg ⁻¹		
AUXILIARY	INFORMATION		
METHOD /APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:		
Not specified. The compiler assumes that	Nothing specified except that anhydrous		
the method was similar to that described in ref (1).	components were used.		
The equilibrated solid phase was dried at			
reduced pressure and it was found to be ScCl ₃ .2S (S = ethyl acetate). IR spectra			
of the solution and the dry addition pro-			
duct are discussed. The spectra indicate the formation of coordinate bonds of ScCl ₃			
with oxygen of ethyl acetate.			
	ESTIMATED ERROR:		
	Nothing specified.		
	DI DE DE VOIA		
	REFERENCES: 1. Kirmse, E. M.		
	Z. Chem. <u>1961</u> , 1, 332.		

COMPONENTS:			ORIGIN	NAL MEASUREMENTS	:
(1) Scandium chlor (2) Amines	ide; ScCl ₃	; [10361-84-9	1	e, E.M. em. <u>1961</u> , 1, 334	4-7
VARIABLES:		<u> </u>	PREPA	RED BY:	· · · · · · · · · · · · · · · · · · ·
One temperature:		2	Mark	Salomon	
EXPERIMENTAL VALUES	5:				
			solubi		solid phase
solvent			mass %	mol kg ⁻¹	Sc:amine ratio
diethylamine;	^C 4 ^H 11 ^N ;	[109-89-7]	0.034	$2.2_5 \times 10^{-3}$	1:3
dipentylamine;	^C 10 ^H 23 ^N ;	[2050-92-2]	0.157	1.04×10^{-2}	1:1
triethylamine;	^C 6 ^H 15 ^N ;	[121-44-8]	0.012	7.93×10^{-4}	1:3
tri-n-octylamine;	^C 24 ^H 51 ^N ;	[1116-76-3]	0.004	2.64×10^{-4}	

^a Molalities calculated by the compiler.

AUXILIARY INFORMATION		
METHOD/APPARATUS/PROCEDURE: Isothermal method. ScCl ₃ and amine placed in glass stoppered bottles (sealed with glycerine) and rotated in a thermostat at 25 ± 0.2°C for 20 days. Scandium was determined gravimetrically as Sc ₂ O ₃ . Samples of the solid phases were dried in vacuum (10 mm Hg) over P ₂ O ₅ to constant weight. Scandium was determined gravi- metrically as Sc ₂ O ₃ and chloride determined gravimetrically as AgCl. The nitrogen, carbon and hydrogen contents were determined by "usual microanalytical methods."	<pre>SOURCE AND PURITY OF MATERIALS: Anhydrous ScCl₃ prepared by heating Sc₂O₃ and activated charcoal in a stream of chlorine at 900 - 1000°C (1). Source and purity of Sc₂O₃ not specified. Comercially available amines were fraction- ated several times.</pre> ESTIMATED ERROR: Soly: nothing specified. Temp: precision ± 0.2 K. REFERENCES: 1. Petru, F; Hajek, B.; Prochazka, V.; Vit, J. Collect. Czech. Chem. Comm. <u>1957</u> , 22, 1534.	

COMPONENTS:	ORIGINAL MEASUREMENTS:		
(1) Scandium chloride; ScCl ₃ ;	Kirmse, E.M.		
[10361-84-9] (2) Amines	Tr. II Vses. Konf. po Teor. Rastvorov <u>1971</u> , 200–6.		
VARIABLES :	PREPARED BY:		
	TREFACED DI.		
T/K = 298	T. Mioduski and M. Salomon		
EXPERIMENTAL VALUES:			
	ScCl ₃ solubility ^a		
solvent	-		
	mass % mol kg ⁻¹		
2-butanamine; C ₄ H ₁₁ N; [13952-84-6]	3.2 0.218		
di-isobutylamine; C ₈ H ₁₉ N; [110-96-3]	0.1 0.0066		
^a Molalities calculated by the compilers.			
AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:		
Experimental details not given, but were	Nothing specified. Presumably the		
probably similar to other works of the author which are compiled throughout this	anhydrous chloride was prepared by the method of Taylor and Carter (1).		
volume.			
Nature of the solid phases not specified.			
	ESTIMATED ERROR:		
	Nothing specified.		
	REFERENCES:		
	1. Taylor , M.D.; Carter, C.P.		
	J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.		
COMPONENTS:	ORIGINAL MEASUREMENTS:		
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(1) Scandium chloride; ScCl ₃ ;	Finke, A.; Kirmse, E. M. Z. Chem. 1965, 5, 193-4.		
[10361-84-9]	2. Chem. 2003, 5, 195-4.		
<pre>(2) Dimethylformamide; C₃H₇NO; [68-12-2]</pre>			
VARIABLES:	PREPARED BY:		
One temperature: T/K = 298	T. Mioduski		
EXPERIMENTAL VALUES:			
The solubility of ScCl ₃ in HCON(CH ₃) ₂ at 25 ^c	C was reported to be		
5	.5 mass %		
The corresponding molality calculated by the	compiler is		
	-		
C	.385 mol kg ⁻¹		
	INFORMATION		
METHOD/APPARATUS/PROCEDURE: Not specified. The compiler assumes that	SOURCE AND PURITY OF MATERIALS: Nothing specified except that anhydrous		
the method is similar to that described in ref (1). The equilibrated solid phase was	components were used.		
dried under reduced pressure and it was found to be ScCl ₃ .2.55 (S = dimethylforma-			
mide). IR spectra of the saturated solution and of the equilibrated solid phase were			
studied. They indicate the formation of coordinate bonds of ScCl ₃ with oxygen of			
C _{3H7} NO.			
	ESTIMATED ERROR:		
	Nothing specified.		
	REFERENCES:		
	1. Kirmse, E. M. Z. Chem. <u>1961</u> , 1, 332.		
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COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Scandium chloride; ScCl₃; [10361-84-9]</pre>	Finke, A.; Kirmse, E. M.
	Z. Chem. 1965, 5, 193-4.
(2) Acetonitrile; C ₂ H ₃ N; [75-05-8]	
VARIABLES:	PREPARED BY:
One temperature: T/K = 298	T. Mioduski
One temperature: 17K - 296	1. MIOGUSKI
EXPERIMENTAL VALUES:	
	-9-
The solubility of ScCl ₃ in acetonitrile at 2	5 C was reported to be
3	8.7 mass %
The corresponding molality calculated by the	compiler is
c	0.254 mol kg ⁻¹
AUXILIARY	INFORMATION
METHOD /APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
Not specified. The compiler assumes that the method was similar to that described in	Nothing specified except that anhydrous components were used.
ref (1). The equilibrated solid phase was	-
dried at reduced pressure and it was found to be unstable. No new IR bands found for	
the solution studied.	
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES:
	1. Kirmse, E. M.
	Z. Chem. <u>1961</u> , 1, 332.

Componente	
COMPONENTS:	ORIGINAL MEASUREMENTS:
 Scandium bromide; ScBr₃; [13465-59-3] 1,4-Dioxane (p-dioxane); C₄H₈O₂; 	Kirmse, E. M. Tr. II Vses. Konf. po Teor. Rastvorov <u>1971</u> , 200-6.
[123-91-1]	
VARIABLES:	PREPARED BY:
One temperature: T/K = 298	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of ScBr ₃ in p-dioxane at 25 ^o C	
1	.0 mass %
The corresponding molality calculated by the	compiler is
c	.035 mol kg ⁻¹
· · · · · · · · · · · · · · · · · · ·	
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Nothing specified. On the basis of previous papers of the author, it appears that re- action mixtures were equilibrated for several days and Sc determined by complexometric titration using xylenol orange indicator.	anhydrous bromide was prepared by the
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES:
	 Taylor, M. D.; Carter, C. P. J. Inorg. Nucl. Chem. <u>1962</u>, 24, 387.

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MPONENTS:		ORIGINAL M	EASUREMENTS:
<pre>(1) Yttrium chloride; YCl₃; [10361-92-9]</pre>		Golub, A.N Ukr. Khim.	M.; Yankovich, V.N. Zh. 1 <u>97</u> 7, 43 , 1139-42;
(2) Alcohols; ROH		Ukr. J. Ch <u>1977</u> , 43,	iem. (Engl. Transl.) 16–20.
(3) Benzene; C ₆ H ₆ ; [71-43-2]			
VARIABLES:		PREPARED B	Y:
Concentration of ROH		M. Salomor	and T. Mioduski
T/K = 295			······································
EXPERIMENTAL VALUES: Numerical data were not given, bu	t regults we	re presente	ad graphically and in the form of
the equation			
		.nROH] / [H	
In this equation [YCl ₃ .nROH] is t alcohol concentration in units of ref. 1). According to this equat logarithm of the solubility, log YCl ₃ can be calculated as a funct n and K (see table below). The s	ion, n is ca [YCl ₃ .nROH] ion of ROH c	lculated fr , against l oncentratio	om the slope of a plot of the og [ROH] . Thus the solubility of on using the reported values_of
alcohol	n	-log K	nature of the solid phase
methanol; CH ₄ 0; [67-56-1]	1 3	2.00 2.90	YCl ₃ . 3CH ₃ OH
ethanol; ^C 2 ^H 6 ⁰ ; [64-17-5]	3	3.38	^{YC1} 3. ^{2C2^H5^{OH}}
1-propanol; C ₃ H ₈ 0; [71-23-8]	1 3	2.00 2.78	YCl ₃ .3C ₃ H ₇ OH
			which give the greater solubility.
	AUXILIARY	INFORMATION	N
METHOD/APPARATUS/PROCEDURE: Isothermal method used as described in (1). Solvent mixtures of known alcohol concentra- tion were saturated with anhydrous YCl ₃ at $22 \pm 1^{\circ}$ C. Equilibrium was confirmed from constancy of the rare earth metal concentra- tion upon repeated analyses.		Source and Anhydrous in (2). C.p. grade	PURITY OF MATERIALS: 1 purity of YCl ₂ not specified. YCl ₃ prepared by method described e organic solvents were purified ' methods (3).
Liquid phases were analysed for rare earth metal concentration (method not specified). At least 3 separate experiments were carried out for each system studied. In addition, the solid phases were analysed for several arbitrary points of each series of experi- ments (method not specified).			
		ESTIMATED	
		Soly: nothing specified.	
		Temp: pred	tision ± 1 K.
		Neorg. 2. Speddir Soc. <u>19</u>	S: A.M.; Golovorushkin, V. I. Zh. Khim. <u>1968</u> , 13 , 3194. ag, F.H.; Doan, A.H. J. Am. Chem. <u>152</u> , 74 , 2783. kin, Ya.M. (ed). Electrochemistry

COMPONENTS: ORIGINAL MEASUREMENTS: Merbach, A.; Pitteloud, M. N.; Jaccard, P. Helv. Chim. Acta <u>1972</u>, 55, 44-52. Yttrium chloride; YCl₃; [19361-92-9] (1) (2) Methanol; CH₁0; [67-56-1] Pittelound, M. N. These. Faculte des Sciences de l'Universite des Lausanne.1971. VARIABLES: PREPARED BY: T/K = 298.2T. Mioduski and M. Salomon **EXPERIMENTAL VALUES:** Starting with YCl₃.4CH₃OH, the solubility was reported to be 4.38 mol kg⁻¹. The equilibrated solid phase was analysed and found to contain 4.1 moles of methanol per mole of YCl₃. AUXILIARY INFORMATION SOURCE AND PURITY OF MATERIALS: $Y_{2}O_{3}$ of at least 99.9% purity dissolved in METHOD/APPARATUS/PROCEDURE: Isothermal method as in (1,2). Mixtures HCl to produce the hexahydrate. The adduct were equilibrated for at least 4 days. Pro-YCl3.4CH3OH prepared by dissolving the hylonged operations were performed in a dry box. Yttrium determined by titration with drate in a small excess of o-methylformate followed by distillation and crystalliza-(NH4)3H(EDTA) using a small amount of urotropine buffer and Xylenol Orange indicator. tion from methanol. The anhydrous salt was prepared by dehydration as described in Chloride was determined by potentiometric titration with AgNO3 solution. Composition (3).of the adduct YCl3.4CH3OH confirmed by 1H Methanol was purified and dried according NMR and x-ray diffraction. to the Vogel method. The reported solubilities are mean values of 2-4 determinations. ESTIMATED ERROR: Soly: precision ± 0.5% as in (1) (compilers) COMMENTS AND/OR ADDITIONAL DATA: Temp: precision probably at least ± 0.05K Reference (3) was incorrectly cited in the as in (1) (compilers). source paper as J. Inorg. Nucl. Chem. 1958 7, 224 (this is the reference to a paper by **REFERENCES:** J. H. Freeman and M. L. Smith which describ- Brunisholz, F.; Quinche, J. P.; Kalo, A.M.
 Helv. Chim. Acta <u>1964</u>, 47, 14.
 Platt, R. Chimia <u>1952</u>, 6, 62. es the preparation of anhydrous salts by treatment with thionyl chloride). Reference (3) was corrected by the compilers. 3. Taylor, M. D.; Carter, C. P. J. Inorg. Nucl. Chem. 1962, 24, 387 (see COMMENTS at left).

MIO-R

COMPONENTS:	EVALUATOR:
(1) Yttrium chloride; YCl ₃ ; [10361-92-9]	Mark Salomon
(2) Ethanol; C ₂ H ₆ O; [64-17-5]	USA ET & DL Ft. Monmouth, NJ, U.S.A.

CRITICAL EVALUATION:

The solubility of YCl₃ in ethanol has been reported only at 298.2 K by Kirmse (1) and by Merbach et al. (2).

Merbach et al. reported two values at 298.15 K as 2.92 mol kg⁻¹ and 2.91 mol kg⁻¹. In the former determination, the solid phase analysed as YCl₃·4.1C₂H₅OH. At 298.2 K Kirmse reported a solubility of 2.82 mol kg⁻¹ and a solid phase of YCl₃·C₂H₅OH.

The difference between these two results (3 %) appears to be greater than the experimental precision. In addition it is doubtful that metastability could explain this difference since it is expected that the monosolvate (if it exists) would be metastable at 298 K and thus have a much greater solubility than the stable tetrasolvate. Thus we select the result of Merbach et al. for the *tentative* solubility at 298.15 K in the stable tetrasolvate system: i.e. 2.92 mol kg^{-1} .

REFERENCES

1. Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov 1971, 200.

 Merbach, A.; Pitteloud, M.N.; Jaccard, P. Helv. Chim. Acta <u>1972</u>, 55, 44: see also Pitteloud, M.N. These. Faculte des Sciences de l'Universite Lausanne. <u>1971</u>.

COMPONENTS:	ORIGINAL MEASUREMENTS:
 Yttrium chloride; YCl₃; [10361-92-9] Etherpolt C. H. Ct. [64-17-5] 	Kirmse, E. M. Tr. 11 Vses. Konf. po Teor. Rastvorov <u>1971</u> , 200-6.
(2) Ethanol; C ₂ H ₆ C; [64-17-5]	
VARIABLES:	PREPARED BY:
T/K ≈ 298	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of YCl ₃ in ethanol at 25 [°] C wa	as reported to be
	35.5 mass %
The corresponding molality calculated by the	e compiler is
	2.82 mol kg ⁻¹
AUXILIARY	INFORMATION
METHOD / APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
Nothing specified except that the solid phase was found to be YCl ₃ .CH ₃ CH ₂ OH. On the basis of previous papers by the author, it appears that reaction mixtures were isother- mally equilibrated for several days and that Y was determined by complexometric titration in the presence of xylenol orange indicator.	Taylor and Carter (1).
	ESTIMATED EDDOD.
	ESTIMATED ERROR: Nothing specified.
	REFERENCES:
	<pre>1. Taylor, M. D.; Carter, C. P. J. Inong. Nucl. Chem. <u>1962</u>, 24, 387.</pre>

COMPONENTS: (1) Yttrium chloride; YCl ₃ ; [19361-92-9] (2) Ethanol; C ₂ H ₆ O; [64-17-5] VARIABLES: T/K = 298.2 EXPERIMENTAL VALUES:	ORIGINAL MEASUREMENTS: Merbach, A.; Pitteloud, M. N.; Jaccard, P. Helv. Chim. Acta <u>1972</u> , 55, 44-52. Pitteloud, M. N. These. Faculte des Sciences de l'Universite de Lausanne. <u>1971</u> . PREPARED BY: T. Mioduski and M. Salomon	
 Two results were reported for 25°C Starting with the solid YCl₃.4CH₃CH₂OH, the solubility was reported to be 2.92 mol kg⁻¹. The equilibrated solid phase was analysed and found to contain 4.1 moles of ethanol per mole of YCl₃. Starting with anhydrous YCl₃, the solubility was reported to be 2.91 mol kg⁻¹. The equilibrated solid phase was not analysed. 		
AUXILIARY	INFORMATION	
by ¹ H NMR and x-ray diffraction.	YCl ₃ .4C _{2H6} O prepared by dissolving the hydrate in a small excess of o-ethylformate followed by distillation and crystallization from ethanol. The anhydrous salt was pre- pared by dehydration as described in (3). Ethanol (Fluka) was used as received. Furity and the absence of water was confirmed by NMR.	
The reported solubilities are mean values of 2-4 determinations. COMMENTS AND/OR ADDITIONAL DATA: Reference (3) was incorrectly cited in the source paper as: J. Inorg. Nucl. Chem. 1958, 7, 224 (this is the reference to a paper by J. H. Freeman and M. L. Smith which descri- bes the preparation of anhydrous salts by treatment with thionyl chloride). Refer- ence (3) was corrected by the compilers.	 ESTIMATED ERROR: Soly: precision ± 0.5% as in (1) (compilers). Temp: precision probably at least ± 0.05 K as in (1) (compilers). REFERENCES: Brunisholz, F.; Quinch, J. P.; Kalo, A. M. Helv. Chim. Acta <u>1964</u>. 47, 14. Platt, R. Chimia 1952, 6, 62. Taylor, M. D.; Carter, C. P. J. Inorg. Nucl Chem. <u>1962</u>, 24, 387 (see COMMENTS at left). 	

COMPONENTS: (1) Yttrium chloride; YCl ₃ ; [10361-92-9]		ORIGINAL MEASUREMENTS: Sakharova, Yu.G; Ezhova, T.A.				
(2) Ethanol; C ₂ H ₆ 0; [64-17-5]		Zh. Neorg. Khim. <u>1976</u> , 21, 551-4; Russ. J.				
(3) Wat	(3) Water; H ₂ 0; [7732-18-5]		Inorg. Chem. (E 296-8.	ngl. Transl.)	<u>1976,</u> 21,	
	2					
VARIABLES	3:			PREPARED BY:		
Temperat	ure			T. Mioduski and	M. Salomon	
EXPERIMENTAL VALUES:		<u></u>				
	solubility	of $YC1_3.6H_2^0$	in 96.8 %	с ₂ н ₅ он ^а		
	sample 1	sample 2	sample	3 sample 4	mean solub	ļ
t/°C	g/100 g ^b	g/100 g	g/100 g	g/100 g	g/100 g	mol kg ^{-lc}
20	35.29	35.40	35.28	35.39	35.34	1.165
30	34.64	34.85	34.74	34.69	34.73	1.145
40	34.47	34.65	34.50	34.46	34.52	1.138
50	34.90	34.95	34.70	34.78	34.83	1.148
60	35.45	35.54	35.49	35.70	35.54	1.172
^a It is n	ot clearly stat	ed whether th	e mixture	e is 96.8 mass %	or 96.8 volum	ne % ethanol.
^b Solubil	ities reported	as grams of h	exahydrat	e in 100 g of so	lvent.	
]	ies calculated					
		-,				
l						
		A	UXILIARY	INFORMATION	<u>_</u>	
	PARATUS/PROCEDU			SOURCE AND PURIT	Y OF MATERIAL	.S :
reached	al method used. after 3-4 h.]	Identical resu	lts	YC1 ₃ .6H ₂ 0 prepd oxide in dil (1	.:3) HCl follo	wed by evapn and
obtained	by approaching d below. Two c	g equilibrium	from	cator over CaCl	2, P205 and N	lried in a desic- NaOH. The
in the t	able obtained a n, and the rema	after 3 hours	of equi-	crystals analys with Trilon B,	ed for the me and for C1 by	etal by titrn the Volhard
obtained	after 4 h of e	equilibration.	a poznici	method. The he 151.8°C. 96.8%	xahydrate mel	ted at 151.0 -
The meta	1 content in ea	ach aliquot ta	ken for	boiling of c.p. anhydr CuSO ₄ fo	grade 93.5%	ethanol with
titratio	was determined on with Trilon H	Β.	1	concn detd refr cally.	actometrical]	y and pycnometri
Analyses 40°C and	of the solids 60°C showed th	withdrawn at he solid phase	20°C, to be	ESTIMATED ERROR: Soly: results a	parantly pro	cise to within
the hexa	hydrate: i.e. e f the solid pha	ethanol was no	ot found		compilers).	
		Temp: nothing s	pecified.			
		REFERENCES :				
ł						
1						
L						

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Yttrium chloride; YCl ₃ ; [10361-92-9]	Merbach, A.; Pitteloud, M. N.; Jaccard, P. Helv. Chim. Acta <u>1972</u> , 55, 44-52.
(2) 2-Propanol; C ₃ H ₈ 0; [67-63-0]	Pitteloud, M. N. <i>These</i> . Faculte des Sciences de l'Universite des Lausanne. <u>1971</u> .
VARIABLES:	PREPARED BY:
$\pi/r = 00^{9}$ 0	
T/K = 298.2	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	
Two results were reported for 25 ⁰ C	
 Starting with YCl₃.3C₃H₈O, the solubility The equilibrated solid phase was analysed propanol per mole of salt. 	was reported to be 0.91 mol kg ⁻¹ . and found to contain 3.3 moles iso-
 Starting with anhydrous YCl₃, the solubil The equilibrated solid phase was not anal 	ity was reported to be 0.93 mol kg ⁻¹ . ysed.
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method as in (1,2). Mixtures were equilibrated for at least 4 days. Prolonged operations were performed in a dry box. Yttrium determined by titration with $(NH_1)_3H(EDTA)$ using a small amount of urotropine buffer and Xylenol Orange indica- tor. Chloride was determined by potentio- metric titration with AgNO ₃ solution. Com- position of the adduct YCl ₃ .3C ₃ H ₈ O confirmed by ¹ H NMR and x-ray diffraction.	SOURCE AND PURITY OF MATERIALS: Y_2O_3 of at least 99.9% purity dissolved in HCl to produce the hexahydrate. The adduct YCl_3.3C_3H_80 prepared by dissolving the hydrate in a small excess of o-methylformate followed by distillation and trans-s lvation of the CH_3OH complex with 2-propanol. The anhydrous salt was prepd by dehydration as described in (3). Iso-propanol (Fluka) used as received. Purity and absence of water confirmed by NMR.
The reported solubilities are mean values of 2-4 determinations.	ESTIMATED ERROR:
COMMENTS AND/OR ADDITIONAL DATA:	Soly: precision \pm 0.5% as in (1) (compilers).
Reference (3) was incorrectly cited in the source paper as: J. Inorg. Nucl. Chem. <u>1958</u> , 7, 224 (this is the reference to a paper by	Temp: precision probably at least ± 0.05 K as in (1) (compilers).
J. H. Freeman and M. L. Smith which describes the preparation of anhydrous salts by treat- ment with thionyl chloride). Reference (3) was corrected by the compilers.	 REFERENCES: I. Brunisholz, F.; Quinche, J. P.; Kalo, A. M. Helv. Chim. Acta <u>1964</u>, 47, 14. Platt, R. Chimia <u>1952</u>, 6, 62. Taylor, M. D.; Carter, C. P. J. Inorg. Nucl. Chem. <u>1962</u>, 24, 387 (see COMMENTS at left).

COMPONENTS:	ORIGINAL MEASUREMENTS:
COM ORENTS,	Kirmse, E. M.
 (1) Yttrium chloride; YC1₃; [10361-92-9] (2) 2-Methoxyethanol; C₃H₈0₂; [109-86-4] 	Tr. II Vses. Konf. po Teor. Rastvorov <u>1971</u> , 200-6.
[103-80-4]	
VARIABLES:	PREPARED BY:
One temperature: T/K = 298	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of YCl ₃ in 2-methoxyethanol a	at 25 ⁰ C was reported to be
	2.7 mass %
The corresponding molality calculated by the	e compiler is
	0.142 mol kg ⁻¹
AUXILIARY	INFORMATION
METHOD / APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
Nothing specified except that the solid phase was found to be a solvate containing 2-3 moles solvent per mole of salt. On the basis of previous papers by the author, it seems that reaction mixtures were thermo- stated for several days, and that Y was determined by complexometric titration in the presence of xylenol orange indicator.	Nothing specified. Presumably, the anhydrous chloride was prepared by the method of Taylor and Carter (1).
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES:
	 Taylor, M. D.; Carter, C. P. J. Inorg. Nucl. Chem. <u>1962</u>, 24, 387.

COMPONENTS:	ORIGINAL MEASUREMENTS:
	Kirmse, E. M.
<pre>(1) Yttrium chloride; YCl₃; [10361-92-9]</pre>	Tr. II Vses. Konf. po Teorl Rastvorov
	<u>1971</u> , 200-6.
(2) 2-Ethoxyethanol; C ₄ H ₁₀ 0 ₂ ; [110-80-5]	
[]	
VARIABLES:	PREPARED BY:
One temperature: $T/K = 298$	T. Mioduski
$\frac{1}{1}$	1. MIOUUSKI
EXPERIMENTAL VALUES:	
The solubility of YCl ₃ in 2-ethoxy-ethanol a	at 25 ⁰ C was reported to be
	5.9 mass %
The corresponding molality calculated by the	e compiler is
	0.38 mol kg ⁻¹
	. Jo mor ng
AUXILIARY	INFORMATION
METHOD / APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
Nothing specified except that the solid	Nothing specified. Presumably, the
phase was found to be YCl ₃ .2C ₄ H ₁₀ O ₂ . On the basis of previous papers by the author,	anhydrous chloride was prepared by the method of Taylor and Carter (1).
it appears that reaction mixtures were	
equilibrated for several days and that Y was determined by complexometric titration	
using xylenol orange indicator.	
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES:
	 Taylor, M. D.; Carter, C. P. J. Inorg. Nucl. Chem. <u>1962</u>, 24,
	387.
	1

COMPONENTS: (1) Yttrium chloride; YC1 ₃ ;	ORIGINAL MEASUREMENTS: Kirmse, E. N.; Zwietasch, K. J.; Tirschmann, J.; Oelsner, L.; Niedergesaess, U. Z. Chem. <u>1968</u> , <i>8</i> , 472-3:	
<pre>[10361-92-9] (2) 1-Ethoxy-2-methoxyethane; C₅H₁₂O₂; [5137-45-1]</pre>	Kirmse, E. M. Tr. II Vses. Konf. po Teor. Rastvorov <u>1971</u> , 200–6.	
VARIABLES:	PREPARED BY:	
One temperature: T/K = 298	T. Mioduski	
EXPERIMENTAL VALUES:		
The solubility of YCl ₃ in $C_2H_5OCH_2CH_2OCH_3$ at	25°C was reported to be	
c).4 mass %	
The corresponding molality calculated by the	compiler is	
c	0.02 mol kg ⁻¹	
	INFORMATION	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were isothermally agitated until equilibrium was attained at 25°C or/and at room temperature (the dif- ference found in the solubility was within the limits of experimental error). Y was determined by complexometric titration (no further details given).	SOURCE AND PURITY OF MATERIALS: Nothing specified except that the anhydrous chloride was obtained by the method of Taylor and Carter (1).	
	ESTIMATED ERROR:	
	Nothing specified.	
	REFERENCES :	
	1. Taylor, M. D.; Carter, C. P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.	

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Yttrium chloride; YCl ₂ ;	Schmalenberg, U. Staatsexamenarbeit.
<pre>(1) Yttrium chloride; YCl₃; [10361-92-9]</pre>	Koethen. Paedag. Institut. <u>1969</u> :
	Kirmse, E. M.; Dressler, H. Z. Chem. <u>1975</u> , 15, 239-40.
(2) 1-Methoxybutane; $C_5H_{12}0;$ [628-28-4]	a. onem. <u>2575</u> , 70, 255 401
[020-20-4]	
VARIABLES:	PREPARED BY:
One temperature: T/K = 293-298	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of YC1 ₃ in 1-methoxybutane at	20-25 [°] C was reported to be
5	
2	29.7 mass %
The corresponding molality calculated by the	compiler 19
	2.16 mol kg ⁻¹
	INFORMATION
AUXILIARI	
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The solute-solvent mixtures were equilibrated	Nothing specified.
isothermally at room temperature until equilibrium was attained. The anhydrous	
reagents were handled in a dry box containing	
P_40_{10} . Y was determined by complexometric	
titration using xylenol orange indicator. The reported solubility is a mean value of	
four determinations. The hydrate YCl ₃ .6H ₂ O	
was found to be insoluble in $C_5H_{12}O$.	
	ESTIMATED ERROR:
	Nothing specified.
	Source operation
	REFERENCES:
1	[

Yttrium Chloride	
COMPONENTS: (1) Yttrium chloride; YCl ₃ ; [10361-92-9] (2) 1-Ethoxybutane; C ₆ H ₁₄ 0; [628-81-9]	ORIGINAL MEASUREMENTS: Kirmse, E. M.; Zwietasch, K. J.; Tirschmann, J. WLSS. Hefte, Paed. Inst. Koethen <u>1968</u> , 1, 128-30: Kirmse, E. M.; Zwietasch, K. J.; Tirschmann, J.; Oelsner, L.; Niedergesaess, U. Z. Chem. <u>1968</u> , 8, 472-3: Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov <u>1971</u> , 200-6.
VARIABLES:	PREPARED BY:
One temperature: T/K = 298	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of YCl ₃ in 1-ethoxybutane at 2 O	5 ⁰ C was reported to be .03 mass %
The corresponding molality calculated by the c	ompiler is
2	$.6 \times 10^{-3} \text{ mol kg}^{-1}$
Note that the solubility for YCl ₃ reported in	n Z. Chem. is 0.05 mass % (0.0015 mol kg ⁺).
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: YCl ₃ was isothermally agitated at 25° C with C ₆ H ₁₄ O until equilibrium was attained. Y was determined by complexometric titration using xylenol orange indicator. The solid phase is YCl ₂ O.37C ₆ H ₁₄ O. No other details available.	SOURCE AND PURITY OF MATERIALS: The anhydrous chloride was prepared by the method of Taylor and Carter (1). No other information given.
	Nothing specified.
	REFERENCES: 1. Taylor, M. D.; Carter, C. P. J. Inong. Nucl. Chem. <u>1962</u> , 24, 387.

COMPONENTS :	EVALUATOR:	
(1) Yttrium chloride; YCl ₃ ; [10361-97-9]	Mark Salomon	
(2) 1-Methoxypentane; C ₆ H ₄ O; [628-80-8]	USA ET & DL Ft. Monmouth, NJ, U.S.A.	
(2) I herioxypenicane, ogniço, (525 65 6)	ree nonmouth, no, oronno	
CRITICAL EVALUATION:		
The solubility of yttrium chloride in 1-methoxypentane has been reported in four publications by Kirmse et al. In all publications the solubility was determined at 298.2 K, and the nature of the solid phase was not identified.		
The studies in $(1-3)$ report the solubility of 0.158 mol kg ⁻¹ , and it is not known if these are independent measurements. The result from (4) is 0.083 mol kg ⁻¹ , and it is therefore apparent that one of these values is in error.		
REFERE	NCES	
 Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, 1968, 1, 128. 	J. Wiss. Hefte, Paed. Inst. Koethen	
 Kirmse, E.M.; Zwietasch, K.J., Tirschmann, <i>Chem.</i> <u>1968</u>, <i>8</i>, 472. 	J.; Oelsner, L.; Niedergesaess, U.	
3. Kirmse, E.M. Tr. 11 Vses. Konf. po Theor.	Rastuorov 1971, 200.	
4. Kirmse, E.M.; Dressler, H. Z. Chem. <u>1975</u> ,	15, 255.	
]		

COMPONENTS: (1) Yttrium chloride; YCl ₃ ; [10361-92-9] (2) 1-Methoxypentane; C ₆ H ₁₄ 0; [628-80-8] VARIABLES: T/K = 298 EXPERIMENTAL VALUES: The solubility of YCl ₃ in 1-methoxypentane at 3.0 mass %	
The corresponding molality calculated by the c	rompiler is 0.158 mol kg ⁻¹
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: YCl ₃ was isothermally agitated at 25 ^o C until saturation (no details given on how equili- brium was ascertained). Yttrium was determin- ed by complexometric titration using Xylenol Orange indicator. The solid phase was analysed and found to be YCl ₃ .0.39C ₅ H ₁₄ O. No other details given.	SOURCE AND PURITY OF MATERIALS: Anhydrous YCl, was prepared by the method of Taylor and Carter (1). No other information given. ESTIMATED ERROR: Nothing specified. REFERENCES: 1. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.

Yttrium Chloride

34	Yttrium	Chloride		
MPONENTS: OF		ORIGINAL MEASU	REMENTS:	
(1) Yttrium chloride; YCl ₃ ; [10361-92-9]		Kirmse, E.M.; Dressler, H.		
(2) Alkyl ethers		Z. Chem. <u>1975</u>	, 15, 239-40).
VARIABLES:		PREPARED BY:		
Room temperature: T/K = 293-298	8	M. Salomon an	d T. Miodusł	ri
EXPERIMENTAL VALUES:				а
solvent			YCl ₃ solu mass %	ubility"
1-methoxypentane;	°6 ^H l4 ^O ;	[628-80-8]	1.6	mol kg ⁻¹ 0.083
1-methoxyheptane;	c _{8^H18} 0;	[629-32-3]	2.7	0.14 ^b
l-methoxyoctane;	°9 ^H 20 ⁰ ;	[929-56-6]	2.5	0.13
1-methoxynonane;	^C 10 ^H 22 ^O ;	[7289-51-2]	2.5	0.13
1-methoxydecane;	C ₁₁ H ₂₄ 0;	[7289-52-3]	2.8	0.15
^b Solid phase is YCl ₃ .C ₈ H ₁₈ 0 as a a vacuum desiccator over P ₂ 0 ₅ .	determined by			
a vacuum desiccator over P205.	determined by			
a vacuum desiccator over P205.		INFORMATION		
METHOD/APPARATUS/PROCEDURE:				
	AUXILIARY e agitated olutions were hts were	INFORMATION	ITY OF MATEI	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were at room temperature until the so saturated. The anhydrous reagen	AUXILIARY e agitated olutions were $P_2^{0}_5$. exometric	INFORMATION SOURCE AND PUR	ITY OF MATEI	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were at room temperature until the so saturated. The anhydrous reagen handled in a dry box containing Yttrium was determined by comple	AUXILIARY e agitated olutions were nts were P ₂ 0 ₅ . exometric indicator. ean values	INFORMATION SOURCE AND PUR	ITY OF MATEI	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were at room temperature until the so saturated. The anhydrous reagen handled in a dry box containing Yttrium was determined by comple titration using Xylenol Orange i The reported solubilities are me based on four determinations for	AUXILIARY e agitated olutions were nts were P ₂ 0 ₅ . exometric indicator. ean values	INFORMATION SOURCE AND PUR	ITY OF MATER	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were at room temperature until the so saturated. The anhydrous reagen handled in a dry box containing Yttrium was determined by comple titration using Xylenol Orange i The reported solubilities are me based on four determinations for	AUXILIARY e agitated olutions were nts were P ₂ 0 ₅ . exometric indicator. ean values	INFORMATION SOURCE AND PUR No information ESTIMATED ERRO	ITY OF MATEM on given. R:	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were at room temperature until the so saturated. The anhydrous reagen handled in a dry box containing Yttrium was determined by comple titration using Xylenol Orange i The reported solubilities are me based on four determinations for	AUXILIARY e agitated olutions were nts were P ₂ 0 ₅ . exometric indicator. ean values	INFORMATION SOURCE AND PUR No information	ITY OF MATEM on given. R:	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were at room temperature until the so saturated. The anhydrous reagen handled in a dry box containing Yttrium was determined by comple titration using Xylenol Orange i The reported solubilities are me based on four determinations for	AUXILIARY e agitated olutions were nts were P ₂ 0 ₅ . exometric indicator. ean values	INFORMATION SOURCE AND PUR No information ESTIMATED ERRO	ITY OF MATEM on given. R:	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were at room temperature until the so saturated. The anhydrous reagen handled in a dry box containing Yttrium was determined by comple titration using Xylenol Orange i The reported solubilities are me based on four determinations for	AUXILIARY e agitated olutions were nts were P ₂ 0 ₅ . exometric indicator. ean values	INFORMATION SOURCE AND PUR No information ESTIMATED ERRO No information	ITY OF MATEM on given. R:	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were at room temperature until the so saturated. The anhydrous reagen handled in a dry box containing Yttrium was determined by comple titration using Xylenol Orange i The reported solubilities are me based on four determinations for	AUXILIARY e agitated olutions were nts were P ₂ 0 ₅ . exometric indicator. ean values	INFORMATION SOURCE AND PUR No information ESTIMATED ERRO No information	ITY OF MATEM on given. R:	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were at room temperature until the so saturated. The anhydrous reagen handled in a dry box containing Yttrium was determined by comple titration using Xylenol Orange i The reported solubilities are me based on four determinations for	AUXILIARY e agitated olutions were nts were P ₂ 0 ₅ . exometric indicator. ean values	INFORMATION SOURCE AND PUR No information ESTIMATED ERRO No information	ITY OF MATEM on given. R:	

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Yttrium chloride; YCl ₃ ; [10361-92-9]	Rossmanith, K.; Auer-Welsbach, C.
(2) Tetrahydrofuran; C ₄ H ₈ 0; [109-99-9]	Monatsh. Chem. <u>1965</u> , 96, 602-5.
VARIABLES:	PREPARED BY:
Room temperature: T/K about 293	T. Mioduski

EXPERIMENTAL VALUES:

The solubility of YCl₃ in tetrahydrofuran at room temperature (about 20^oC) was reported as

0.930 g/100 ml solution

The solid phase is $YCl_3 \cdot 3 \cdot 59C_4H_8O$.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution was equilibrated in an extractor for 60-80 hours at room temperature. Yttrium was determined by the oxalate method and by titration with EDTA using Xylenol Orange indicator. For the solid phase analysis, the solvent was determined by difference. Anhydrous substances were handled in a dry box through which was passed a current of dry and CO ₂ -free nitrogen.	SOURCE AND PURITY OF MATERIALS: Sources and purities not specified. YCl ₂ prepared by reaction of the oxide at high temperatures with an excess of NH ₄ Cl followed by heating the product in a current of dry nitrogen, and then in vacuum to remove unreacted NH ₄ Cl. Tetrahydrofuran was distilled from LiAlH ₄ .
	ESTIMATED ERROR: Nothing specified. REFERENCES:

COMPONENTS :	ORIGINAL MEASUREMENTS:
(1) Yttrium chloride; YCl ₃ ; [10361-92-9]	Kirmse, E. M.; Zwietasch, K. J.; Tirschmann, J.; Oelsner, L.; Niedergesaess, U. Z. Chem. <u>1968</u> , 8, 472-3.
<pre>(2) 1,4-Dioxane (p-dioxane); C₄H₈0₂; [123-91-1]</pre>	Kirmse, E. M. Tr. II Vses. Konf. po Teor. Rastvorov <u>1971</u> , 200–6.
VARIABLES:	PREPARED BY:
One temperature: T/K = 298	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of YC1 ₃ in 1,4-dioxane at 25 [°] C was reported to be	
	0.1 mass %
1	
The corresponding molality calculated by the	compiler is
5.	$1 \times 10^{-3} \text{ mol kg}^{-1}$
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The solute-solvent mixtures were equilibrate isothermally by agitation at 25°C or/and at room temperature. (The difference found in the solubilities was within the limits of experimental error. Y was determined by complexometric titration. No other informa- tion given.	d The anhydrous chloride was obtained by the method of Taylor and Carter (1). No other information given.
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES: 1. Taylor, M.D.; Carter, C. P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.

COMPONENTS:	ORIGINAL MEASUREMENTS:	
(1) Yttrium chloride; YC1 ₃ ; [10361-92-9]	Golub, A.M.; Yankovich, V.N. Ukr. Khim. Zh. <u>1977</u> , 43, 1139-42;	
(2) Alcohols; ROH	Ukr. J. Chem. (Engl. Transl.) <u>1977</u> , 43, 16-20.	
(3) 1,4-Dioxane; C ₄ H ₈ 0 ₂ ; [123-91-1]		
VARIABLES:	PREPARED BY:	
Concentration of ROH $T/K \approx 295$	M. Salomon and T. Mioduski	
the equation	sults were presented graphically and in the form of = [YCl ₃ .nROH] / [ROH] ⁿ [1]	
In this equation [YCl_3.nROH] is the solubility in units of mol dm^{-3} , [ROH] is the <u>total</u> alcohol concentration in units of mol dm^{-3} , and n is the solvate number <u>in solution</u> (see ref. 1). According to this equation, n is calculated from the slope of a plot of the logarithm of the solubility, log [YCl_3.nROH], against log [ROH]. Thus the solubility of YCl_3 can be calculated as a function of ROH concentration using the reported values of n and K (see table below). The alcohol concentrations were varied from 1-5 mol dm ⁻³ .		
alcohol n	-log K nature of the solid phase	
methanol; CH ₄ 0; [67-56-1] 1 2	1.40 YCl ₃ .3CH ₃ OH 1.80	

2.67 3.17

1.65

2.00

For the systems, two values of n and K are reported, and the overall solubility of YCl_3 is obtained by using the values for n-K in eq. [1] which give the greater solubility.

чс13.2С2н5он

YC13.3C3H7OH

2 3

1

2

ethanol; C₂H₆0; [64-17-5]

1-propanol; C₃H₈0; [71-23-8]

AUXILIARY	INFORMATION	
METHOD/APPARATUS/PROCEDURE: Isothermal method used as described in (1). Solvent mixtures of known alcohol concentra- tion were saturated with anhydrous YCl ₃ at 22 ± 1°C. Equilibrium was confirmed from constancy of the rare earth metal concentra- tion upon repeated analyses. Liquid phases were analysed for rare earth metal concentration (method not specified). At least 3 separate experiments were carried out for each system studied. In addition, the solid phases were analysed for several arbitrary points of each series of experi- ments (method not specified).	SOURCE AND PURITY OF MATERIALS: Source and purity of YCl ₃ not specified. Anhydrous YCl ₃ prepared by method described in (2). C.p. grade organic solvents were purified by "known" methods (3). ESTIMATED ERROR: Soly: nothing specified.	
	 Temp: precision ± 1 K REFERENCES: 1. Golub, A.M.; Golovorushkin, V. I. Zh. Neorg. Khim. <u>1968</u>, 13, 3194. 2. Spedding, F.H.; Doan, A. H. J. Am. Chem. Soc. <u>1952</u>, 74, 2783. 3. Kolotyrkin, Ya.M. (ed). Electrochemistry of Metals in Nonaqueous Solutions. Khimiya Press. Moscow. <u>1974</u>. p 440. 	

COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Yttrium chloride; YCl₃; [10361-92-9]</pre>	Kirmse, E. M. Tr. II Vses. Konf. po Teor. Rastvorov
(2) Diethylamine; ChH ₁₁ N; C ₄ H ₁₁ N; [109-89-7]	<u>1971</u> , 200-6.
VARIABLES:	PREPARED BY:
One temperature: T/K = 298	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of YCl $_3$ in diethylamine, (C $_2$ ^H	$_{5}$) $_{2}^{\rm NH}$, at 25 $^{\rm O}$ C was reported to be
	1.2 mass %
The corresponding value recalculated by the	compiler is
	0.062 mol kg ⁻¹
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Nothing specified. On the basis of previous papers by the author, it seems that reaction mixtures were thermostated for several days, and that Y was determined by complexometric titration in the presence of xylenol orange indicator. For the solid phase, the ratio Y:Cl:amine was found to be 1:2.9:2.6.	anhydrous chloride was prepared by the
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES: 1. Taylor, M. D.; Carter, C. P. J. Inong. Nucl. Chem. <u>1962</u> , 24, 387.

COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Yttrium chloride; YCl₃; [10361-92-9]</pre>	Kirmse, E. M. Tr. II Vses. Konf. po Teor. Rastvorov
(2) 1-Propanamine (propylamine); C ₃ H ₉ N; [107-10-8]	<u>1971</u> , 200-6.
VARIABLES:	PREPARED BY:
One temperature: $T/K = 29\delta$	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of YCl ₃ in $CH_3CH_2CH_2NH_2$ at 25 ^c	C was reported to be
1	5.0 mass %
The corresponding molality calculated by the	compiler is
c	.904 mol kg ⁻¹
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Nothing specified. On the basis of previous papers by the author, it seems that reaction mixtures were thermostated for several days, and that Y was determined by complexometric titration in the presence of xylenol orange indicator.	Nothing specified. Presumably, the anhydrous chloride was prepared by the method of Taylor and Carter (1).
	ESTIMATED ERROR: Nothing specified.
	REFERENCES :
	<pre>I. Taylor, M. D.; Carter, C. P. J. Inorg. Nucl. Chem. <u>1962</u>, 24, 387.</pre>

COMPONENTS :	ORIGINAL MEASUREMENTS:			
(1) Yttrium chloride; YCl ₃ ;	Kirmse, E. M.			
[10361-92-9]	Tr. II Vses. Konf. po Teor. Rastvorov			
(2) 2-Propanamine (isopropylamine); C ₃ H ₉ N; [75-31-0]	<u>1971</u> , 200-6.			
VARIABLES:	PREPARED BY:			
One temperature: T/K = 298	T. Mioduski			
EXPERIMENTAL VALUES:				
The solubility of YCl ₃ in $(CH_3)_2 CHNH_2$ at 25°C	was reported to be			
	4.1 mass %			
The corresponding molality calculated by the	compiler is			
c	0.84 mol kg ⁻¹			
AUXILIARY	INFORMATION			
METHOD / APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS;			
Nothing specified. On the basis of previous papers by the author, it seems that reaction mixtures were thermostated for several days, and that Y was determined by complexometric titration in the presence of xylenol orange indicator.	Nothing specified. Presumably, the anhydrous chloride was prepared by the method of Taylor and Carter (1).			
	ESTIMATED ERROR:			
	Nothing specified.			
	REFERENCES :			
	1. Taylor, M. D.; Carter, C. P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.			

COMPONENTS:	ORIGINAL MEASUREMENTS:					
(1) Yttrium chloride; YCl ₃ ; [10361-92-9]	Kirmse, E. M. Tr. II Vses. Konf. po Teor. Rastvorov 1 <u>971</u> , 200-6.					
(2) 2-Propen-1-amine (allylamine); C ₃ H ₇ N; [107-11-9]						
VARIABLES:	PREPARED BY:					
One temperature: T/K = 298	T. Mioduski					
EXPERIMENTAL VALUES:	<u> </u>					
The solubility of YCl ₃ in H_2C =CHCH ₂ NH ₂ at 25 ⁶	C was reported to be					
	35.6 mass %					
The corresponding molality calculated by the	compiler is					
2	2.83 mol kg ⁻¹					
AUXILIARY	INFORMATION					
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:					
Nothing specified. On the basis of previous works by the author, it appears that solute- solvent mixtures were equilibrated iso- thermally for several days and that Y was determined by complexometric titration using xylenol orange indicator.	Nothing specified. Presumably anhydrous YCl ₃ was prepared by the method of Taylor and Carter (1).					
	ESTIMATED ERROR:					
	Nothing specified.					
	REFERENCES: 1. Taylor, M. D.; Carter, C. P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.					

COMPONENTS :	ORIGINAL MEASUREMENTS:				
	Kirmse, E. M.				
<pre>(1) Yttrium chloride; YCl₃; [10361-92-9]</pre>					
[10361-92-9]	Tr. II Vses. Konf. po Teor. Rastvorov				
(2) 1-Butanamine (n-butylamine);	<u>1971</u> , 200-6.				
$C_{4H_{11}N}; [109-73-9]$					
4 11					
VARIABLES:	DEFDADED BY.				
	PREPARED BY:				
One temperature: T/K = 298	T. Mioduski				
EXPERIMENTAL VALUES:					
The solubility of YCl ₃ in $CH_3(CH_2)_3NH_2$ at 25°	C was reported to be				
	21.1 mass %				
4	1.1 mass %				
The corresponding molality calculated by the	compiler is				
	$.37 \text{ mol kg}^{-1}$				
	,				
······································					
AUXILIARY	INFORMATION				
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:				
Nothing specified. On the basis of previous papers by the author, it seems that reaction	Nothing specified. Presumably, the anhy- drous chloride was prepared by the method				
mixtures were thermostated for several days,	of Taylor and Carter (1).				
and that Y was determined by complexometric					
titration in the presence of xylenol orange					
indicator.					
	PETTMATED EDDOR.				
	ESTIMATED ERROR:				
	Nothing specified.				
	REFERENCES :				
	1. Taylor, M. D.; Carter, C. P.				
	J. Inorg. Mucl. Chem. <u>1962</u> , 24, 387.				

COMPONENTS:	ORIGINAL MEASUREMENTS:					
	Kirmse, E. M.					
(1) Yttrium chloride; YC1 ₃ ; [10361-92-9]	Tr. II Vses. Konf. po Teor. Rastvorov					
(2) 2-Butanamine (sec-butylamine); C ₄ H ₁₁ N; [13952-84-6]	<u>1971</u> , 200-6					
VARIABLES:	PREPARED BY:					
One temperature: T/K = 298	T. Mioduski					
EXPERIMENTAL VALUES:						
The solubility of YCl ₃ in C ₂ H ₅ CH(NH ₂)CH ₃ at 2	25°C was reported to be					
1	1.3 mass %					
The corresponding molality calculated by the	compiler is					
C	0.652 mol kg ⁻¹					
AUXILIARY	INFORMATION					
METHOD/APPARATUS/PROCEDURE: Nothing specified. On the basis of previous papers by the author, it seems that reaction mixtures were thermostated for several days, and that Y was determined by complexometric titration in the presence of xylenol orange indicator.	SOURCE AND PURITY OF MATERIALS: Nothing specified. Presumably the anhydrous chloride was prepared by the method of Taylor and Carter (1).					
	ESTIMATED ERROR: Nothing specified. REFERENCES: 1. Taylor, M. D.; Carter, C. P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.					

Yttrium Chloride

COMPONENTS:	OPICINAL MEASUREMENTS .
oun unlivio.	ORIGINAL MEASUREMENTS:
(1) Yttrium chloride; YCl ₃ ;	Kirmse, E. M.
[10361-92-9]	Tr. II. Vses. Konf. po Teor. Rastvorov
(2) D_{1-1} actuation of $C H$ No	<u>1971,</u> 200-6.
(2) Di-isobutylamine; C ₈ H ₁₉ N; [110-96-3]	
VARIABLES:	PREPARED BY:
	PREPARED BI:
One temperature: $T/K = 298$	T. Mioduski
EXPERIMENTAL VALUES:	
	a. 9.
The solubility of YCl ₃ in $(CH_3)_2CHCH_2_2NH$ at	25°C was reported to be
	0.6 mass %.
The corresponding molality calculated by the	complier is
	0.03 mol kg ⁻¹
	mot Kg
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE :	SOURCE AND PURITY OF MATERIALS;
Nothing specified. On the basis of previous	Nothing specified. Presumably, the anhydrous chloride was prepared by the
papers by the author, it seems that reaction mixtures were thermostated for several days,	method of Taylor and Carter (1).
and that Y was determined by complexometric	
titration in the presence of xylenol orange	
indicator.	
	1
	ESTIMATED ERROR:
	Nothing specified.
	1
	DEFEDENCIE .
	REFERENCES :
	1. Taylor, M. D.; Carter, C. P.
	J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.

COMPONENTS:	OPICINAL MEASUDEMENTS .					
SOIL OVEN19:	ORIGINAL MEASUREMENTS:					
(1) Yttrium bromide; YBr ₃ ;	Kirmse, E. M.					
[13469-98-2]	Tr. II Vses. Konf. po Teor. Rastvorov					
	1971, 200-6.					
(2) 1,2-Diethoxyethane; $C_6H_{14}O_2$; [629-14-1]						
VARIABLES:						
TARABLES :	PREPARED BY:					
One temperature: $T/K = 298$	T. Mioduski					
EXPERIMENTAL VALUES:						
The solubility of YBr ₃ in $C_2H_5OCH_2CH_2OC_2H_5$ at	25° C was reported to be					
1	2 mass %					
1						
The corresponding molality calculated by the	compiler is					
c	$0.037 \text{ mol kg}^{-1}$					
AUXILIARY	INFORMATION					
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:					
Nothing specified. On the basis of previous	Nothing specified. Presumably the					
papers by the author, it seems that reaction	anhydrous bromide was prepared by the					
mixtures were thermostated for several days, and that Y was determined by complexometric	method of Taylor and Carter (1).					
titration in the presence of xylenol orange						
indicator.						
	ESTIMATED ERROR:					
	Nothing specified.					
[
	REFERENCES:					
	1. Taylor, M. D.; Carter, C. P. I Incre Nucl. Cham 1962 24 287					
	J. Inorg. Hucl. Chem. <u>1962</u> , 24, 387.					

Yttrium Bromide

COMPONENTS:	ORIGINAL MEASUREMENTS:			
(1) Yttrium bromide; YBr ₃ ; [13469-98-2]	Rossmanith, K.			
-				
(2) Tetrahydrofuran; C ₄ H ₈ 0; [109-99-9]	Monatsh. Chem. <u>1966</u> , 97, 1357-64.			
VARIABLES:	PREPARED BY:			
Room temperature: T/K about 294-296	T. Mioduski			
EXPERIMENTAL VALUES:				
The solubility of YBr ₃ in tetrahydrofuran at	$21-23^{\circ}$ C was reported to be			
-				
0.16 g/100 r	nl solution			
The solid phase is $YBr_3.3.5C_4H_8O.$				
-				
AUXILIARY	INFORMATION			
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:			
Isothermal method employed. The solution	Sources and purities not specified. YBr ₃			
was equilibrated in an extractor for 60-80	prepared by reaction of the oxide at high temperatures with an excess of NH _L Br fol-			
hours at room temperature. Yttrium was determined by the oxalate method and by	lowed by heating the product in a current			
titration with EDTA using Xylenol Orange	of dry nitrogen, and then in vacuum to			
indicator. For the solid phase analysis, the solvent was determined by difference.	remove unreacted NH4Br.			
	Tetrahydrofuran was distilled from LiAlH4.			
Anhydrous substances were handled in a dry box through which was passed a current of				
dry and CO ₂ -free nitrogen.				
	ESTIMATED ERROR:			
	Nothing specified.			
	REFERENCES :			

	·				
COMPONENTS :	ORIGINAL MEASUREMENTS:				
(1) Yttrium bromide; YBr ₃ ; [13469-98-2]	Kirmse, E. M.; Zwietasch, K. J.; Tirschmann, J.; Oelsner, L.; Niedergessaess, U. Z. Chem. <u>1968</u> , <i>8</i> , 472-3				
(2) 1,4-Dioxane (p-dioxane); C ₄ H ₈ O ₂ ; [123-91-1]	Kirmse, E. M. Tr. II Vses. Konf. po Teor. Rastvorov <u>1971</u> , 200-6.				
VARIABLES:	PREPARED BY:				
One temperature: T/K = 298	T. Mioduski				
EXPERIMENTAL VALUES:					
The solubility of YBr ₃ in 1,4-dioxane at 25°C	C was reported to be				
	L.6 mass %				
The corresponding molality calculated by the	compiler is				
C	0.049 mol kg ⁻¹				
AUXILIARY	INFORMATION				
METHOD / APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:				
The solute-solvent mixtures were isothermally agitated at 25°C or/and at room temperature (the difference found in the solubility was within the limits of experimental error). Y was determined by complexometric titration. No other information given.	the method of Taylor and Carter (1). No other details given.				
	ESTIMATED ERROR:				
	Nothing specified.				
	REFERENCES:				
	1. Taylor, M. D.; Carter, C. P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.				

ORIGINAL MEASUREMENTS:				
Kachkimbaeva, S. A.; Chalova, E. P.; Bleshinskii, S. V.				
Khim. Kompleks. Soedin. Redk. Soputstvuyushchikh Elem. <u>1970</u> , 122–6.				
PREPARED BY:				
T. Mioduski				
L				
20 ⁰ C was reported to be				
dm ⁻³ , compiler).				
INFORMATION				
SOURCE AND PURITY OF MATERIALS: YI ₃ prepared from "c.p." grade I ₂ and excess powdered metal (Y-0-Sort) by heating in an ampule to 1200° C. YI ₃ sublimated from the hot to the cold part of the ampoule. The product was analysed for Y and I (results not given).				
"C.p." grade tetrahydrofuran, b.p.=65.6°C, dried with NaOH and distilled from metallic sodium.				
ESTIMATED ERROR:				
Nothing specified.				
REFERENCES:				

Lantnanum Fluoride 2				
COMPO	NENTS:	ORIGINAL MEASUREMENTS:		
(1)	Lanthanum fluoride; LaF ₃ ; [13709-38-1]	Kirmse, E. M.		
(2)	Bis-(2-ethylhexyl)phosphoric acid; $C_{16}H_{35}O_4P$; [298-07-7]	Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85-90.		
(3)	Petroleum ether			
VARIA	BLES:	PREPARED BY:		
Room	temperature	T. Mioduski		
EXPER	IMENTAL VALUES:	L		
The s petro	colubility of LaF ₃ in 1 m solution of di(leum ether at room temperature was repor	2-ethylhexl)phosphoric acid in ted to be		
	0.	02 mass %		
The s to be	olid phase was dried in a desiccator ove about 1:3.	r P_4O_{10} and its La:F ratio was found		
1				
	· · · · · · · · · · · · · · · · · · ·	INFORMATION		
	D/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:		
10-20 at roo solut tion solut 10 % p	ermal method. About 100 mg LaF ₃ and cm^3 of solvent mechanically agitated om temp for 100 hours. Samples of satd ion for analyses were obtaine by decantator by centrifuging. 5-10 g of saturated ion were heated with about 10 cm ³ of KOH solution to obtain quantitative	drying at 310°C for 120 hours. The other components were purified and		
solut: and di by cor	ation of solid La(OH) ₃ and a basic F ⁻ ion. The La(OH) ₃ was filtered, washed issolved with HCl. La was determined mplexometric titration using a potentio- c method (1). The fluoride content of	dried by standard methods.		
the ba	asic filtrate was determined photo- cally using Al-Eriochrome cyanine color	ESTIMATED ERROR:		
lake (Nothing specified.		
		REFERENCES :		
		 Schilbach, U.; Kirmse, E. M. Z. Chem. <u>1974</u>, 14, 484. 		
		 Schilbach, U.; Hetze, I.; Kirmse, E. M. Chemia Analityczna <u>1975</u>, 20, 33. 		

	Lanthanu	m Fluoride					
COMPONENTS :		ORIGINAL MEAS	UREMENTS	:			
<pre>(1) Lanthanum fluoride; LaF₃; [13709-38-1]</pre>		Dressler, H.					
(2) Halongenated organic solver	nts	Dissertationschrift. Paed. Inst. Koethen. GDR. <u>1980</u> .					
VARIABLES:							
Room temperature		PREPARED BY: T. Mioduski and M. Salomon					
EXPERIMENTAL VALUES:		l					
solvent				lubility ^a mol kg ⁻¹	solid phase La:F:solvent ratio		
1-(chloromethoxy)propane;	C,H,C10;	[3587-57-3]	0.026	1.33x10 ⁻³	1:2.70:0.52		
1-(chloromethoxy)butane;				2.30x10 ⁻³ 2.6x10 ⁻³	b		
1-(chloromethoxy)pentane;	C ₆ H ₁₃ C10;	[19416-65-0]	0.022	1.12x10 ⁻³	1:2.41:0.40		
1-(bromomethoxy)butane;		[59375-51-8]			1:3.19:0.40		
1-(bromomethoxy)pentane;	C ₆ ^H 13 ^{Br0} ;	-		2.81x10 ⁻³			
Nonafluoro-1-butanesulfonyl fluoride;	^C 4 ^F 10 ^{SO} 2 ^F ;	[375-72-4]	0.060	3.06x10 ⁻³	1:3.12:0.12		
heptadecafluoro-1-octanesulfony fluoride;	1 C ₈ F ₁₈ 0 ₂ S;	[307-35-7]	0.011	5.62x10 ⁻⁴	1:2.90:0.06		
^a Molalities calculated by the c	ompilers.						
^b La:F:ether:H ₂ 0 ratio reported							
	AUXILIARY	INFORMATION					
METHOD/APPARATUS/PROCEDURE: Method analogous to that descri No other information available.	bed in (1).	in (1). In	hat the spite of at 573 K	fluoride wa drying the , the La:F:	s prepared as fluoride by H ₂ 0 ratio was		
		ESTIMATED ER	ROR:				
		Nothing spec	ified.				
		REFERENCES: 1. Kirmse, E. M. Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85.					

COMPONENTE		ODTOTIVAL NO				
COMPONENTS: (1) Lanthanum fluoride; LaF ₃ ; [13709-38-1]	ORIGINAL MEA Dressler, H		:			
(2) Benzene; C_6H_6 ; [71-43-2]		Dissertatio GDR, 1980,	nschrift.	Paed. Inst	. Koethen.	
(3) Substituted benzenes		GDR. <u>1980</u> .				
VARIABLES:		PREPARED BY:				
Room temperature		T. Mioduski	and M. Sa	alomon		
EXPERIMENTAL VALUES: The solubility of LaF ₃ was determ 0.5 mol dm ⁻³ benzene.	ined in thre	e substitute	d benzene	solvents co	ntaining	
solvent (component 3)					solid phase La:F:solvent ratio	
1	C.H.N.O.:	[99-65-0]			1:2.89:0.16	
1-fluoro-2,4-dinitrobenzene;						
1-chloro-2,4-dinitrobenzene;	C ₆ H ₃ ClN ₂ O ₄ ;	[97-00-7]	0.015	7.66×10^{-4}	1:3.05:0.17	
AMolalities calculated by the com						
					~	
	AUXILIARY	INFORMATION				
METHOD/APPARATUS/PROCEDURE:		SOURCE AND P It appears	URITY OF	MATERIALS :		
Method analogous to that described No other information available.	1 in (1).	in (1). In	spite of	drying the f	luoride by	
		was 1:3.01:0	at 575 K,	the La:F:H2	U ratio	
		No other inf	formation	available.		
		nomtuu				
		ESTIMATED ER Nothing spec				
		REFERENCES :				
		1. Kirmse, E Koethen	. м. Wis <u>1978</u> , 2,		ed. Inst.	

COMPONENTS:	ORIGINAL MEASUREMENTS:	
<pre>(1) Lanthanum fluoride; LaF₃; [13709-38-1]</pre>	Kirmse, E. M.	
<pre>(2) Benzenamine (aniline); C₆H₇N; [62-53-3]</pre>	Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85-90.	
VARIABLES:	PREPARED BY:	
Room temperature	T. Mioduski	
EXPERIMENTAL VALUES:		
The solubility of LaF ₃ in aniline at room temperature was reported as		
0.03 mass %.		
The corresponding molality calculated by the compiler is		
$1.5 \times 10^{-3} \text{ mol kg}^{-1}$		
The solid phase was dried in a desiccator over P_40_{10} and its La:F ratio was found to be very close to 1:3.		
AUXILIARY INFORMATION		
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:	
Isothermal method. About 100 mg of LaF ₃ and $10-20 \text{ cm}^3$ of solvent mechanically agitated at room temperature for 100 hours. Samples of saturated solution for analyses were obtained by decantation or by centrifuging. 5-10 g of saturated solution were heated with about 10 cm ³ of 10 % KOH solution for 1-3 hours to obtain quantitative separation of solid La(OH) ₃ and a basic F ⁻ solution. La(OH) ₃ was filtered, washed and dissolved with HCl. La was determined several times by complexometric titration using a potentiometric method (1). The fluoride content of the basic filtrate was determined photometrically using Al-Eriochrome cyanine color lake (2).	La ₂ O ₃ (source and purity not specified) was dissolved in HCl and the fluoride precipitat- ed with HF. The ppt (LaF ₃ .0.5H ₂ O) was dehy- drated by washing with acetone followed by drying at 310°C for 120 hours. The solvent was purified and dried by standard methods.	
	ESTIMATED ERROR: Soly: results for which rel error exceeded 50% were rejected. The reported value is a mean of at least two detns. REFERENCES:	
	1. Schilbach, U.; Kirmse, E. M. Z. Chem. <u>1974</u> , 14, 484.	
	 Schilbach, U.; Hetze, I.; Kirmse, E. M. Chemia Analityczna <u>1975</u>, 20, 33. 	
Lanthanum Fluoride 5		
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COMPONENTS:	ORIGINAL MEASUREMENTS:	
 (1) Lanthanum fluoride; LaF₃; [13709-38-1] (2) Methanol; CH₄0; [67-56-1] 	Kirmse, E. M. Wiss. Hefte, Paed. Inst. Koethen 1978, 2, 85-90.	
	<u></u> , -,	
VARIABLES:	PREPARED BY:	
Room temperature	T. Mioduski	
EXPERIMENTAL VALUES:		
The solubility of LaF3 in methanol was repor	ted to be	
0	.02 mass %	
The second line we had deep earland by the	compiler 18	
The corresponding molality calculated by the	$0 \times 10^{-3} \text{ mol kg}^{-1}$	
-		
The solid phase was dried in a desiccator ov was found to be very close to 1:3.	er P ₄ 0 ₁₀ and its La:F ratio	
	INFORMATION	
METHOD/APPARATUS/PROCEDURE: Isothermal method. About 100 mg of LaF ₃ and $10-20 \text{ cm}^3$ of solvent mechanically agitated at room temperature for 100 hours. Samples of saturated solution for analyses were obtained by decantation or by centrifuging. 5-10 g of saturated solution were heated with about 10 cm ³ of 10 % KOH solution for 1-3 hours to obtain quantitative separation of solid La(OH) ₃ and a basic F ⁻ solution. La(OH) ₃ was filtered, washed and dissolved with HCl. La was determined several times	SOURCE AND PURITY OF MATERIALS: La203 (source and purity not specified) was dissolved in HCl and the fluoride precipitat- ed with HF. The ppt (LaF3.0.5H20) was dehy- drated by washing with acetone followed by drying at 310°C for 120 hours. The solvent was purified and dried by standard methods.	
by complexometric titration using a potentio- metric method (1). The fluoride content of the basic filtrate was determined photo- metrically using Al-Eriochrome cyanine color lake (2).	 ESTIMATED ERROR: Soly: results for which rel error exceeded 50% were rejected. The reported value is a mean of at least two detns. Temp: nothing specified. REFERENCES: Schilbach, U.; Kirmse, E. M. Z. Chem. 1974, 14, 484. Schilbach, U.; Hetze, I.; Kirmse, E. M. Chemia Analityczna 1975, 20, 33. 	

HT0____+

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Lanthanum fluoride; LaF ₃ ;	Kirmse, E. M.
[13709-38-1]	With Walter Brand Turke Kanethan
(2) Urea; CH ₄ N ₂ O; [57-13-6]	Wiss. Hefte, Paed. Inst. Koethen 1978, 2, 85-90.
(3) Methanol; CH ₄ 0; [67-56-1]	
VARIABLES:	PREPARED BY:
	I WI AKED DI.
Room temperature : $T/K = 291-295$	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of LaF ₃ in methanol saturated	with urea at room temperature
was reported to be	-2
1.	7×10^{-2} mass %
The urea content was not given.	ч.
The solid phase was dried in a desiccator ove found to be about 1:3.	r P ₄ 0 ₁₀ and its La:F ratio was
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS: La203 (source and purity not specified) was
Isothermal method. About 100 mg LaF3 and	dissolved in HCl and the fluoride precipitat-
10-20 cm ³ of solvent mechanically agitated at room temp (18-22°C) for 100 hours. Samples	ed with HF. The ppt $(LaF_3.0.5H_20)$ was dehy- drated by washing with acetone followed by
of saturated solution for analyses were	drying at 310°C for 120 hours.
obtained by decantation or by centrifuging. 5-10 g of saturated solution were heated with	The other components were purified and dried
about 10 cm ³ of 20 % KOH solution for 3 hours	by standard methods.
to obtaine quantitative separation of solid $La(OH)_3$ and a basic F ⁻ solution. The $La(OH)_3$	
was filtered, washed and dissolved with HCl. La was determined several times by complexo-	
metric titration using a potentiometric	
method (1). The fluoride content of the basic filtrate was determined photometrically	ESTIMATED ERROR:
using Al-Eriochrome cyanine color lake (2).	Soly: results for which rel error exceeded 50% were rejected. The reported value
	is a mean of at least two detns.
	Temp: nothing specified. REFERENCES:
	1. Schilbach, U.; Kirmse, E. M. Z. Chem.
	<u>1974</u> , 14, 484.
	 Schilbach, U.; Hetze, I.; Kirmse, E. M. Chemia Analityczna <u>1975</u>, 20, 33.

COMPONENTS:	ORIGINAL MEASUREMENTS:
	ORIGINAL MEASUREMENTS:
<pre>(1) Lanthanum fluoride; LaF₃; [13709-38-1]</pre>	Kirmse, E. M.
(2) Ethanol; C ₂ H ₆ 0; [64-17-5]	Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85-90.
VARIABLES:	PREPARED BY:
Room temperature	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of LaF3 in ethanol was reported	ed to be
0	03 mass %
The corresponding molality calculated by the	compiler is
1.	$5 \times 10^{-3} \text{ mol kg}^{-1}$
The solid phase was dried in a desiccator over was found to be very close to 1:3.	er P ₄ 0 ₁₀ and its La:F ratio
AUXILIARY	INFORMATION
METHOD / APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS;
Isothermal method. About 100 mg LaF3 and 10-20 cm ³ of solvent mechanically agitated at room temperature for 100 hours. Samples of saturated solution for analyses were obtained by decantation or by centrifuging.	La_2O_3 (source and purity not specified) was dissolved in HCl and the fluoride precipitat- ed with HF. The ppt (LaF ₃ .0.5H ₂ O) was dehy- drated by washing with acetone followed by drying at 310°C for 120 hours.
5-10 g of saturated solution were heated with about 10 cm ³ of 10 % KOH solution for 1-3 hours to obtain quantitative separation of solid La(OH) ₃ and a basic F ⁻ solution. La(OH) ₃ was filtered, washed and dissolved with HCl. La was determined several times	The solvent was purified and dried by standard methods.
by complexometric titration using a potentiometric method (1). The fluoride Content of the basic filtrate was determined photometrically using Al-Eriochrome cyanine color lake (2).	ESTIMATED ERROR: Soly: results for which rel error exceeded 50% were rejected. The reported value is a mean of at least two detns. Temp: nothing specified.
	REFERENCES: 1. Schilbach, U.; Kirmse, E. M. Z. Chem. <u>1974</u> , 14, 484.
	2. Schilbach, U.; Hetze, I.; Kirmse, E. M. Chemia Analityczna <u>1975</u> , 20, 33.

COMPONENTS:	ORIGINAL MEASUREMENTS:			
<pre>(1) Lenthanym fluoride; LaF₃; [13709-38-1]</pre>	Kirmse, E. M.			
(2) Urea; CH ₄ N ₂ O; [57-13-6]	Wiss, Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85-90.			
(3) Ethanol; C ₂ H ₆ 0; [67-17-5]				
VARIABLES:	PREPARED BY:			
Room temperature	T. Mioduski			
EXPERIMENTAL VALUES:				
The solubility of LaF_3 in ethanol saturated w reported to be				
5×10^{-3} mass %.				
The urea content was not given.				
The solid phase was dried in a desiccator ove found to be about 1:3.	r P_40_{10} and its La:F ratio was			
AUXILIARY	INFORMATION			
METHOD / APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:			
Isothermal method. About 100 mg LaF_3 and 10-20 g of solvent mechanically agitated at room temperature for 100 hours. Samples of saturated solution for analyses were obtained by decantation or by centrifuging. 5-10 g of saturated solution were heated	La_2O_3 (source and purity not specified) was dissolved in HCl and the fluoride precipitat- ed with HF. The ppt (LaF ₃ .0.5H ₂ O) was dehy- drated by washing with acetone followed by drying at 310°C for 120 hours.			
with about 10 cm ³ of 10 % KOH solution for 1-3 hours to obtain quantitative separation of solid La(OH) ₃ and a basic F ⁻ solution. La(OH) ₃ was filtered, washed and dissolved with HCl. La was determined several times by complexometric titration using a	The other components were purified and dried by standard methods.			
potentiometric method (1). The fluoride content of the basic filtrate was determined photometrically using Al-Eriochrome cyanine color lake (2).	ESTIMATED ERROR: Soly: results for which rel error exceeded 50% were rejected. The reported value is a mean of at least two detns. Temp: nothing specified.			
	REFERENCES: 1. Schilbach, U.; Kirmse, E. M. Z. Chem. <u>1974</u> , 14, 484.			
	 Schilbach, U.; Hetze, I.; Kirmse, E. M. Chemia Analityczna <u>1975</u>, 20, 33. 			

Lanthanum Fluoride			
COMPONENTS:	ORIGINAL MEASUREMENTS:		
 Lanthanum fluoride; LaF₃; [13709-38-1] 1,2-Ethanediol (ethylene glycol); C₂H₆O₂; [107-21-1] 	Kirmse, E. M. Wiss. Hefte, ^p aed. Inst. Koethen <u>1978</u> , 2, 85-90.		
VARIABLES:	PREPARED BY:		
	T. Hioduski		
Room temperature			
EXPERIMENTAL VALUES: The solubility of LaF ₃ in ethylene glycol at	room temperature was reported to be		
0.02 mass %			
The corresponding molality calculated by the compiler is			
$1.0 \times 10^{-3} \text{ mol kg}^{-1}$			
AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE: Isothermal method. About 100 mg LaF ₃ and $10-20 \text{ cm}^3$ of solvent mechanically agitated at room temperature for 100 hours. Samples of saturated solution for analyses were obtained by decantation or by centrifuging. 5-10 g of saturated solution were heated with about 10 cm ³ of 10 % KOH solution for 1-3 hours to obtain quantitative separation of solid La(OH) ₃ and a basic F ⁻ solution. La(OH) ₃ was filtered, washed and dissolved with HCl. La was determined several times by complexometric titration using a potentiometric method (1). The fluoride Content of the basic filtrate was determined	SOURCE AND PURITY OF MATERIALS: La203 (source and purity not specified) was dissolved in HCl and the fluoride precipitat ed with HF. The ppt (LaF3.0.5H20) was dehy- drated by washing with acetone followed by drying at 310°C for 120 hours. The solvent was purified and dried by standard methods. ESTIMATED ERROR: Soly: results for which rel error exceeded		
Photometrically using Al-Eriochrome cyanine color lake (2).	Soly. Testits for which fer erfor exceeded 50% were rejected. The reported value is a mean of at least two detns. Temp: nothing specified. REFERENCES:		

1. Schilbach, U.; Kirmse, E. H. Z. Chem. <u>1974</u>, 14, 484.

 Schilbach, U.; Hetze, I.; Kirmse, E. M. Chemia Analityczna <u>1975</u>, 20, 33.

COMPONENTS:	ORIGINAL MEASUREMENTS:			
<pre>(1) Lanthanum fluoride; LaF₃; [13709-38-1]</pre>	Kirmse, E. M.			
(2) 2-Methy1-1-propanol (isobutanol); C ₄ H ₁₀ 0; [78-83-1]	Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85–90.			
VARIABLES:	PREPARED BY:			
Room temperature	T. Mioduski			
EXPERIMENTAL VALUES:				
The solubility of LaF ₃ in isobutanol at room temperature was reported to be $0.03 \text{ mass } \%$				
The corresponding molality calculated by the	compiler is			
	$5 \times 10^{-3} \text{ mol kg}^{-1}$			
1.	5 x 10 mol kg			
The solid phase was dried in a desiccator over P_40_{10} and its La:F ratio was found to be very close to 1:3.				
AUXILIARY	INFORMATION			
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:			
Isothermal method. About 100 mg of LaF ₃ and	La ₂ O ₃ (source and purity not specified) was dissolved in HCl and the fluoride precipita-			
$10-20 \text{ cm}^3$ of solvent mechanically agitated at room temp for 50 hours. Samples of saturated	ted with HF. The ppt (LaF3.0.5H20) was de-			
solution for analyses were obtained by decantation. 5-10 g of saturated solution	hydrated by washing with acetone followed by drying at 310°C for 120 hours.			
were heated with about 10 cm ³ of 10 % KOH solution for 3 hours to obtain quantitative	The solvent was purified and dried by			
separation of solid La(OH)3 and a basic F	standard methods.			
solution. La was determined several times by complexometric titration using a potentio-				
metric method (1). The fluoride content of the basic filtrate was determined photo-				
metrically using Al-Eriochrome cyanine color	ESTIMATED ERROR:			
lake (2).	Nothing specified.			
The reported solubility is the mean of at least two determinations.				
	REFERENCES :			
	 Schilbach, U.; Kirmse, E. M. Z. Chem. <u>1974</u>, 14, 484. 			
	2. Schilbach, U.; Hetze, I.; Kirmse, E. M. Chemia Analityczna <u>1975</u> , 20, 33.			

COMPONENTS :	
	ORIGINAL MEASUREMENTS:
<pre>(1) Lanthanum fluoride; LaF₃; [13709-38-1]</pre>	Kirmse, E. M.
(2) 2-Butanol; C ₄ H ₁₀ 0; [78-92-2]	Wíss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85-90.
VARIABLES:	PREPARED BY:
Room temperature	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of LaF3 in 2-butanol at room t	emperature was reported to be
0.	02 mass %
The corresponding molality calculated by the	
1.	$0 \times 10^{-3} \text{ mol kg}^{-1}$
The solid phase was dried in a desiccator over	r P40 ₁₀ and its La:F ratio was
found to be very close to 1:3.	
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method. About 100 mg LaF ₃ and $10-20 \text{ cm}^3$ of solvent mechanically agitated at room temperature for 100 hours. Samples of saturated solution for analyses were obtained by decantation or by centrifuging. 5-10 g of saturated solution were heated	La20 ₃ (source and purity not specified) was dissolved in HCl and the fluoride precipitat- ed with HF. The ppt (LaF ₃ .0.5H ₂ 0) was de- hydrated by washing with acetone followed by drying at 310° C for 120 hours.
with about 10 cm ³ of 10 % KOH solution for 1-3 hours to obtain quantitative separation of solid La(OH) ₃ and a basic F ⁻ solution. La(OH) ₃ was filtered, washed and dissolved with HCl. La determined several times by complexometric titration using a potentio-	The solvent was purified and dried by standard methods.
metric method (2). The fluoride content of the basic filtrate was determined photo- metrically using Al-Eriochrome cyanine color lake (2).	ESTIMATED ERROR: Soly: results for which rel error exceeded 50% were rejected. The reported value is a mean of at least two detns.
	Temp: nothing specified.
	REFERENCES: 1. Schilbach, U.; Kirmse, E. M. Z. Chem. <u>1974</u> , 14, 484.
	 Schilbach, U.; Hetze, I.; Kirmse, E. M. Chemia Analityczna <u>1975</u>, 20, 33.

COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Lanthanum fluoride; LaF₃; [13709-38-1]</pre>	Kirmse, E. M.
(2) 2-Methyl-2-butanol (t-pentanol); C ₅ H ₁₂ 0; [75-85-4]	Wiss, Hefte, Paed. Inst. Yoethen <u>1978</u> , 2, 85–90.
VARIABLES:	PREPARED BY:
Room temperature	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of LaF ₃ in t-pentanol at room	temperature was reported to be
0.	025 mass %
	5
The corresponding molality calculated by the	compiler is
1.	$3 \times 10^{-3} \text{ mol kg}^{-1}$
The solid phase was dried in a desiccator ove to be very close to 1:3.	r P_40_{10} and its La:F ratio was found
	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method. About 100 mg LaF ₃ and	La ₂ O ₃ (source and purity not specified) was dissolved in HCl and the fluoride precipitat-
10-20 cm ³ of solvent mechanically agitated at room temperature for 100 hours. Samples	ed with HF. The ppt (LaF ₃ .0.5H ₂ 0) was de-
of saturated solution for analyses were	hydrated by washing with acetone followed by drying at 310°C for 120 hours.
obtained by decantation or by centrifuging. 5-10 g of saturated solution were heated	
with about 10 cm ³ of 10 % KOH solution for	The solvent was purified and dried by standard methods.
1-3 hours to obtain quantitative separation of solid $La(OH)_3$ and a basic F ⁻ solution.	standard methods.
La(OH) ₃ was filtered, washed and dissolved	
with HČ1. La was determined several times by complexometric titration using a	
potentiometric method (1). The fluoride	ESTIMATED ERROB: Soly: results for which rel error exceeded
content of the basic filtrate was dtermined photometrically using Al-Eriochrome cyanine	50% were rejected. The reported value
color lake (2).	is a mean of at least two detns. Temp: nothing specified.
	REFERENCES:
	1. Schilbach, U.; Kirmse, E. M. Z. Chem. <u>1974</u> , 14, 484.
	 Schilbach, U.; Hetze, I.; Kirmse, E. M. Chemia Analityczna <u>1975</u>, 20, 33.

COMPONENTS: (1) Lanthanum fluoride; LaF ₃ ;		ORIGINAL MEA Dressler, H		5:	
[13709-38-1]				• Paed. Ins	t. Koethen.
(2) Alkyl ethers		GDR. <u>1980</u> .	-		
	······				
VARIABLES:		PREPARED BY: T. Mioduski		Salomon	
Room temperature		11 modula	unu m	Su tomon	
EXPERIMENTAL VALUES:					
solvent			LaF ₃ so mass %	olubility ^a mol kg ⁻¹	solid phase La:F:solvent ratio
1,2-dimethoxyethane;	C4H1002;	[110-71-4]	0.017	8.68x10 ⁻⁴	1:2.82:0.31
1-ethoxy-2-methoxyethane;	C5H1202;	[5137-45-1]	0.005	2.6x10 ⁻⁴	1:2.87:0.26
1-methoxy-2-methy1propane;	C ₅ H ₁₂ O;	[625-44-5]	0.002	1.0x10 ⁻⁴	1:2.97:0.36
1-methoxybutane;	C ₅ H ₁₂ 0;	[628-28-4]	0.003	1.5x10 ⁻⁴	Ъ
1-methoxypentane	C ₆ H ₁₄ 0;	[628-80-8]	0.005	2.6x10 ⁻⁴	1:3.20:0.33
1-methoxyheptane;	C ₈ H ₁₈ 0;	[629-32-3]	0.004	2.0×10 ⁻⁴	1:2.88:0.22
1-methoxyoctane;	с ₉ н ₂₀ 0;	[929-56-6]	0.003	1.5x10 ⁻⁴	с
1-methoxydecane;	C ₁₁ H ₂₄ 0;	[7289-52-3]	0.020	1.02x10 ⁻³	1:2.98:0.11
^a Molalities calculated by the	compilers.				
^b La:F:ether:H ₂ 0 ratio reported	l as 1:2.87:0.	20:0.58			
CLa:F:ether:H ₂ 0 ratio reported					
24.F.Ether.n2 14010 Teported		1010132			
	AUXILIAR	Y INFORMATION			····
METHOD/APPARATUS/PROCEDURE: Method analogous to that described in (1). It appears that the fluorid		fluoride wa	s prepared		
No other information available	2.	as in (1). In spite of drying the fluoride by two methods at 573 K, the La:F:H ₂ O ratio was 1:3.01:0.20.			
		No other in	formation	n available.	
		ESTIMATED ER			
		Nothing spe	cified.		
		DEPENDIQUE		·	
		REFERENCES: 1. Kirmse, Koethen		iss.Hefte, 1 , 85.	Paed. Inst.
		_ <u> </u>			

COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Lanthanum fluoride; LaF₃; [13709-38-1]</pre>	Kirmse, E. M.
(2) Ethyl acetate (acetic acid ethyl ester); C ₄ H ₈ O ₂ ; [141-78-6]	Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85–90.
VARIABLES:	PREPARED BY:
Room temperature	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of LaF ₃ in ethyl acetate at ro	om temperature was reported to be
0.	01 mass %
The corresponding molality calculated by the	compiler is
	$x 10^{-4} mol kg^{-1}$
The solid phase was dried in a desiccator ove found to be very close to 1:3.	r P ₄ 0 ₁₀ and its La:F ratio was
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method. About 100 mg LaF ₃ and	La ₂ O ₃ (source and purity not specified) was dissolved in HCl and the fluoride precipitat-
10-20 cm ³ of solvent mechanically agitated at room temperature for 100 hours. Samples	ed with HF. The ppt (LaF3.0.5H20) was dehy-
of saturated solution for analyses were obtained by decantation or by centrifuging.	drated by washing with acetone followed by drying at 310°C for 120 hours.
5-10 g of saturated solution were heated	The solvent was purified and dried by
with about 10 cm ³ of 10 % KOH solution for 1-3 hours to obtain quantitative separation	standard methods.
of solid La(OH) ₃ and a basic F- solution. La(OH) ₃ was filtered, washed and dissolved	
with HCl. La was determined several times by complexometric titration using a	
potentiometric method (1). The fluoride	ESTIMATED ERROR:
content of the basic filtrate was determined photometrically using Al-Eriochrome cyanine	Soly: results for which rel error exceeded 50% were rejected. The reported value
color lake (2). ,	is a mean of at least two detns.
	Temp: nothing specified. REFERENCES:
	 Schilbach, U.; Kirmse, E. M. Z. Chem. <u>1974</u>, 14, 484.
	 Schilbach, U.; Hetze, I.; Kirmse, E. M. Chemia Analityczna <u>1975</u>, 20, 33.

Lanthanum Fluoride 6		
COMPONENTS:	ORIGINAL MEASUREMENTS:	
 (1) Lanthanum fluoride; LaF₃; [13709-38-1] (2) Tributyl phosphate ; C₁₂H₂₇0₄P; [126-73-8] 	Kirmse, E. M. Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85-90.	
VARIABLES:	PREPARED BY	
Room temperature	T. Mioduski	
EXPERIMENTAL VALUES:		
The solubility of LaF ₃ in tributyl phosphate reported to be 0	at room temperature was .03 mass %	
The corresponding molality calculated by the	compiler is	
1.5	$\times 10^{-3} \text{ mol kg}^{-1}$	
AUXILIARY	INFORMATION	
METHOD/APPARATUS/PROCEDURE: Isothermal method. About 100 mg LaF ₃ and $19-20 \text{ cm}^3$ of solvent mechanically agitated at room temperature for 100 hours. Samples of saturated solution for analyses were obtained by decantation or by centrifuging. $5-10$ g of saturated solution were heated with about 10 cm ³ of 10 % KOH solution for 1-3 hours to obtaine quantitative separation of solid La(OH) ₃ and a basic F ⁻ solution. La(OH) ₃ was filtered, washed and dissolved with HC1. La was determined several times by complexometric titration using a potentiometric method (1). The fluoride content of the basic filtrate was determined photometrically using Al-Eriochrome cyanine color lake (2).	<pre>SOURCE AND PURITY OF MATERIALS: La₂₀₃ (source and purity not specified) was dissolved in HCl and the fluoride precipitat- ed with HF. The ppt (LaF₃.0.5H₂0) was dehy- drated by washing with acetone followed by drying at 310°C for 120 hours. The solvent was purified and dried by standard methods.</pre> ESTIMATED ERROR: Soly: results for which rel error exceeded 50% were rejected. The reported value is a mean of at least two detns. Temp: nothing specified. REFERENCES: 1. Schilbach, U.; Kirmse, E. M. Z. Chem.	
	 Schilbach, U.; Hetze, I.; Kirmse, E. M. Chemia Analityczna <u>1975</u>, 20, 33. 	

COMPONENTS:	ORIGINAL MEASUREMENTS:		
(1) Lanthanum fluoride; LaF ₃ ; [13709-38-1]	Kirmse, E. M.		
(2) Dimethylsulfoxide; C ₂ H ₆ OS; [67-68-5]	Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85-90.		
VARIABLES:	PREPARED BY:		
Room temperature	T. Mioduski		
EXPERIMENTAL VALUES:			
The solubility of LaF ₃ in dimethylsulfoxide	at room temperature was reported to be		
0.03 mass %			
The corresponding molality calculated by the compiler is			
$1.5 \times 10^{-3} \text{ mol kg}^{-1}$			
found to be very close to 1:3.			
AUXILIARY	INFORMATION		
ME THOD / APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:		
Isothermal method. About 100 mg LaF3 and $10-20 \text{ cm}^3$ of solvent mechanically agitated at room temperature for 100 hours. Samples of saturated solution for analyses were obtained by decantation or by centrifuging. 5-10 g of saturated solution were heated with about 10 cm ³ of 10 % KOH solution for 1-3 hours to obtain quantitative separation of solid La(OH) ₃ and a basic F ⁻ solution. La(OH) ₃ was filtered, washed and dissolved with HCl. La was determined several times by complexometric titration using a potentiometric method (1). The fluoride content of the basic filtrate was determined photometrically using Al-Eriochrome cyanine color lake (2).	<pre>La₂O₃ (source and purity not specified) was dissolved in HCl and the fluoride precipitat- ed with HF. The ppt (LaF₃.0.5H₂O) was dehy- drated by washing with acetone followed by drying at 310°C for 120 hours. The solvent was purified and dried by standard methods.</pre> ESTIMATED ERROR: Soly: results for which rel error exceeded 50% were rejected. The reported value is a mean of at least two detns. Temp: nothing specified. REFERENCES: 1. Schilbach, U.; Kirmse, E. M. Z. Chem. <u>1974</u> , 14, 484.		
	2. Schilbach, U.; Hetze, I.; Kirmse, E. M. Chemia Analityczna <u>1975</u> , 20, 33.		

COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Lanthanum fluoride; LaF₃; [13709-38-1]</pre>	Kirmse, E. M.
(2) 2-Aminoethanol (ethanolamine); C ₂ H ₇ NO; [141-43-5]	Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85–90.
VARIABLES:	PREPARED BY:
Room temperature	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of LaF ₃ in ethanolamine at roc	m temperature was reported to be
0.	03 mass %
The corresponding molality calculated by the	compiler is
1.5	$\times 10^{-3} \text{ mol kg}^{-1}$
The solid phase was dried in a desiccator ove was found to be very close to 1:3.	r P ₄ 0 ₁₀ and its La:F ratio
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method. About 100 mg LaF ₃ and	La ₂ O ₃ (source and purity not specified) was dissolved in HCl and the fluoride precipitat-
10-20 cm ³ of solvent mechanically agitated at room temperature for 100 hours. Samples	ed with HF. The ppt $(LaF_3.0.5H_20)$ was dehy- drated by washing with acetone followed by
of saturated solution for analyses were obtained by decantation or by centrifuging.	drying at 310°C for 120 hours.
5-10 g of saturated solution were hearted	
with about 10 $\rm cm^3$ of 10 % KOH solution for 1-3 hours to obtain quantitative separation	
of solid La(OH) $_3$ and a basic F ⁻ solution. La(OH) $_3$ was filtered, washed and dissolved	
with HCl. La was determined several times	
by complexometric titration using a potentiometric method (1). The fluoride	ESTIMATED ERROR:
content of the basic filtrate was determined photometrically using Al-Eriochrome cyanine color lake (2).	Soly: results for which rel error exceeded 50% were rejected. The reported value is a mean of at least two detns.
	Temp: nothing specified. REFERENCES:
	 Schilbach, U.; Kirmse, E. M. Z. Chem. <u>1974</u>, 14, 484.
	<u> </u>

2. Schilbach, U.; Hetze, I.; Kirmse, E. M. Chemia Analityczna <u>1975</u>, 20, 33.

COMPONENTS:	ORIGINAL MEASUREMENTS:
UNIT ONENTO I	SALSTARL MERSUREMENTS;
<pre>(1) Lanthanum fluoride; LaF₃; [13709-38-1]</pre>	Kirmse, E. M.
(2) Triethylamine ;	Wiss. Hefte, Paed. Inst. Koethen <u>1978,</u> 2, 85–90.
$C_6H_{15}N; [121-44-8]$	<u>1970</u> , 2, 09-90.
VARIABLES:	PREPARED BY:
Room temperature: T/K about 298	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of LaF ₃ in triethylamine at ro reported to be	oom temperature was
0.	01 mass %
The corresponding molality calculated by the	compiler is
	10^{-4} mol kg ⁻¹
	-
The solid phase was dried in a desiccator over	er P ₄ 0 ₁₀ and its La:F ratio
was found to be very close to 1:3.	
	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS: La203 (source and purity not specified) was
Isothermal method. About 100 mg of LaF_3 and $10-20 \text{ cm}^3$ of solvent mechanically agitated	dissolved in HCl and the fluoride precipitat- ed with HF. The ppt (LaF ₃ .0.5H ₂ O) was dehy-
at room temperature (about 25°C) for 100 h Samples of saturated solution for analyses	drated by washing with acctone followed by drying at 310°C for 120 hours.
were obtained by decantation or by centri- fuging. 5-10 g of saturated solution were	
heated with about 10 cm ³ of 10 % KOH sln for	The solvent was purified and dried by standard methods.
3-5 hours to obtain quantitative separation of solid La(OH) ₃ and a basic F ⁻ solution.	
The La(OH) ₃ was filtered, washed and dissolved in HCl. La was determined several	
times by complexometric titration using a potentiometric method (1). The fluoride	ESTIMATED ERROR:
content of the basic filtrate was determined photometrically using Al-Eriochrome cyanine	Soly: results for which rel error exceeded 50% were rejected. The reported value
color lake (2).	is a mean of at least two detns. Temp: nothing specified.
	REFERENCES:
	1. Schilbach, U.; Kirmse, E. M. Z. Chem. <u>1974</u> , 14, 484.
	 Schilbach, U.; Hetze, I.; Kirmse, E. M. Chemia Analityczna <u>1975</u>, 20, 33.

Lantnanui	n Fluoride 67
COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Lanthanum fluoride; LaF₃; [13709-38-1]</pre>	Kirmse, E. M.
(2) 2-Propanamine ; C ₃ H ₉ N; [75-31-0]	Wiss. Hefte, ^p aed. Inst. Koethen <u>1978</u> , 2, 85–90.
VARIABLES:	PREPARED BY:
Room temperature	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of LaF ₃ in isopropylamine at reported to be	room temperature was
0	.02 mass %
The corresponding molality calculated by the	compiler is
1	$.0 \times 10^{-3} \text{ mol kg}^{-1}$
The solid phase was dried in a desiccator ov was found to be very close to 1:3.	er P ₄ 0 ₁₀ and its La:F ratio
	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS
Isothermal method. About 100 mg LaF ₃ and $10-20 \text{ cm}^3$ of solvent mechanically agitated at room temperature for 100 hours. Samples of saturated solution for analyses were obtained by decantation or by centrifuging. 5-10 g of saturated solution were heated	La_2O_3 (source and purity not specified) was dissolved in HCl and the fluoride precipitat- ed with HF. The ppt (LaF ₃ .0.5H ₂ O) was dehy- drated by washing with acetone followed by drying at 310°C for 120 hours.
with about 10 cm ³ of 10 % KOH solution for 1-3 hours to obtain quantitative separation of solid $La(OH)_3$ and a basic F ⁻ solution. $La(OH)_3$ was filtered, washed and dissolved with HCl. La was determined several times	The solvent was purified and dried by standard methods.
by complexometric titration using a potentiometric method (1). The fluoride content of the basic filtrate was determined photometrically using Al-Eriochrome cyanine color lake (2).	ESTIMATED ERROR: Soly: results for which rel error exceeded 50% were rejected. The reported value is a mean of at least two detns. Temp: nothing specified.
	REFERENCES :
	 Schilbach, U.; Kirmse, E. M. 7. Chem. <u>1974</u>, 14, 484.
	 Schilbach, U.; Hetze, I.; Kirmse, E. M. Chemia Analityczna <u>1975</u>, 20, 33.

	ODTOTIVIT A THOMPSON
COMPONENTS:	ORIGINAL MEASUREMENTS:
[13709-38-1]	Kirmse, E. M. Wiss. Hefte, Paed. Inst. Koethen
(2) Di-isobutylamine; C ₈ H ₁₉ N; [110-96-3]	<u>1978,</u> 2, 85–90.
VARIABLES:	PREPARED BY:
Room temperature	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of LaF ₃ in di-isobutylamine at reported to be	room temperature was
0.	01 ₅ mass %
The corresponding molality calculated by the	compiler is
	$7 \times 10^{-4} \text{ mol kg}^{-1}$
7.	7 x 10 mol kg
The solid phase was dried in a desiccator ove was found to be very close to 1:3.	er P ₄ 0 ₁₀ and its La:F ratio
was found to be very crose to 1.5.	
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method. About 100 mg LaF3 and	La ₂ O ₃ (source and purity not specified) was dissolved in HCl and the fluoride precipitat-
10-20 cm ³ of solvent mechanically agitated	ed with HF. The ppt (LaF3.0.5H20) was dehy-
at room temperature for 100 hours. Samples of saturated solution for analyses were	drated by washing with acetone followed by drying at 310°C for 120 hours.
obtained by decantation or by centrifuging. 5-10 g of saturated solution were heated with	The solvent was purified and dried by
about 10 cm ³ of 10 % KOH solution for 1-3 hours to obtain quantitative separation of	standard methods.
solid La(OH) ₃ and a basic F^- solution.	
La(OH) ₃ was filtered, washed and dissolved with HCl. La was determined several times	
by complexometric titration using a potentiometric method (1). The fluoride	ESTIMATED ERROR:
content of the basic filtrate was determined	Soly: results for which rel error exceeded
photometrically using Al-Eriochrome cyanine color lake (2).	50% were rejected. The reported value is a mean of at least two detns.
	Temp: nothing specified.
	REFERENCES :
	 Schilbach, U.; Kirmse, E. M. Z. Chem. <u>1974</u>, 14, 484.
	 Schilbach, U.; Hetze, I.; Kirmse, E. M. Chemia Analityczna <u>1975</u>, 20, 33.

COMPONENTS :	ORIGINAL MEASUREMENTS:
(1) Lanthanide fluoride; LaF ₃ ;	Kirmse, E. M.; Jordan, M.
[13709-38-1]	Z. Chem. <u>1977</u> , 17, 75-6.
(2) Pyridine; C ₅ H ₅ N; [110-86-1]	
, s.	
VARIABLES:	PREPARED BY:
Temperature not specified: presumably	T. Mioduski
room temperature.	
EXPERIMENTAL VALUES:	
	tod to bo
The solubility of LaF ₃ in pyridine was repor	
4×10^{-2} mas	в %
The corresponding value in molal units calcu	lated by the compiler is
2×10^{-3} mol	kg ⁻¹
AUXILIARY	INFORMATION
METHOD /APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS; Technical grade LaF ₂ (VEB Fluowerke Dohna)
Isothermal method. A sample of saturated	Technical grade LaF ₃ (VEB Fluowerke Dohna)
solution was evaporated to dryness, and about 30 mg of LaF, heated with about 10	contained 3.5 $\%$ Pr ₆ 0 ₁₁ and 14.5 $\%$ Nd ₂ 0 ₃ .
cm of 10 % KOH solution for 1 hour to ob-	The salt (LaF $_{3}$.0.5H $_{2}$ 0) was dehydrated by
tain quantitative separation of the precipi-	washing with acetone and drying at
tated La(OH) ₃ and the fluoride solution. The precipitate was filtered, washed and	300°C (1).
dissolved in dil HCl. La was determined by	
complexometric titration with potentiometric	
end-point detection. The fluoride content of the filtrate was determined photometric-	
ally using Al-Eriochrome cyanine color lake.	
	ESTIMATED ERROR:
	Security union.
	Nothing specified.
	REFERENCES:
	1. Karpenko, L. I.; Fadeeva, L.A.;
	Shevchenko, L. D. Zh. Anal. Khim.
	<u>1975</u> , <i>30</i> , 1330.

COMPONENTS: ORIGINAL MEASUREMENTS: (1) Lanthanum fluoride; LaF3; Kirmse, E. M. (1) Janthanum fluoride; LaF3; Kirmse, E. M. (2) Pyridine; C5H5N; [110-86-1] Wiss. He6te, Paed. Inst. Koethen VARIABLES: PREPARED BY: Room temperature T. Mioduski EXPERIMENTAL VALUES: The solubility of LaF3 in pyridine at room temperature was reported to be 0.035 mass % 1.8 x 10 ⁻³ mol kg ⁻¹ . The solid phase was dried in a desiccator over P4010 and its La:F ratio was found to be very close to 1:3.
$[13709-38-1]$ Wiss. Hefte, Paed. Inst. Koethen (2) Pyridine; C_5H_5N ; $[110-86-1]$ Wiss. Hefte, Paed. Inst. Koethen 1978 , 2, 85-90.VARIABLES:PREPARED BY:Room temperatureT. MioduskiEXPERIMENTAL VALUES:The solubility of LaF3 in pyridine at room temperature was reported to be 0.03_5 mass %The corresponding molality calculated by the compiler is 1.8×10^{-3} mol kg ⁻¹ .The solid phase was dried in a desiccator over P_4O_{10} and its La:F ratio was
(2) Pyridine; C_5H_5N ; [110-86-1]Wiss. Hefte, Paed. Inst. Koethen 1978, 2, 85-90.VARIABLES: Room temperaturePREPARED BY: T. MioduskiEXPERIMENTAL VALUES: The solubility of LaF3 in pyridine at room temperature was reported to be 0.03_5 mass %The corresponding molality calculated by the compiler is 1.8×10^{-3} mol kg ⁻¹ .The solid phase was dried in a desiccator over P_4O_{10} and its La:F ratio was
VARIABLES: PREPARED BY: Room temperature T. Mioduski EXPERIMENTAL VALUES: The solubility of LaF3 in pyridine at room temperature was reported to be 0.035 mass % The corresponding molality calculated by the compiler is 1.8 x 10 ⁻³ mol kg ⁻¹ . The solid phase was dried in a desiccator over P4010 and its La:F ratio was
Room temperatureT. MioduskiEXPERIMENTAL VALUES:The solubility of LaF3 in pyridine at room temperature was reported to be 0.03_5 mass %The corresponding molality calculated by the compiler is 1.8×10^{-3} mol kg ⁻¹ .The solid phase was dried in a desiccator over P_40_{10} and its La:F ratio was
Room temperatureT. MioduskiEXPERIMENTAL VALUES:The solubility of LaF3 in pyridine at room temperature was reported to be 0.03_5 mass %The corresponding molality calculated by the compiler is 1.8×10^{-3} mol kg ⁻¹ .The solid phase was dried in a desiccator over P_40_{10} and its La:F ratio was
EXPERIMENTAL VALUES: The solubility of LaF ₃ in pyridine at room temperature was reported to be 0.03_5 mass % The corresponding molality calculated by the compiler is $1.8 \times 10^{-3} \text{ mol kg}^{-1}$. The solid phase was dried in a desiccator over P_40_{10} and its La:F ratio was
EXPERIMENTAL VALUES: The solubility of LaF ₃ in pyridine at room temperature was reported to be 0.03_5 mass % The corresponding molality calculated by the compiler is $1.8 \times 10^{-3} \text{ mol kg}^{-1}$. The solid phase was dried in a desiccator over P_40_{10} and its La:F ratio was
The solubility of LaF ₃ in pyridine at room temperature was reported to be 0.03_5 mass % The corresponding molality calculated by the compiler is $1.8 \times 10^{-3} \text{ mol kg}^{-1}$. The solid phase was dried in a desiccator over P ₄ 0 ₁₀ and its La:F ratio was
0.03_5 mass % The corresponding molality calculated by the compiler is $1.8 \times 10^{-3} \text{ mol kg}^{-1}$. The solid phase was dried in a desiccator over $P_4 O_{10}$ and its La:F ratio was
0.03_5 mass % The corresponding molality calculated by the compiler is $1.8 \times 10^{-3} \text{ mol kg}^{-1}$. The solid phase was dried in a desiccator over $P_4 O_{10}$ and its La:F ratio was
The corresponding molality calculated by the compiler is $1.8 \times 10^{-3} \text{ mol kg}^{-1}$. The solid phase was dried in a desiccator over P ₄ 0 ₁₀ and its La:F ratio was
The corresponding molality calculated by the compiler is $1.8 \times 10^{-3} \text{ mol kg}^{-1}$. The solid phase was dried in a desiccator over P ₄ 0 ₁₀ and its La:F ratio was
$1.8 \times 10^{-3} \text{ mol kg}^{-1}$. The solid phase was dried in a desiccator over P ₄ 0 ₁₀ and its La:F ratio was
$1.8 \times 10^{-3} \text{ mol kg}^{-1}$. The solid phase was dried in a desiccator over P ₄ 0 ₁₀ and its La:F ratio was
The solid phase was dried in a desiccator over P_4O_{10} and its La:F ratio was
The solid phase was dried in a desiccator over $P_4^0{}_{10}$ and its La:F ratio was found to be very close to 1:3.
The solid phase was dried in a desiccator over P_40_{10} and its La:F ratio was found to be very close to 1:3.
found to be very close to 1:3.
AUXILIARY INFORMATION
METHOD/APPARATUS/PROCEDURE: SOURCE AND PURITY OF MATERIALS:
Isothermal method. About 100 mg LaF_3 and La_2O_3 (source and purity not specified) was $10-20$ cm ³ of columnt mechanically agitated dissolved in HCl and the fluoride precipitat
ed with HF. The ppt (LaF3.0.5H ₂ 0) was dehy-
of saturated solution for analyses were drated by wasning with according to how by
5-10 g of saturated solution were heated
is a construct out of the second se
with about 10 cm ³ of 10 % KOH solution for The solvent was purified and dried by
with about 10 cm ³ of 10 % KOH solution for 1-3 hours to obtain quantitative separation of solid La(OH) ₃ and a basic F ⁻ solution.
with about 10 cm ³ of 10 % KOH solution for 1-3 hours to obtain quantitative separation of solid La(OH) ₃ and a basic F ⁻ solution. La(OH) ₃ was filtered, washed and dissolved
with about 10 cm ³ of 10 % KOH solution for 1-3 hours to obtain quantitative separation of solid La(OH) ₃ and a basic F ⁻ solution. La(OH) ₃ was filtered, washed and dissolved with HCl. La was determined several times by complexometric titration using a
<pre>with about 10 cm³ of 10 % KOH solution for 1-3 hours to obtain quantitative separation of solid La(OH)₃ and a basic F⁻ solution. La(OH)₃ was filtered, washed and dissolved with HCl. La was determined several times by complexometric titration using a potentiometric method (1). The fluoride</pre> The solvent was purified and dried by standard methods.
with about 10 cm ³ of 10 % KOH solution for 1-3 hours to obtain quantitative separation of solid La(OH) ₃ and a basic F ⁻ solution. La(OH) ₃ was filtered, washed and dissolved with HCl. La was determined several times by complexometric titration using a
<pre>with about 10 cm³ of 10 % KOH solution for 1-3 hours to obtain quantitative separation of solid La(OH)₃ and a basic F⁻ solution. La(OH)₃ was filtered, washed and dissolved with HCl. La was determined several times by complexometric titration using a potentiometric method (1). The fluoride content of the basic filtrate was determined photometrically using Al-Eriochrome cyanine color lake (2).</pre> The solvent was purified and dried by standard methods. The solvent was purified and dried by standard methods. ESTIMATED ERROR: Soly: results for which rel error exceeded 50% were rejected. The reported value is a mean of at least two detns.
<pre>with about 10 cm³ of 10 % KOH solution for 1-3 hours to obtain quantitative separation of solid La(OH)₃ and a basic F⁻ solution. La(OH)₃ was filtered, washed and dissolved with HCl. La was determined several times by complexometric titration using a potentiometric method (1). The fluoride content of the basic filtrate was determined photometrically using Al-Eriochrome cyanine color lake (2).</pre> The solvent was purified and dried by standard methods. The solvent was purified and dried by standard methods. ESTIMATED ERROR: Soly: results for which rel error exceeded 50% were rejected. The reported value is a mean of at least two detns. Temp: nothing specified.
<pre>with about 10 cm³ of 10 % KOH solution for 1-3 hours to obtain quantitative separation of solid La(OH)₃ and a basic F⁻ solution. La(OH)₃ was filtered, washed and dissolved with HCl. La was determined several times by complexometric titration using a potentiometric method (1). The fluoride content of the basic filtrate was determined photometrically using Al-Eriochrome cyanine color lake (2).</pre> ESTIMATED ERROR: Soly: results for which rel error exceeded 50% were rejected. The reported value is a mean of at least two detns. Temp: nothing specified. REFERENCES:
<pre>with about 10 cm³ of 10 % KOH solution for 1-3 hours to obtain quantitative separation of solid La(OH)₃ and a basic F⁻ solution. La(OH)₃ was filtered, washed and dissolved with HCl. La was determined several times by complexometric titration using a potentiometric method (1). The fluoride content of the basic filtrate was determined photometrically using Al-Eriochrome cyanine color lake (2).</pre> ESTIMATED ERROR: Soly: results for which rel error exceeded 50% were rejected. The reported value is a mean of at least two detns. Temp: nothing specified. REFERENCES:
<pre>with about 10 cm³ of 10 % KOH solution for 1-3 hours to obtain quantitative separation of solid La(OH)₃ and a basic F⁻ solution. La(OH)₃ was filtered, washed and dissolved with HCl. La was determined several times by complexometric titration using a potentiometric method (1). The fluoride content of the basic filtrate was determined photometrically using Al-Eriochrome cyanine color lake (2).</pre> ESTIMATED ERROR: Soly: results for which rel error exceeded 50% were rejected. The reported value is a mean of at least two detns. Temp: nothing specified. REFERENCES: 1. Schilbach, U.; Kirmse, E. M. Z. Chem. <u>1974</u> , 14, 484. 2. Schilbach, U.; Hetze, I.; Kirmse, E. M.
<pre>with about 10 cm³ of 10 % KOH solution for 1-3 hours to obtain quantitative separation of solid La(OH)₃ and a basic F⁻ solution. La(OH)₃ was filtered, washed and dissolved with HCl. La was determined several times by complexometric titration using a potentiometric method (1). The fluoride content of the basic filtrate was determined photometrically using Al-Eriochrome cyanine color lake (2).</pre> ESTIMATED ERROR: Soly: results for which rel error exceeded 50% were rejected. The reported value is a mean of at least two detns. Temp: nothing specified. REFERENCES: 1. Schilbach, U.; Kirmse, E. M. Z. Chem. <u>1974</u> , 14, 484.

·····	
COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Lanthanum fluoride; LaF ₃ ; [13709-38-1]	Kirmse, E. M.
(2) Urea; CH ₄ N ₂ O; [57-13-6]	Wiss. Hefte, Paed. Inst. Koethen 1978, 2, 85–90.
(3) Pyridine; C5H5N; [110-86-1]	
VARIABLES:	PREPARED BY:
Room temperature : T/K = 291-294	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of LaF_3 at room temperature in reported to be	pyridine saturated with urea was
1.	2×10^{-2} mass %
The urea content was not given.	
The solid phase was dried in a desiccator ove found to be about 1:3.	r P_40_{10} and its La:F ratio was
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS;
Isothermal method. About 100 mg of LaF3 and	La ₂ 0 ₃ (source and purity not specified) was
10-20 cm ³ of solvent mechanically agitated at room temperature (18-22°C) for 100 hours.	dissolved in HCl and the fluoride precipitat- ed with HF. The ppt (LaF3.0.5H20) was dehy-
Samples of saturated solution for analyses	drated by washing with acetone followed by drying at 310°C for 120 hours.
were obtained by decantation or by centri- fuging. 5-10 g of saturated solution were	
heated with about 10 cm^3 of 10 % KOH to obtaine quantitative separation of solid	The other components were purified and dried by standard methods.
La(OH) ₃ and a basic F ⁻ solution. The solid	
$La(OH)_3$ was filtered, washed and dissolved with HCl. La was determined several times	
by complexometric titration using a	
potentiometric method.(1).	ESTIMATED ERROR:
The reported solubility is the mean of at least two determinations.	Nothing specified.
	REFERENCES:
	1. Schilbach, U.; Kirmse, E. M. Z. Chem.
	<u>1974</u> , <i>14</i> , 484.
	 Schilbach, U.; Hetze, I.; Kirmse, E. M. Chemia Analityczna <u>1975</u>, 20, 33.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Lanthanum fluoride; LaF ₃ ;	Galkin, N. P.; Shishkov, Yu. D.
[13709-38-]]	Khomyakov, V. I.
(2) Acidic nitrosyl fluoride; NOF.3HF;	Radiokhimiya <u>1978</u> , 20, 136–41; Soviet Radiochem. (Engl. Transl.)
[14947-17-2]	1978, 20, 109–13.
[19947 17 1]	,,,
VARIABLES:	PREPARED BY:
Room temperature	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of LaF3 in acidic nitrosyl flu	oride at room temperature was reported to be
0.05 mass %	
The molality calculated by the compiler is	
2.6×10^{-3} mol	kg ⁻¹
	0
	· · · · · · · · · · · · · · · · · · ·
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method employed. The solute-	LaF ₂ was at least 99 % pure.
solvent mixture was placed in a Teflon	
vessel and mechanically agitated at room	NOF.3HF prepared by saturation of liquid
temperature for 10 h. The reaction mixture	HF with NOF, and was distilled twice at
was allowed to settle for 24 h and the super- natant saturated solution was analysed for	95°C before use. The melting point of acidic nitrosyl fluoride was 3.8°C.
the La content. An aliquot was evaportated	acture microsyr riddride was 5.0 C.
to dryness under vacuum at 100-150°C, and	
the dry residue dissolved and analysed (the	
method of analysis not specified).	
The solid phase is LaF_3 as found by analyses for F,N,HF and La.	
IUL Fyllynir and Da.	ESTIMATED ERROR:
]	Nothing specified.
	1
	DEPERENCING
	REFERENCES :
	l i
1	

Lantnahur	m Fluoride 73
COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Lanthanum fluoride; LaF ₃ ;	Kirmsę, E. M.
[13709-38-1] (2) Urea; CH ₄ N ₂ O; [57-13-6]	Wiss. Hefte, Paed. Inst. Koethen
(3) Water; H ₂ O; [7732-18-5]	<u>1978</u> , 2, 85-90.
VARIABLES:	PREPARED BY:
Room temperature	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of LaF3 in 46% aqueous solution	on of urea at room temperature
was reported to be 9	x 10 ⁻³ mass %
m	
The solid phase was dried in a desiccator over found to be about 1:3.	$r P_4 U_{10}$ and its La:F ratio was
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS: La $_{2}O_{3}$ (source and purity not specified) was
Isothermal method. About 100 mg LaF ₃ and $10-20 \text{ cm}^3$ of solvent mechanically agitated at room temperature for 100 hours. Samples of saturated solution for analyses were	dissolved in HCl and the fluoride precipitat- ed with HF. The ppt (LaF3.0.5H20) was de- hydrated by washing with acetone followed by drying at 310°C for 120 hours.
obtained by decantation or by centrifuging. 5-10 g of saturated solution were heated with about 10 cm ³ of 10 % KOH solution for 1-3 hours to obtain quantitative separation of solid La(OH) ₃ and a basic F ⁻ solution. $24(0H)^{-1}$	The other components were purified and dried by standard methods.
La(OH) ₃ was filtered, washed and dissolved with HC1. La was determined several times	
by complexometric titration using a potentio- metric method (1). The fluoride content of	ESTIMATED ERROR:
the basic filtrate was determined photo- metrically using Al-Eriochrome cyanine color lake (2).	Soly: results for which rel error exceeded 50% were rejected. The reported value is a mean of at least two detns. Temp: nothing specified.
	REFERENCES: 1. Schilbach, U.; Kirmse, E. M. Z. Chem. <u>1974</u> , 14, 484.
	 Schilbach, U.; Hetze, I.; Kirmse, E. M. Chemia Analityczna <u>1975</u>, 20, 33.

COMPONENTS: (1) Lanthanum	chloride;	LaCl ₃ ;		Shevt			, B.G.; Safonov, , V.I.
[10099-58 (2) Hexachlo [87-68-3]		diene; C ₄ Cl ₆ ;		zh. N	eorg. Khim . Chem. (E	. 1968, 13,	3096-9; Russ, J. .) <u>1968</u> , 13,
VARIABLES:	·			PREPAR	ED BY:		
Temperature				T. Mi	oduski and	M. Salomon	
EXPERIMENTAL V	ALUES:			l			
Composition, o	lensities,	viscosities an	d refra	active :	indices of	saturated s	solutions.
		ility ^a					nature of the
t/ ^o c	mass %	mol kg ⁻¹	d/g c	em ⁻³	n/P	n _D ²⁰	solid phase
25	0.040	0.00163	1.681	-	0.0382	1.5564	LaCl3.4H20
50	0.042	0.00171	1.642	2	0.0305	1.5554	LaCl3.4H20
75	0.057	0.00233	1.614	ŀ	0.0244	1.5547	LaC13.2H20
^a Molaliti	ies calcula	ted by the com	pilers.				
		AUX	ILIARY	INFORM	ATION		
equil was esta 10 d at 50°C, Chloride was of lanthanum det ting as the or oxide. Lantha with Trilon B The composition tablished by of ed by X-ray an Samples of the thermographics solvent by was which is claim tion of hydrat Authors state phase is the r	thod used. ablished af and 7 d at detd by the d gravimetic calate and with Xylen on of the s chemical an halysis. e solid pha ally after shing with med not to to that at 110 monohydrate o. At 120	Depending on ter 12 d at 25 75°C. Volhard metho cically by prec igniting to th so detd by tit e Orange indic olid phase was alysis, and co ses were also removal of exc absolute ethyl change the com 0°C the equil , but no solub C partial hydr	C, d, and ipita - e ration ator. es- nfirm- studied ess ether posi- solid ility	LaCl ₃ evapo: ized a pure, rare (%), an hydra: La 37 Purif: the fg and n ESTIMA	TH20 preparating and dried is contained dried is contained earth metal and Cu (0.01) and Cu (0.02) a	cooling, ar in a desicce oxide impun is, Fe (0.01 %). Analys e following 67; H ₂ 0 33. c (method no roperties: c 3.	<pre>ving La₂O₃ in HCl, nd then recrystal- ator. La₂O₃, 99.9% rities of other L%), Ca (0.01-0.05 sis of the hepta- (in mass % units): .91. ot₂specified) had i₄ = 1.6807 g/ml,</pre>

Coverage	
COMPONENTS:	ORIGINAL MEASUREMENTS: Golub, A.M.; Yankovich, V.N.
<pre>(1) Lanthanum chloride; LaCl₃; [10099-58-8]</pre>	Ukr. Khim. Zh. <u>1977</u> , 43, 1139-42;
(2) Methanol; CH ₄ 0; [67-56-1]	Ukr. J. Chem. (Engl. Transl.) <u>197</u> 7, 43 , 16–20.
(3) Benzene; C ₆ H ₆ ; [71-43-2]	
VARIABLES:	PREPARED BY:
Concentration of CH_3OH T/K = 295	T. Mioduski
EXPERIMENTAL VALUES:	L
Initial Concn	8
Methanol	LaCl 3 solubility ^a
mol dm ⁻³	mol dm ⁻³
	0.00225
1.0	
1.5	0.00580
2.0	0.01017
2.5	0.01600
3.0	0.02350
3.5	0.03155
4.0	0.04169
^a Solid phase is LaCl ₃ .CH ₃ C	
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method used as described in (1). Solvent mixtures of known alcohol concentra- tion were saturated with anhydrous LaCl ₃ at $22 \pm 1^{\circ}$ C. Equilibrium was confirmed from constancy of the rare earth metal concentra- tion upon repeated analyses.	SOURCE AND PURITY OF MATERIALS: Source and purity of LaCl ₃ not specified. Anhydrous LaCl ₃ prepared by method described in (2). C.p. grade organic solvents were purified by "known" methods (3).
Liquid phases were analysed for rare earth metal concentration (method not specified). At least 3 separate experiments were carried out for each system studied. In addition, the solid phases were analysed for several arbitrary experimental points (method not	
specified).	ESTIMATED ERROR:
	Soly: nothing specified.
	Temp: precision <u>+</u> 1 K.
	 REFERENCES: 1. Golub, A.M.; Golovorushkin, V. I. Zh. Neorg. Khim. 1968, 13, 3194. 2. Spedding, F.H.; Doan, A.H. J. Am. Chem. Soc. 1952, 74, 2783. 3. Kolotyrkin, Ya.M. (ed). Electrochemistry of Metals in Nonaqueous Solutions. Khimiya Press. Moscow, 1974. p 440.

Lanthanum Chlorid

		Lanthanui	m Chloride	
COMPONENTS:	<u></u>	<u> </u>		EASUREMENTS:
(1) Lanthan [10099-5	num chloride; LaCl ₃ ; 58-8]			.M.; Yankovich, V. N. m. Zh. <u>1977</u> , 43, 1139-42;
(2) Alcohol	Ls; ROH			Chem. (Engl. Transl.)
(3) Benzene	e; C ₆ H ₆ ; [71-43-2]		<u>1977</u> , 43	, 16 - 20.
VARIABLES:		<u> </u>	PREPARED E	Y:
Concentration	n of ROH		M. Salom	on and T. Mioduski
Т/К = 295				
EXPERIMENTAL Numerical da this system) equation			- CH ₃ OH - (nted graphi Cl ₃ .nROH] /	C ₆ H ₆ system (see the compilation cally and in the form of the IROH] ⁿ [1]
alcohol concerent. 1). According to the concernment of LaCl, can be	entration in units o cording to this equa the solubility, log calculated as a fun	the solubili f mol dm ⁻³ , a tion, n is ca [LaCl ₃ .nROH] ction of ROH	ity in unit; and n is the alculated f: , against concentrat;	s of mol dm ⁻³ , [ROH] is the <u>total</u> e solvate number <u>in solution</u> (see rom the slope of a plot of the log [ROH]. Thus the solubility ion using the reported values of were varied from 1-5 mol dm ⁻³ .
alcohol		n	-log K	nature of the solid phase
methanol; CH	4 ⁰ ; [67-56-1]	2	2.58	LaC13.CH30H
ethanol; C ₂ H	6 ⁰ ; [64-17 - 5]		2.05 2.57	LaCl ₃ .3C ₂ H ₅ OH
1-propanol;	с ₃ н ₈ 0; [71-23-8]	1	2.10	LaCl ₃ .3C ₃ H ₇ OH
For those sys LaCl ₃ is obta	stems where two valu			ted, the overal solubility of] which give the greater
For those sys	stems where two valu		are repor	ted, the overal solubility of
For those sys LaCl ₃ is obta	stems where two valu	alues for n-H	are repor	ted, the overal solubility of] which give the greater
For those sy LaCl ₃ is obt solubility. METHOD/APPARA Isothermal ma Solvent mixt tion were sa 22 <u>+</u> 1°C. E constancy of tion upon rej Liquid phase metal concern	stems where two valu ained by using the v ATUS/PROCEDURE: ethod used as descri ures of known alcoho turated with anhydro quilibrium was confi the rare earth meta peated analyses. s were analysed for tration (method not	AUXILIARY bed in (1). l concentra- us LaCl ₃ at rmed from l concentra- rare earth specified).	(are repor (in eq. [] INFORMATIO SOURCE ANI Source an Anhydrous in (2). C.p. grav	ted, the overal solubility of] which give the greater
For those sy LaCl ₃ is obt solubility. METHOD/APPARA Isothermal m Solvent mixtu tion were sat 22 ± 1°C. Ex constancy of tion upon rej Liquid phase metal concern At least 3 so out for each the solid ph arbitrary po	stems where two valu ained by using the v ATUS/PROCEDURE: ethod used as descri ures of known alcoho turated with anhydro quilibrium was confi the rare earth meta peated analyses. s were analysed for	AUXILIARY bed in (1). 1 concentra- us LaCl ₃ at rmed from 1 concentra- rare earth specified). were carried addition, or several	(are repor (in eq. [] INFORMATIO SOURCE ANI Source an Anhydrous in (2). C.p. grau by "known	N O PURITY OF MATERIALS: nd purity of LaCl ₃ not specified. s LaCl ₃ prepared by method descri de organic solvents were purified n" methods (3).
For those sy LaCl ₃ is obt solubility. METHOD/APPARA Isothermal m Solvent mixtu tion were sat 22 ± 1°C. Ex constancy of tion upon rej Liquid phase metal concern At least 3 so out for each the solid ph arbitrary po	stems where two valu ained by using the v ATUS/PROCEDURE: ethod used as descri ures of known alcoho turated with anhydro quilibrium was confi the rare earth meta peated analyses. s were analysed for tration (method not eparate experiments system studied. In ases were analysed f ints of each series	AUXILIARY bed in (1). 1 concentra- us LaCl ₃ at rmed from 1 concentra- rare earth specified). were carried addition, or several	(are repor (in eq. [1 INFORMATIO SOURCE ANI Source an Anhydrous in (2). C.p. grad by "known ESTIMATED Soly: no	N D PURITY OF MATERIALS: nd purity of LaCl ₃ not specified. s LaCl ₃ prepared by method descri de organic solvents were purified n" methods (3). ERROR:

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2017	
COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Lanthanum chloride; LaCl ₃ ; [10099-58-8]	Merbach, A.; Pitteloud, M. N.; Jaccard, P. Helv. Chim. Acta <u>1972</u> , 55, 44-52.
(2) Methanol; CH ₄ 0; [67-56-1]	Pitteloud, M.N. These. Faculte des Sciences de l'Universite des Lausanne. <u>1971</u> .
VARIABLES:	PREPARED BY:
T/K = 273.2, 298.2, 323.2	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	L
501	ability LaCl ₃ /mol kg ⁻¹
t/ ^o C	a b
0	2.23
-	2.45 2.44
25	
50	2.98
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method as in (1,2). Mixtures were equilibrated for at least 4 days. Prolonged operations were performed in a dry box. Lanthanum determined by titration with $(NH_4)_3H(EDTA)$ using a small amount of urotropine buffer and Xylenol Orange indica- tor. Chloride was determined by potentio- metric titration with AgNO ₃ solution. Com- position of the adduct LaCl ₃ .4CH ₃ OH confirm- ed by ¹ H NMR and x-ray diffraction.	HCl to produce the heptahydrate. The adduct LaCl ₃ .4CH ₃ OH prepared by dissolving the hep- tahydrate in a small excess of o-methyl- formate followed by distillation and crystal- lization from methanol. The anhydrous salt prepared by dehydration as described in (3). Methanol was purified and dried by the Vogel
The reported solubilities are mean values of 2-4 determinations. COMMENTS AND/OR ADDITIONAL DATA: Reference (3) was incorrectly cited in the source paper as: J. Inong. Nucl. Chem. <u>1958</u> , 7, 224 (this is the reference to a paper by J. H. Freeman and M. L. Smith which describes the preparation of anhydrous salts by treat- ment with thionyl chloride). Reference (3) Was corrected by the compilers.	 method. ESTIMATED ERROR: Soly: precision ± 0.5% as in (1) (compilers). Temp: precision probably at least ± 0.05 K as in (1) (compilers). REFERENCES: I. Brunisholz, F.; Quinche, J. P.; Kalo, A. M. Helv. Chim. Acta 1964, 47, 14. Platt, R. Chimia 1952, 6, 62. Taylor, M. D.; Carter, C. P. J. Inorg. Nucl. Chem. 1962, 24, 387 (see COMMENTS

COMPONENT					NAL MEASURE	MENTS:	
(1) Lar [10	thanum chlorid 099-58-8]	e; LaCL ₃ ;		-	, F. E. ers Thesis.		
(2) Eth	nanol; C ₂ H ₆ 0; [64-17-5]				llinois. Urba	na, IL. <u>1932</u> . ¹
(2) 10.					·		
VARIABLE	S:			PREPA	RED BY:	<u></u>	
Temperat	ure			M. S	alomon and ?	f. Mioduski	
experime t/ ^o C	NTAL VALUES: g La ₂ 0 ₃ in 10 experimental	cc satd sln average ^a		nsity, ptl	/g cm ⁻³ av ^a	solubility mol dm ⁻³	of LaCl3 ^{a,b} mol kg ⁻¹
0	1.8753 1.8297	1.8525	1.	0487		1.1372	1.0844
10 10	2.0314 2.0547	2.0431	1.	0774		1.2541	1.1640
15 15	2.1682 2.1017	2.1350				1.3106	
20 20	2.8246 2.8337	2.8292		1751 1747	1.1749	1.7367	1.4782
25 25	2.7874 2.7534	2.7704		1697 1689	1,1693	1.7006	1.4544
25 [°] 25 [°]	2.9355 2.9252	2.9304		1839 1835	1.1837	1.7989	1.5196
30 30	2.7338 2.7384	2.7361		1510 1509	1.1510	1.6796	1.4593
40 40	2.8743 2.8707	2.8725		1719 1718	1.1719	1.7633	1.5047
40 [°]	3.6374					2.2328	
50 50	4.4695 4.4747	4.4721		4100 4102	1.4101	2.7452	1.9468
c. Repe temp	at analyses af	ilers. b. From a ter lowering temp: irst to 40°C, then ria.	comp	ilers	presume that	it after reach:	ing 50°C, the
i 				INFOR	MATION		
bottles mostat f by placi neck of for at 1 quots re with the ethanol, with oxa and igni sities m states 1 values. (1) star the next to a low and etha The resu (i.e. by values (solid we <i>ture not</i> in vac or	and mechanical for at least 24 or at least 24 ing rubber tubi- each bottle. east 12 h and moved with pip s sln. Analyse addn of water lic acid. The ted to const m measured with a coss by evapn r Soly detns us ting at 0°C an detn, and (2) rer temp for a mol added to t lits of the sec cooling) resu see table). S ree taken for a to specified. To over P205, weig	pure: d in 250 cc stoppe: ly agitated in a th h. Bottles were so ng over the stoppe: Slns allowed to set duplicate 10 cc al: et previously rins, s performed by evan , and pptn of lanth oxalate was filte: ass as the oxide. pycnometer, but an esulted in slightly ing single bottle b d raising the temp by cooling the bots second analysis. She bottle as needed ond duplicate analy lted in higher soly everal samples of nalyses, but <i>tempe</i> hese samples were hed, converted to the oxide. Two	her- ealed r and ttle ed of hanum red Den- uthor y low by for ttle Salt d. y y the ta- dried	of ad Cryst room until salt analy found (i.e. with ESTIN Soly Temp: REFEI 1. S we He	HCl, and e cals dried i temp follow anhydr sal ed in a vac was analyse rsis (oxalat given: press a. Ethanol source and anhydr Na ₂ S IATED ERROR: precision (compilers precision ENCES: Some of the ere publishe opkins, B. S	n atm of dry H red by slow head t obtained. S desiccator over ed for H ₂ O by a ce-oxide method mably little of obtained from a purity unknow SO4.	bint of crystn. HCl for 24 h at ating in dry HCl The salt was er P205. The gravimetric 1), but results or no water the stock room m) was dried h ± 5% s's Thesis form by proc. Natl.
analyses		1.39 molecules of					

Lantnanu	n Chionae /
COMPONENTS: (1) Lanthanum chloride; LaCl ₃ ; [10099-58-8] (2) Ethanol; C ₂ H ₆ O; [64-17-5] VARIABLES: T/K = 273.2, 298.2, 323.2	ORIGINAL MEASUREMENTS: Merbach, A.; Pitteloud, M. N.; Jaccard, P. Helv. Chim. Acta <u>1972</u> , 55, 44-52. Pitteloud, M.N. These. Faculte des Sciences de l'Universite des Lausanne. <u>1971</u> . PREPARED BY: T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	L
t/°C 0 25 50 a. Initial solid was LaCl ₃ .3C ₂ H ₆ O. Equilibra to contain 3.6 moles ethanol per mole of b. Initial solid was anhydrous LaCl ₃ . The e analysed.	-
	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method as in (1,2). Mixtures were equilibrated for at least 4 days. Prolonged operations were performed in a dry box. Lanthanum determined by titration with (NH ₄) ₃ H(EDTA) using a small amount of urotropine buffer and Xylenol Orange indica- tor. Chloride was determined by potentio- metric titration with AgNO3 solution. Com- position of the adduct LaCl _{3.3} C ₂ H ₆ O confirm- ed by ¹ H NMR and x-ray diffraction. The reported solubilities are mean values of 2-4 determinations. COMMENTS AND/OR ADDITIONAL DATA: Reference (3) was incorrectly cited in the source paper as: J. Inorg. Nucl. Chem. <u>1958</u> , 7, 224. (this is the reference to a paper by J. H. Freeman and M. L. Smith which describes the preparation of anhydrous salts by treat- ment with thionyl chloride). Reference (3) was corrected by the compilers.	<pre>SOURCE AND PURITY OF MATERIALS; La₂O₃ of at least 99.9% purity dissolved in HCl to produce the heptahydrate. The adduct LaCl₃.3C₂H₆O prepared by dissolving the hydrate in a small excess of o-ethylformate followed by distillation and crystallization from ethanol. The anhydrous salt was prepared by dehydration as described in (3). Ethanol (Fluka) was used as received. Purity and absence of water was confirmed by MMR method. ESTIMATED ERROR: Soly: precision ± 0.5% as in (1) (compilers). Temp: precision probably at least ± 0.05 K as in (1) (compilers). REFERENCES:</pre>

COMPONENTS:				ORIGINAL MEASURE	EMENTS :	
(1) Lanth [1009	anum chloride 9-58-8]	; LaCl ₃ ;		Sakharova, N.N. Ezhova, T.A.; 1		
(2) Ethan	o1; C ₂ H ₆ 0; [64-17-5]		Zh. Neorg. Khin	n. <u>1975</u> , 20, 1	479-83; Russ. J.
(3) Water	; н ₂ 0; [7732	-18-5]		Inorg. Chem. (1 830-2.	ingl. Transl.)	<u>1975</u> , 20,
VARIABLES:				PREPARED BY:		
Temperature	2			T. Mioduski and	l M. Salomon	
EXPERIMENTA	L VALUES:	·	I		<u> </u>	
	solubility	of LaC1 ₃ .6H ₂ 0		2 5		
	sample 1	sample 2	sample	3 sample 4	mean solub	
t/°C	g/100 g ^b	g/100 g	g/100 g	g/100 g	g/100 g	mol kg ^{-1c}
20	40.05	40.23	39.82	40.23	40.08	1.134
30	44.30	44.25	44.18	44.21	44.23	1.252
40	48.70	48.73	48.99	48.66	48.69	1.378
50	56.42	56.38	56.59	56.61	56.50	1.599
60	71.25	71.14	71.14	71.36	71.23	2.016
^a It is not ethanol.	clearly stat	ed whether the	e mixture	is 96.8 mass %	ethanol or 96	.8 volume %
^b Solubiliti	les reported	as grams of h	exahydrat	e in 100 g of so	lvent.	
c _{Molalities}	calculated	by the compile	ers.			
						i.
		A	UXILIARY	INFORMATION		
METHOD APPA	RATUS / PROCEDU			SOURCE AND PURI	TY OF MATERIAL	ç.
		Equilibrium	was	LaCl ₃ .6H ₂ O prep	d by dissolvi	ng c.p. grade
reached aft	er 3-4 h. I	dentical resul	lts			wed by evapn and ried in a desic-
		equilibrium : f the data po:		cator over CaCl	2, P_2O_5 and N	aOH. The
the table o	btained after	r 3 hours of e	equilibra	crystals analys Trilon B, and f		tal by titrn with Volhard method.
	he remaining r 4 h of equ	two data point ilibration.	nts ob-	Found (%) for L	a: 39.20, 39.	39 (calcd 39.33).
	-					08 (calcd 30.16). nged boiling of
		ch aliquot tal by complexome		c.p. grade 93.5	% ethanol wit	h anhydr CuSO ₄
	with Trilon B			followed by dis fractometricall		
		withdrawn at 2		ESTIMATED ERROR		
		e solid phase thanol was not		Soly: results a <u>+</u> 0.8% (c	pparently pre ompilers).	cise to within
in any of t	the solid phase	ses.	1	Temp: nothing s	pecified.	
The hexahyd	lrate melted a	at 93.9 - 94.5	5°C.	REFERENCES:		

COMPONENTS :				OBTO	TNAL MEACH		
	anum chloride; L	aC1 :		UKIG	INAL MEASUR	CEMENTS:	
[1009	9-58-8]	aor3,		Rac	ster, L.V.		
	thanediol (ethyl 2; [107-21-1]	ene glycol);			ters Thes <i>is</i> versity of		Urbana, IL. <u>1932</u> . ¹
VARIABLES:	· <u></u>			PPFP	ARED BY:	<u> </u>	
Temperatur	P					T. Mioduski	L
	-						
EXPERIMENTA	L VALUES: La ₂ 0 ₃ in 10 cc	of satd sln	dens	ity/§	; cm ⁻³	solubility	v of LaCl ₃ ^{a,b}
t/°C e	xperimental	average ^a	expt	1	av ^a	mol dm ⁻³	mol kg ⁻¹
	.9275 .8410	1.8843	1.35			1.1567	0.8518
	.1165 .0950	2.1058	1.38			1.2926	0.9329
	.1443 .1488	1.1466	1.25 1.25		1.2597	0.7038	0.5587
	.7345 .7810	2 /5/8	1.43 1.43		1.4356	1.6929	1.1792
	.1325 .9720	3 0523	1.45 1.46		1.4570	1.8736	1.2860
	.0810 .9565	3.0188	1.44 1.44		1.4413	1.8531	1.2858
	.5923 .6240	2,6082				1.6010	
		The sol	id pł	nase '	was not ana	alysed.	
		AUXILI	ARY	INFOR	MATION	· · · · · · · · · · · · · · · · · · ·	
LaCl ₃ and a stoppered b for 24 h. and neck of with a rubb entering th for 12-18 h particularl At 60°C sln appeared di late possib solvent. R approximate pipetted fr aliquot dil earth pptd The oxalate as the oxid pycnometric at each tem may be high	RATUS/PROCEDURE: solvent placed in pottle and mechan Rubber tubing pl bottle and end ber stopper to pr he bottle. Slns a, but slight tur y at the lowest a turbidity was s fferent leading le reaction betw desults at 50°C a . Duplicate 10 rom the bottle fo uted with 25 cc as the oxalate w was filtered, i e. Densities of ally using pycno p. Densities at due to the cond e surface of the	ically agitated aced over stopp of tubing seale event water fro allowed to sett bidity persists and highest ter ignificant and author to spece een solute and nd 60°C said to cc aliquots r each temp. He H2O and the rar ith oxalic acid gnited and weig satd slns detd neter calibrate 10°C and 15°C ensation of atm	d per ed oom tle ed, mps. o be Cach ce 1. ghed 1 ad	LaCl La20 Crys (2). grav init: init: seald ESTIN Soly: Temp REFEI 1. So 11 Qu	3 prepd by 3, and evap tals dehydr Salt anal imetrically ion to the found. Eth y not speci- tal 5% of d tiled solve ed with par ATED ERROR Precision accuracy Not speci- ENCES: ome data fr til, L. L. 33, 19, 64	nn of solven ated by met ysed for pr by convers oxide. No ylene glyco dified) was distillate d nt was stor affin. : no better f is probably fied. om Racster's aphical for <i>Proc. Natl.</i>	to spectro-pure t until crystn. hod of Kremers esence of H ₂ O ion to oxalate and water of crystn l (source and distilled and iscarded. The ed in a flask than ± 3%, and poor (compilers).
					emers, H.C 8.	. J. Am. Che	um. Soc. <u>1925</u> 17,

COMPONENTS :		ORIGINAL MEASUREME	NTS:
 Lanthanum chlor: [10099-58-8] (2) 1-Propanol; C₃H 	5	West, D.H. Masters Thesis. University of Ill	inois. Urbana, IL. <u>1932.¹</u>
VARIABLES:		PREPARED BY:	
Temperature		M. Salomon and T.	Mioduski
EXPERIMENTAL VALUES:			
g L	a ₂ 0 ₃ in 10 cc of saturate	ed sln	solubility of LaCl ₃ ^{a,b}
t/°C sampi	2 3	averagea	mol dm ⁻³
10 1.80	57 1.8263	1.8160 ^c	1.1148
20 2.00	97 2.0251	2.0174	1.2384
30 2.36	41 2.3763	2.3702	1.4550
40 2.80	13 2.7879	2.7946	1.7115
	npilers from average mass 146 g for this average. The solid pl	nase was not analys	ed.
	AUXILIARY	INFORMATION	
and excess salt place pered bottle, and rul the stopper and neck rubber bung fitted in tubing to prevent lea bottle. The bottle v mostat and mechanical 12 h. The saturated mitted to settle for duplicate 10 cc aliq Water was added to th heated and oxalic act the rare earth oxalat	About 100 cc of alcohol ad in 250 cc glass stop- ober tubing placed over of the bottle and a nto the open end of the akage of water into the was immersed in a ther- lly agitated for at least solutions were then per- a minimum of 12 h, and nots removed with a pipet the aliquots and the sln id added to precipitate te. The precipitate was a distilled water, and	La ₂ 0 ₃ , and evapor which crystallize was dried in a st increasing the te stored in cork-st desiccator over P sion to the oxala oxide showed the cial alcohol plac then distilled: the were discarded. negative. ESTIMATED ERROR: Soly: precision p (compilers) Temp: precision ± REFERENCES: 1. Some data fro lished in grap	dn of HCl to spectro-pure ating the sln to a paste d upon cooling. The hydrate ream of dry HCl by slowly mp. The anhyd salt was oppered bottles in a $_{2}0_{5}$. Analysis by conver- te and ignition to the salt to be anhydr. Commer- ted over Ca0 for 1 week and he first and last 15-20 cc CuSO ₄ test for H ₂ 0 was robably within \pm 3 %.

COMPONENTS:		ORIGINAL MEASU	REMENTS :
 Lanthanum chloride; LaCl₃ [10099-58-8] 2-Propanol; C₃H₈0; [67-6 		West, D.H. Masters Thesi	
VARIABLES:		PREPARED BY:	
Temperature		M. Salomon and	d T. Mioduski
EXPERIMENTAL VALUES:	<u></u>	<u> </u>	
g La ₂ 0 ₃ in 10 cc t/°C sample 1 s		n average ^a	solubility of LaCl ₃ ^{a,b} mol dm ⁻³
t/°C sample 1 s	ample 2	average	
10 0.0283 0	.0269	0.0276	0.0169
20 0.0335 0	.0319	0.0327	0.0201
30 0.0656 0	.0642	0.0649	0.0398
40 0.0884 0	.0906	0.0895	0.0549
	AUXILIARY	INFORMATION	
THOD/APPARATUS/PROCEDURE: Isothermal method. About 100 c and excess salt placed in 250 c pered bottle, and rubber tubing the stopper and neck of the bot rubber bung fitted into the ope tubing to prevent leakage of wa pottle. The bottle was immerse mostat and mechanically agitate 12 h. The saturated solutions mitted to settle for a minimum duplicate 10 cc aliquots remove pipet. Water was added to the the sln heated and oxalic acid	g placed over the and a en end of the ter into the ed in a ther- ed for at least were then per- of 12 h, and ed with a aliquots and	LaCl ₃ prepd by La ₂ O ₃ , and eva which crystall drate was drie slowly increas was stored in desiccator ove sion to the ox showed the sal alcohol placed distilled: the	ITY OF MATERIALS: addn of HCl to spectro-pure porating the sln to a paste ized upon cooling. The hy- d in a stream of dry HCl by ing the temp. The anhyd salt cork-stoppered bottles in a r P_00_5 . Analysis by conver- alate and ignition to the oxid t to be anhydr. Commercial over Ca0 for 1 week and then first and last 15-20 cc were $S0_4$ test for H ₂ 0 was negative.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Lanthanum chloride; LaCl ₃ ; [10099-58-8]	Merbach, A.; Pitteloud, M. N.; Jaccard, P. Helv. Chim. Acta <u>1972</u> , 55, 44-52.
(2) 2-Propanol; C ₃ H ₈ O; [67-63-0]	Pitteloud, M.N. These. Faculte des Sciences de l'Universite des Lausanne. <u>1971</u> .
VARIABLES:	PREPARED BY:
т/к = 298.2	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	
Two results were reported for 25 ⁰ C.	
 Starting with LaCl₃.3C₃H₈O, the solubilit The equilibrated solid phase was analysed iso-propanol per mole of LaCl₃. 	y was reported to be 0.004 mol kg ⁻¹ . d and found to contain a 4.5 - 5.1 moles of
2. Starting with the anhydrous salt, the sol The equilibrated solid phase was not anal	ubility was reported to be 0.016 mol kg^{-1} . ysed.
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method as in (1,2). Mixtures were equilibrated for at least 4 days. Prolonged operations were performed in a dry box. Lanthanum determined by titration with $(NH_{4})_{2}H(EDTA)$ using a small amount of urotropine buffer and Xylenol Orange indica- tor. Chloride was determined by potentio- metric titration with AgNO ₃ solution. Com- position of the adduct LaCl ₃ .3C ₃ H ₈ O confirm- ed by ¹ H NMR and x-ray diffraction. The reported solubilities are mean values of 2-4 determinations.	SOURCE AND PURITY OF MATERIALS: La ₂ O ₃ of at least 99.9% purity dissolved in HCl to produce the hepthahydrate. The adduct LaCl ₃ .3C ₃ H ₈ O prepared by dissolving the hydrate in a small excess of o-methylformate followed by distillation and trans-solvation of the methanol complex with 2-propanol. The anhydrous salt was prepared by dehydra- tion as described in (3). Iso-propanol (Fluka) was used as received. Purity and absence of water confirmed by NMR.
	ESTIMATED ERROR: Soly: precision \pm 0.5% as in (1) (compilers).
COMMENTS AND/OR ADDITIONAL DATA: Reference (3) was incorrectly cited in the source paper as: J. Inorg. Nucl. Chem. <u>1958</u> , 7, 224 (this is the reference to a paper by J. H. Freeman and M. L. Smith which des- cribes the preparation of anhydrous salts by treatment with thionyl chloride). Ref- erence (3) was corrected by the compilers.	 Temp: precision probably at least ± 0.05 K as in (1) (compilers). REFERENCES: 1. Brunisholz, P.; Quinche, J. P.; Kalo, A. M. Helv. Chim. Acta <u>1964</u>, 47, 14. 2. Platt, R. Chimia <u>1952</u>, 6, 62. 3. Taylor, M. D.; Carter, C. P. J. Inorg. Nucl. Chem. <u>1962</u>, 24, 387 (see COMMENTS at left).

		La	nthanur	n Chloride		85
COMPON	ENTS :			ORIGINAL MEAS	UREMENTS :	
	Lanthanum chloride; [10099-58-8] 1,2,3-propanetriol C ₃ H ₈ O ₃ ; [56-81-5]	-		Dawson, L. Masters The University	sis.	Urbana, IL. <u>1932</u> . ¹
VARIAB	BLES:			PREPARED BY:		
Tempe	Prature			M. Salomon an	d T. Mioduski	
EXPERI	MENTAL VALUES:			. <u></u>	······	
	g La ₂ 0 ₃ in 25	cc satd sln	dens	ity/g cm ⁻³	solubility	of LaCl ₃ ^{a,b}
t/°C	experimental	average	expt	l ave c	mol dm^{-3}	mol kg ⁻¹
10 10	0.2423 0.2566	0.2495	1.27 1.26	1.2681	0.0613	0.0483
20 20	2.6962 2.6873	2.6918	1.35 1.35	1. 1545	0.6609	0.4862
25 25	2.0927 2.0855	2.0891	1.33 1.33	³⁰ d 1.3332	0.5130	0.3848
30 30	1.3266 1.3287	1.3277	1.31 1.31	1.31/3	0.3260	0.2484
40 40	2.3058 2.3039	2.3049	1.36 1.36	1 (647	0.5659	0.4149
50 50	2.4841 2.4782	2.4812	1.35 1.34		0.6092	0.4515
60 60	2.5302 2.5123	2.5213			0.6191	
b. B c. R	alculated by compile ased on average mass ecalculated by compi alue tabulated in Th	s of La ₂ 0 ₃ . lers. lesis is 1.334		chis is obvious Is not analyse		nical error.
		AUX	ILIARY	INFORMATION		
About stopp salt in the of st	/APPARATUS/PROCEDURE 175 cc glycerol pla ered bottles and "li added. Mixtures mec ermostat for 24 h, a anding turbidity was ses carried out on t	ced in 250 co beral amounts hanically agi nd even after present. Al	s" of Ltated r 15 h	LaCl ₃ prepd l La ₂ 0 ₃ , and ev point of crys carried out t room temp 24	vaporating the stallization. In a stream of h, then at 100	ALS: to spectro-pure solvent to the Dehydration was dry HCl first at 0°C for ~ 12 h, for 3-4 h. HCl

MIO-D*

analyses carried out on turbid slns. For 110°C for ~ 6 h, and 200°C for 3-4 h. prepd from NaCl + H_2SO_4 and passed through H_2SO_4 drying towers. Glycerol (presumably c.p. or A.R. grade: compilers) distilled at analyses, duplicate 25 cc aliquots (from each bottle) were taken and the rare earth pptd as the oxalate. The ppt was filtered, reduced pressure and the "first portion" ignited, and weighed as the oxide. Author states the presence of turbidity has small rejected (no other details given). effect on the overall accuracy of the soly detns. Densities of satd slns determined ESTIMATED ERROR: Soly: based upon precision in analyses and by withdrawing samples from the bottles, placing them into a pycnometer, and weightemp control, overall precision in soly around \pm 3%. Error in accuracy ing "as quickly as possible." COMMENTS AND/OR ADDITIONAL DATA: due to turbidity is unknown. Since there is a sharp rise in soly from Temp: precision ± 0.5K except for the 10°C 10°C to 20°C followed by a sharp decrease to run where precision was \pm 1.5 K. 30°C at which point the soly begins to rise **REFERENCES:** again, it is evident that the solid phase in equil with the satd slns is changing. Unsuc-1. Some of the data from Dawson's Thesis were published in graphical form by cessful attempts were made to isolate and Hopkins, B. S.; Quill, L. L. Proc. Natl. identify the solid phases. Acad. Sci. U.S.A. <u>1933</u>, 19, 64.

<pre>COMPONENTS: (1) Lanthanum chloride; [100000 50 0]</pre>		ORIGINAL ME	ASUREMENTS :
	LaCl ₃ ;	McCarty, C	
[10099-58-8]			
(2) 2-Methoxyethanol (me C ₃ H ₈ 0 ₂ ; [109-86-4]	thyl cellosolve);	University	esis. of Illinois. Urbana, IL. <u>1933</u> . ¹
VARIABLES:	· · · ·	PREPARED BY	:
Temperature		M. Salomon	and T. Mioduski
EXPERIMENTAL VALUES:			
	Composition of Sat	urated Solut	tons
	La203	LaC13 ^b	LaCl ₃ ^b
t/°C	g/25 cc	g/dm ³	mol/dm ³
0	0.5793	34.89	0.1422
10	0.9068	54.61	0.2227
20 30	1.1026 1.2228	66.40 73.64	0.2707 0.3002
40	1.3077	78.75	0.3211
50	1.5886	95.67	0.3901
	AUXILIARY	INFORMATION	
METHOD/APPARATUS/PROCEDURE	:	SOURCE AND	PURITY OF MATERIALS:
Isothermal method. About vent + excess salt were p agitated in a thermostat	: 75-100 cc of sol- laced in bottles and for at least 12 h. the 0°C measurements ith ground glass the atmosphere by over the stoppers and a rubber bung of the tubing. solutions were al- ast 12 h, and using two samples were re- samples were evapora ved in aq HCl and dn of oxalic acid. , washed with dist tant weight as the nd to be insoluble	SOURCE AND Commercial over CaO fo led. A mfd fied) was r flask: b.p. double ammo pic purity" details) an methods. 1. and the exc salt was de ce of dry H then at 200 was pptd fr sodium benz by heating traction th HCl and the in a desicc from NaCl + ing HCl thr REFERENCES: 1. IUPAC Co	solvent was permitted to stand or at least 1 week and then distil- dule portion (fraction not speci- retained and stored in a stoppered 123°C. La salts prepd in 1925 a mium nitrates were of "spectrosco- and converted to the oxide (no d the anhydr chloride prepd by tw The oxide was dissolved in aq HC ress HCl evapd. The crystallized hydrated by heating in the presen- Cl first at 100°C for several h, °C. 2. The rare earth benzoate om the aq chloride or nitrate with oate, and the benzoate dehydrated to 110°C for at least 24 h. Ex- e chloride was carried out with n in dry air. The salt was stored ator over P205. Dry HCl was prep- H2SO4 and by passing the result- ough H2SO4 drying towers.

	Lanthanu	m Chloride		
COMPONENTS:		ORIGINAL M	EASUREMENTS :	
(1) Lanthanum chlo	oride: LaCl.;			
[10099-58-8]		McCarty,	C.N.	
(2) 2-Ethoxyethano	1 (ethyl cellosolve);	Masters 7	Thesis.	,
	-80-5]	Universit	y of Illinois. Urbana, IL.	<u>1933</u> . ¹
. 10 1		1		
VARIABLES:		PREPARED B	¥:	
Temperature		M. Salomor	n and T. Mioduski	
EXPERIMENTAL VALUES:		<u> </u>	·····	
	Composition of Sa			
	La ₂ 03 ^a	LaC13 ^b	LaC13 ^b	
t/°C	g/25 cc	g/dm ³	mol/dm ³	
	-			
0 10	0.2746 0.4968	16.54 29.92	0.0674 0.1220	
20	0.4988	44.15	0.1220	
30	0.9991	60.17	0.2453	
40	1.1125	67.00	0.2732	
50	1.3391	80.64	0.3288	
	the compilers using 1977 i solid phase was not anal			
	i solid phase was not anal			
The equilibrated	d solid phase was not anal AUXILIARY	ysed. INFORMATION	PURITY OF MATERIALS:	and
The equilibrated ETHOD/APPARATUS/PROU Sothermal method. Yent + excess salt w agitated in a thermo Lee + water was used the bottles were fit stoppers and sealed placing gum rubber t and necks of the bot litted into the uppe after equilibration, lowed to settle for a calibrated 25 cc p removed for analysis evaporated to drynes IC1 and pptd as the cid. The samples w list water and ignit	AUXILIARY AUXILIARY CEDURE: About 75-100 cc of sol- tere placed in bottles and ostat for at least 12 h. for the 0°C measurements ted with ground glass from the atmosphere by ubing over the stoppers tles, and a rubber bung r end of the tubing. the solutions were al- at least 12 h, and using ipet, two samples were s and dissolved in aq oxalate by addn of oxalic ere filtered, washed with ed to constant weight as e was found to be insolu- olvent.	INFORMATION SOURCE AND Commercial over CaO fo A middle po was retaine b.p. 134°C ammonium : purity" and details) an methods. : HCl and the lized salt presence of eral h, the benzoate was nitrate with ate dehydra least 24 h. ried out wi ing chlorid stored in a was prepd f	PURITY OF MATERIALS: solvent was permitted to sta or at least 1 week and disti ortion (fraction not specific ed and stored in a stoppered . La salts prepd in 1925 as itrates were of "spectroscopi d converted to the oxide (no nd the anhydr chloride prepd 1. The oxide was dissolved in e excess HC1 evapd. The cryss was dehydrated by heating in f dry HC1 first at 100°C for en at 200°C. 2. The rare ear is pptd from the aq chloride th sodium benzoate, and the b ated by heating to 110°C for Extraction the chloride wa th HC1 satd ether, and the r le heated at 60°C first in a and then in dry air. The sa desiccator over P205. Dry from NaC1 + H2S04 and by pass ing HC1 through H2S04 drying	lied. ad) flask doubl ic by tw aq stal- the sev- th or eenzo- at s car- esult- stream lt was HCl ing

38	L	anthanun.	n Chlori	de		
COMPONENTS:			ORIGINA	L MEASUREME	NTS:	
(1) Lanthanum chloride;	LaC1 ₃ ; [10099	9-58-8]	Kirmse	E.M.; Dres	sler, H.	
(2) Ethers			Z. Cher	n. <u>1975</u> , 15,	239-40.	
VARIABLES:			PREPARI	ED BY:		
Room temperature: T/K = 2	293–298		Mark Sa	lomon and I	omasz Miodus	ki
EXPERIMENTAL VALUES:						
				colub	ility ^{a,b}	
solvent					mol kg ⁻¹	
1-methoxyheptane;	с ₈ н ₁₈ 0;	[629-32	2-3]	0.6	0.025	
1-methoxyoctane;	^C 9 ^H 20 ^O ;				0.004	
^a Molalities calculated	by the compi	lers.				
		UXILIARY				
METHOD/APPARATUS/PROCEDU	RE:		SOURCE		OF MATERIALS	:
The solute-solvent mixtu agitated at room tempera ibrium was attained. Th were handled in a dry bo	RE: ures were iso ature until e he anhydrous ox containing	thermally quil- reagents	SOURCE			:
The solute-solvent mixtu agitated at room tempera ibrium was attained. Th were handled in a dry bo La was determined by com titration using Xylenol	RE: ures were iso ature until e he anhydrous ox containing mplexometric Orange indic	thermally quil- reagents P4 ⁰ 10. ator.	SOURCE	AND PURITY		:
The solute-solvent mixtu agitated at room tempera ibrium was attained. Th were handled in a dry bo La was determined by com	RE: ures were iso ature until e he anhydrous ox containing mplexometric Orange indic es are mean v	thermally quil- reagents P4 ⁰ 10. ator.	SOURCE	AND PURITY		:
The solute-solvent mixtu agitated at room temperation ibrium was attained. The were handled in a dry bo La was determined by com titration using Xylenol The reported solubilitie	RE: ures were iso ature until e he anhydrous ox containing mplexometric Orange indic es are mean v	thermally quil- reagents P4 ⁰ 10. ator.	SOURCE Nothi	AND PURITY		:
The solute-solvent mixtu agitated at room tempera ibrium was attained. Th were handled in a dry bo La was determined by com titration using Xylenol The reported solubilitie	RE: ures were iso ature until e he anhydrous ox containing mplexometric Orange indic es are mean v	thermally quil- reagents P4 ⁰ 10. ator.	SOURCE Nothi ESTIMA	AND PURITY ng specifie	d.	:
The solute-solvent mixtu agitated at room temperation ibrium was attained. The were handled in a dry bo La was determined by com titration using Xylenol The reported solubilitie	RE: ures were iso ature until e he anhydrous ox containing mplexometric Orange indic es are mean v	thermally quil- reagents P4 ⁰ 10. ator.	SOURCE Nothi ESTIMA Nothi	AND PURITY ng specifie TED ERROR: ng specifie	d.	:
The solute-solvent mixtu agitated at room tempera ibrium was attained. Th were handled in a dry bo La was determined by com titration using Xylenol The reported solubilitie	RE: ures were iso ature until e he anhydrous ox containing mplexometric Orange indic es are mean v	thermally quil- reagents P4 ⁰ 10. ator.	SOURCE Nothi ESTIMA	AND PURITY ng specifie TED ERROR: ng specifie	d.	:
The solute-solvent mixtu agitated at room tempera ibrium was attained. Th were handled in a dry bo La was determined by com titration using Xylenol The reported solubilitie	RE: ures were iso ature until e he anhydrous ox containing mplexometric Orange indic es are mean v	thermally quil- reagents P4 ⁰ 10. ator.	SOURCE Nothi ESTIMA	AND PURITY ng specifie TED ERROR:	d.	:
COMPONENTS:			ODICINAL MEASUREMENTS			
--	--	------------------------------------	---	--		
			ORIGINAL MEASUREMENTS:			
(1) Lanthanum chloride; LaCl ₃ ; [10099-58-8]		J.; Oelsner, L.; Niedergesaess, U.	nn,			
(2) Ethers			Z. Chem. <u>1968</u> , 8, 472-3.			
			1			
VARIABLES:			PREPARED BY:			
Room temperature: T/K around 298			Mark Salomon and Tomasz Mioduski			
EXPERIMENTAL VALUES:						
solvent			LaCl ₃ solubility ^{a,b}			
	6 U O.	fr107 /r 1	mass % mol kg ⁻¹			
<pre>l-ethoxy-2-methoxyethane;</pre>						
1,3-dioxolane;		[646-06-0				
l,4-dioxane;	с ₄ н ₈ 0 ₂ ;	[123-81-1] 0.02 0.0008			
		AUXILIARY	INFORMATION			
METHOD / APPARATUS / PROCEDURE			SOURCE AND PURITY OF MATERIALS:			
The solute-solvent mixture			The anhydrous salt was preapred by the			
mally agitated at 25 ⁰ C or	at room 1	tempera-	method of Taylor and Carter (1).			
ture. Authors state that	the diffe	erence	No other information given.			
found for the solubilities	s was with	nin				
experimental error limits.						
La determined by complexon	netric tit	ration.				
No other details given.		ł	ESTIMATED ERROR:			
othet details given.		Nothing angelfield				

Nothing specified.

REFERENCES:

Taylor, M.D.; Carter, C.P.
 J. Inorg. Nucl. Chem. <u>1962</u>, 24, 387.

COMPONENTS :	ORIGINAL MEASUREMENTS:
<pre>(1) Lanthanum chloride; LaCl₃; [10099-58-8]</pre>	Golub, A.M.; Yankovich, V. N. Ukr. Khim. Zh. <u>1977</u> , 43,1139-42;
(2) Methanol; CH ₄ 0; [67-56-1]	Ukr. J. Chem. (Engl. Transl.) <u>197</u> 7,
(3) 1,4-Dioxane; C ₄ H ₈ O ₂ ; [123-91-1]	43, 16-20.
VARIABLES :	PREPARED BY:
Concentration of CH_3OH T/K = 295	T. Mioduski
EXPERIMENTAL VALUES:	
Initial Concn	8
Methanol	LaCl ₃ solubility ^a
mol dm ⁻³	mol dm ⁻³
1.5	0.01320
2.0	0.02972
2.5	0.05482
3.0	0.09300
3.5	0.13804
jt * O	0.21380
AUXILIARY	INFORMATION
Solvent mixtures of known alcohol concentra- tion were saturated with anhydrous LaCl ₃ at 22 ± 1 °C. Equilibrium was confirmed from constancy of the rare earth metal concentra- tion upon repeated analyses.	SOURCE AND PURITY OF MATERIALS: Source and purity of LaCl ₃ not specified. Anhydrous LaCl ₃ prepared by method described in (2). C.p. grade organic solvents were purified by "known" methods (3).
Liquid phases were analysed for rare earth metal concentration (method not specified). At least 3 separate experiments were carried out for each system studied. In addition, the solid phases were analysed for several arbitrary experimental points (method not	
specified).	ESTIMATED ERROR: Soly: nothing specified.
	Temp: precision ± 1 K.
	 REFERENCES: 1. Golub, A. M.; Golovorushkin, V. I. Zh. Neorg. Khim. 1968, 13, 3194. 2. Spedding, F.H.; Doan, A.H. J. Am. Chem. Soc. 1952, 74, 2783. 3. Kolotyrkin, Ya.M. (ed). Electrochemistry of Metals in Nonaqueous Solutions. Khimiya Press. Moscow. 1974. p 440.

COMPONENTS:	ORIGINAL MEASUREMENTS:		
(1) Lanthanum chloride; LaCl ₃ ; [10099-58-8]	Golub, A.M.; Yankovich, V.N. Ukr. Khim. Zh. <u>1977</u> , 43, 1139-42;		
(2) Alcohols; ROH	Ukr. J. Chem. (Engl. Transl.) <u>1977</u> , 43, 16–20.		
(3) 1,4-Dioxane; C ₄ H ₈ O ₂ ; [123-91-1]			
VARIABLES:	PREPARED BY:		
Concentration of ROH	M. Salomon and T. Mioduski		
Т/к - 295			
EXPERIMENTAL VALUES:			
for this system). The remaining data were equation	$Cl_3 - CH_3OH - C_1H_8O_2$ system (see the compilation e presented graphically and in the form of the		
K = []	LaCl ₃ .nROH] / [ROH] ⁿ [1]		
ref. 1). According to this equation, n is logarithm of the solubility, log [LaCl ₃ .n] LaCl ₂ can be calculated as a function of 1	pility in units of mol dm ⁻³ , [ROH] is the total , and n is the solvate number in <u>solution</u> (see s calculated from the slope of a plot of the ROH], against log [ROH]. Thus the solubility of ROH concentration using the reported values of poncentrations were varied from 1-5 mol dm ⁻³ .		
alcohol n	-log K nature of the solid phase		
methanol; CH ₁ 0; [67-56-1] 3	2.36 LaCl ₃ .CH ₃ OH		
ethanol; C ₂ H ₆ 0; [64-17-5] 3	3.10 LaCl ₃ .3C ₂ H ₅ OH		
1-propanol; C ₃ H ₈ 0; [71-23-8] 1 2	2.90 LaCl ₃ .3C ₃ H ₇ OH 3.45		
LaCl, is obtained by using the values for solubility.	and K are reported, the overall solubility of n-K in eq. [1] which give the greater		
AUXILIA	ARY INFORMATION		
METHOD/APPARATUS/PROCEDURE: Isothermal method used as described in (1) Solvent mixtures of known alcohol concentr tion were saturated with anhydrous LaCl ₃ a $22 \pm 1^{\circ}$ C. Equilibrium was confirmed from constancy of the rare earth metal concentr tion upon repeated analyses.	a- Anhydrous LaCl ₃ prepared by method described t in (2).		
Liquid phases were analysed for rare earth metal concentration (method not specified) At least 3 separate experiments were carri out for each system studied. In addition, the solid phases were analysed for several arbitrary points of each series of experi-	ed		
ments (method not specified).	ESTIMATED ERROR: Soly: nothing specified.		
	Temp: precision <u>+</u> 1 K		
	 REFERENCES: 1. Golub, A.M.; Golovorushkin, V. I. Zh. Neorg. Khim. 1968, 13, 3194. 2. Spedding, F.H.; Doan, A.H. J. Am. Chem. Soc. 1952, 74, 2783. 3. Kolotyrkin, Ya.M. (ed). Electrochemistry of Metals in Nonaqueous Solutions. Khimiya Press. Moscow. 1974. p 440. 		

CONTROLLER	
COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Lanthanum chloride; LaCl₃; [10099-58-8]</pre>	Mikheev, N.B.; Kamenskaya, A.N.; Konovalova, N.A.; Zhilina, T.A.
<pre>(2) Hexamethylphosphorotriamide; C₆H₁₈N₃OP; [680-31-9]</pre>	Zh. Neorg. Khim. <u>1977</u> , 22, 1761-6; Russ, J. Inrog. Chem. (Engl. Transl.) <u>1977</u> , 22, 955-8.
VARIABLES:	PREPARED BY:
Room temperature	T. Mioduski
EXPERIMENTAL VALUES:	
Starting with anhydrous LaCl ₃ , the solubility	y at 25 <u>+</u> 3 ⁰ C was given as
0.106 <u>+</u> 0.00	02 mol dm ⁻³
Starting with the solvate $LaCl_3.3((CH_3)_2N)_3P_3$	D, the solubility at 25 \pm 3 ^o C was given as
0.107 ± 0.00	$02 \text{ mol } \text{dm}^{-3}$
	· · · · · · · · · · · · · · · · · · ·
AUXILIARY	INFORMATION
METHOD / APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
Isothermal method used. Salt and solvent were placed in a test-tube in a dry box, and the	Anhyd LaCl, prepd similar to that in (1) by subliming NH,Cl from a mixt of LaCl, and 6
tube agitated at room temperature $(25 \pm 3^{\circ}C)$ until eqilibrium was reached. Aliquots were	moles of NH, Cl in a stream of inert ³ gas at 200-400°C (LaOC1 content less than 3%). The
withdrawn periodically and analysed for the metal content. Rare earth concentration was	solvent was purified as in (2).
determined by complexometric titration, and	LaCl ₃ .3C ₆ H ₁₈ N ₃ OP prepd by dissolving the hydrate in $C_{3}^{H}H_{8}N_{3}^{OP}$ and heating to 140-145°
by the radiometric method using the isotope $Tm-170$ (t) = 169 d) Authors state that	C for 5 m. The solvate was pptd by addition
Tm-170 ($t_{\frac{1}{2}} = 169$ d). Authors state that results for both methods agreed. Although	of abs ether, washing 7 times with ether,
not clearly stated, it appears that equili-	and drying over P ₂ 0 ₅ in a stream of dry nitrogen. Yield was about 90%.
brium was reached in several weeks to several	
months.	ESTIMATED ERROR: Soly: precision \pm 0.002 mol dm ⁻³ at a 95%
Solid phase samples washed three times with benzene or ether and dried on a steam bath in	level of confidence (authors).
an argon atmosphere. The solid phase was	Temp: precision ± 3 K.
analysed and found to be LaCl ₃ .3C ₆ H ₁₈ N ₃ OP.	remp. precision ± 5 m.
The solvate was analysed for metal content by	REFERENCES:
complexometric titrn, for chloride by the Volhard method, and the solvent was obtained	I. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.
by difference. IR spectra confirmed the	2. Fomicheva, M.G.; Kessler, Yu.M.;
absence of water. Structural studies of the	Zabusova, S.E.; Alpatova, N.M. Elabtraphiming 1075 11 163
solvate also carried out by x-ray analysis.	Elektrokhimiya <u>1975</u> , 11, 163.
1	

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Lanthanum chloride; LaCl ₃ ;	Lyubimov, E. I.; Batyaev, I. M.
[10099-58-8]	Zh. Prikl. Khim. <u>1972</u> , 45, 1176-8.
<pre>(2) Tetrachlorostannate; SnCl₄; [7646-78-8]</pre>	
(3) Phosphorus oxychloride; POCl ₃ ; [10025-87-3]	
VARIABLES:	PREPARED BY:
T/K = 293 Concentration of SnC1 ₄	T. Mioduski
EXPERIMENTAL VALUES:	
	concentration La ₂ 0 ₃ solubility ^a
(by volume) ma	ol dm ⁻³ moles La dm ⁻³
0 0	0.012
	.035 0.14
	.085 0.26 .17 0.30
	.17 0.30 .33 0.27
	.59 0.22
	.78 0.21
^a This is also the solubility of LaCl ₃ in the quantitatively converted to the chloride acc	SnC1 ₄ -POC1 ₃ mixtures because the oxide is cording to
$La_0 - + 6POC1_{-} =$	$2LaCl_3 + 3P_2O_3Cl_4$
Thus the equilibrated solutions should actuate	5 2 5 4
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method used. POC1 ₃ + SnC1 ₄	SOURCE AND PURITY OF MATERIALS: La203 of "the first sort" was ignited at
solutions were prepared by volume in $\overset{4}{a}$ dry box. The SnCl ₄ content was verified by chemical analysis for Sn. This solution and La ₂ O ₃ were placed in sealed ampoules, heated to 20-250°C to increase the rate of solution, and then rotated in an air thermostat at 20°C for 2-200 hours. Without preheating, equil- ibrium was established after 200 hours. Preheating to 120°C lowered the equilibra- tion time at 20°C to 2 hours.	950°C for 2 hours. "Pure" grade SnCl ₄ and POCl ₃ were dehy- drated with P ₂ O ₅ and distilled under vacuum.
La was determined by the oxalate method. The reported solubilities are mean values based on 3-5 parallel determinations.	ESTIMATED ERROR: Soly: authors state the "coefficient of variance" to be less than 7%. Temp: precision presumably ± 0.2K (compiler). REFERENCES:

Lanthanum Bromide

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Lanthanum bromide; LaBr ₃ ; [13536-79-3]	Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J.; Oelsner, L.; Niedergesass, U.
(2) 1,4-Dioxane; C ₄ H ₈ O ₂ ; [123-91-1]	Z. Chem. <u>1968</u> , 8, 472-3.
VARIABLES:	PREPARED BY:
Room temperature: T/K around 298	Mark Salomon and Tomasz Mioduski
EXPERIMENTAL VALUES: The solubility of LaBr ₃ in p-dioxane at abou	25 ⁰ C mag advances
The solubility of Labig in p-dioxane at abou	t 25 C was given as
0.2 mass	%
The corresponding molality calculated by the	compilers is
0.005 ₃ m	
0.003 ₃ m	
The peture of the colid charge and not and the	
The nature of the solid phase was not specif:	Lea.
·	
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The solute-solvent mixture was isothermally agitated at 25° C or room temperature. The authors state that the difference found for	The anhydrous salt was prepared by the method of Taylor and Carter (1).
the solubility was within experimental error limits.	No other information given.
La was determined by complexometric titration.	
No other details given.	
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES:
	1. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.

COMPONENTS:				
	ORIGINAL M	EASUREMENTS:		
<pre>(1) Lanthanum bromide; LaBr₃; [13536-79-3]</pre>	Golub, A.M Ukr. Khím.	Golub, A.M.; Yankovich, V. N. Uhr. Khim. Zh. <u>1977</u> , 43, 1139-42;		
(2) Alcohols; ROH	Ukr. J. Ch 1 <u>977</u> , 43,	Ukr. J. Chem. (Engl. Transl.) 1977, 43, 16-20.		
(3) 1,4-Dioxane; C ₄ H ₈ O ₂ ; [123-91-1]				
VARIABLES:	PREPARED B	Y:		
Concentration of ROH		M. Salomon and T. Mioduski		
T/K = 295				
EXPERIMENTAL VALUES: .				
Numerical data were not given, but result	lts were presente	d graphically and in the form of		
the equation K =	[LaCl_nROH] / [Roh j ⁿ [1]		
In this equation [LaBr ₃ .nROH] is the solubility in units of mol dm ⁻³ , [ROH] is the <u>total</u> alcohol concentration in units of mol dm ⁻³ , and n is the solvate number <u>in solution</u> (see ref. 1). According to this equation, n is calculated from the slope of a plot of the logarithm of the solubility, log [LaBr ₃ .nROH], against log [ROH]. Thus the solubility of LaBr ₃ can be calculated as a function of ROH concentration using the reported values of n and K (see table below). The alcohol concentrations were varied from 1-5 mol dm ⁻³ .				
alcohol n	-log K	nature of the solid phase		
methanol; CH ₁ 0; [67-56-1] 1 2	0.89 1.16	LaBr ₃ .2CH ₃ OH		
1-propanol; C ₃ H ₈ 0; [71-23-8] 1 2	1.71 2.16	LaBr3.2C3H70H		
AUXI	LIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE:				
Isothermal method used as described in (Solvent mixtures of known alcohol concen- tion were saturated with anhydrous LaBr ₃ $^{22} \pm 1^{\circ}C$. Equilibrium was confirmed from	<pre>1). Source and tra- Anhydrous at in (2).</pre>	PURITY OF MATERIALS: purity of LaBr ₃ not specified. LaBr ₃ prepared by method describ		
-	eberro a Di - eret		ed	
constancy of the rare earth metal concen		organic solvents were purified methods (3).	ed	
constancy of the rare earth metal concen- tion upon repeated analyses. Liquid phases were analysed for rare ear metal concentration (method not specified At least 3 separate experiments were car out for each system studied. In addition the solid phases were analysed for severa	by "known" d). ried al i-	methods (3).	ed	
Constancy of the rare earth metal concen- tion upon repeated analyses. Liquid phases were analysed for rare ear metal concentration (method not specified At least 3 separate experiments were car out for each system studied. In addition the solid phases were analysed for severa arbitrary points of each series of experi-	by "known" d). ried a, al i- ESTIMATED E	methods (3).	ed	
constancy of the rare earth metal concen- tion upon repeated analyses. Liquid phases were analysed for rare ear metal concentration (method not specified At least 3 separate experiments were carro out for each system studied. In addition the solid phases were analysed for severa arbitrary points of each series of experi- ments (method not specified).	by "known" d). ried n, al i- ESTIMATED E Soly: noth	methods (3).	ed	

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Lanthanum iodide; LaI ₃ ; [13813-22-4]	Moeller, T.; Galasyn, V.
<pre>(2) N,N-Dimethylformamide; C₃H₇NO; [68-12-2]</pre>	J. Inorg. Nucl. Chem. <u>1960</u> , 12, 259-65.
VARIABLES:	PREPARED BY:
T/K = 298.15	M. Salomon
EXPERIMENTAL VALUES:	
The solubility of LaI_3 in $HCON(CH_3)_2$ at 25°C	
578.7 g	dm ⁻³
and as	
0.5240 1	nol dm ⁻³
The solid phase is the solvate LaI ₃ .8HCON(CH method) of this solvate given as 73.0-75.0°C	$_{3}$) ₂ . The melting point (sealed tube
	INFORMATION
METHOD/APPARATUS/PROCEDURE: Authors state that solubilities were deter- mined by analysis of aliquots after equili- bration at $25 \pm 0.025^{\circ}$ C, and that techniques were generally similar to those described in (1). The rare earth content was determined by	SOURCE AND PURITY OF MATERIALS: The initial material was the rare earth oxide of 99.9+% purity. Iodides were prepd by two methods. 1. Acetyl iodide method (2) where the hydrated acetate is treated with acetyl iodide in benzene. Acetyl iodide prepd as in (3). 2. The iodide was
complexometric titration with EDTA at 60°C. Iodide was determined by the Volhard method, and carbon, hydrogen, and nitrogen by usual microanalytical techniques.	prepd by metathesis by reaction of the hydrated LaCl ₃ with KI in DMF followed by addition of benzene and distillation of the benzene-water azeotrope.
REFERENCES:	For both preparations the solvate LaI3.8DMF was recrystallized from DMF by addition of
1. Moeller, T.; Cullen, G.W. J. Inorg. Nucl. Chem. <u>1959</u> , 10, 148.	ether. The solvent, DMF, was prepared as in (4,5),
2. Watt, G.W.; Gentile, P.S.; Helvenston, E.P. J. Am. Chem. Soc. <u>1955</u> , 77, 2752.	and its electrolytic conductance was \geq 3.7 x 10 ⁻⁷ S cm ⁻¹ at 25°C.
 Biltz, H.; Biltz, W. Laboratory Methods of Inorganic Chemistry (2nd Edition). John Wiley. N.Y. <u>1928</u>. 	ESTIMATED ERROR: Soly: precision around \pm 0.1% (compiler).
 Leader, G.R.; Gormley, J.F. J. Am. Chem. Soc. <u>1951</u>, 73, 5731. 	Temp: precision \pm 0.025 K (authors).
5. Thomas, A.B.; Rochow, E.G. J. Am. Chem. Soc. <u>1957</u> , 79, 1843.	

COMPONENTS :	ORIGINAL MEASUREMENTS:
(1) Cerium fluoride; CeF ₃ ; [7758-88-5]	Galkin, N. P.; Shishkov, Yu.D. Khomyakov, V.I.
(2) Acidic nitrosyl fluoride; NOF.3HF; [14947-17-2]	Radiokhimiya <u>1978</u> , 20, 136-41; Soviet Radiochem. (Engl. Transl.) <u>1978</u> , 20, 109-13.
VARIABLES:	PREPARED BY:
Room temperature	T. Mioduski
EXPERIMENTAL VALUES:	I
The solubility of CeF ₃ in acidic nitrosyl fl	uoride at room temperature was reported to be
0.09 mas	s %
The molality calculated by the compiler is	
	-3 mol kg ⁻¹
4.0 X 10	mor ve
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method employed. The solute- solvent mixture was placed in a Teflon	CeF ₃ was at least 99 % pure.
vessel and mechanically agitated at room temperature for 10 h. The reaction mixture	5
was allowed to settle for 24 h and the	NOF.3HF prepared by saturation of liquid HF with NOF, and was distilled twice at
supernatant saturated solution was analysed for the Ce content. An aliquot was evaporat-	95°C before use. The melting point of acidic nitrosyl fluoride was 3.8°C
ed to dryness under vacuum at 100-150°C, and the dry residue dissolved and analysed (the	
method of analysis not specified).	
The solid phase is CeF3 as found by analyses	
for F,N,HF and Ce.	ESTIMATED ERROR:
	Nothing specified.
	DEFEDENCIE
	REFERENCES :

8		C	enum	Chloride			
(2) Hexach	TS: rium chloride; CeCl ₃ ; [7790-86-5] xachloro-1,3-butadiene; C ₄ Cl ₆ ; 7-68-3]		ORIGINAL MEASUREMENTS: Shevtsova, Z.N.; Korshunov, B.G.; Safonov, V.V.; Kogan, L.M.; Gudkova, V.I. Zh. Neorg. Khim. <u>1968</u> , 13, 3096-9; Russ. J. Inorg. Chem. (Engl. Transl.) <u>1968</u> , 13, 1596-8				
VARIABLES:		<u></u>		PREPAREI	D BY:		
Temperature	2			T. Miod	luski and	M. Salomon	
EXPERIMENTAL	L VALUES:	<u></u>			······		
Composition	n, densities,	viscosities and	d refra	ctive in	dices of	saturated	solutions.
t/ ^o C	solubili mass %	ity ^a -1 mol kg ⁻¹	d/g c	-3 m	ŋ/P	n _D ²⁰	nature of the solid phase
25	0.036	0.00146	1.679		0.0385	1.5563	$CeCl_3.4H_2^0$
50	0.043	0.00175	1.645	I	0.0308	1.5556	н
75	0.062	0.00252	1.616	I	0.0247	1.5549	$CeC1_3$. $2H_2^0$
		AUX	ILIARY	INFORMAT	ION		
Isothermal		RE: Llibrium attaine Lat 50°C, and 1	ed	ISOBRCE .		TY OF MATERI	

COMPONENTS :	ORIGINAL MEASUREMENTS:		
(1) Cerium chloride; CeCl ₃ ; [7790-86-5]	Sakharova, N.N.; Sakharova, Yu.G.; Ezhova, T.A.; Izmailova, A.A.		
(2) Ethanol; C ₂ H ₆ 0; [64-17-5]			
(3) Water: H ₂ 0; [7732-18-5]	Zh. Neorg. Khim. <u>1975</u> , 20, 1479-83;Russ. J. Inorg. Chem. (Engl. Transl.) <u>1975</u> , 20, 830-2.		
VARIABLES:	PREPARED BY:		
Temperature	T. Mioduski and M. Salomon		
EXPERIMENTAL VALUES:	L		
solubility of CeCl ₃ .6H ₂ 0 in 96.8	[%] с ₂ н ₅ он ^а		
sample 1 sample 2 sample	3 sample 4 mean solubilities		
t/°C g/100 g ^b g/100 g g/100 g	g/100 g g/100 g mol kg ^{-1c}		
20 43.97 44.10 44.36	44.15 44.15 1.245		
30 48.91 48.89 48.90	48.92 48.9 ^d 1.379		
40 55.20 54.98 54.87	54.93 54.99 1.551		
50 68.41 68.55 68.66	68.38 68.50 1.932		
60 84.53 84.61 84.47	84.51 84.53 2.384		
^a It is not clearly stated whether the mixture	is 96.8 mass % or 96.8 volume % ethanol.		
b Solubilities reported as grams of hexahydrat	e in 100 g of solvent.		
^C Molalities calculated by the compilers.			
d Compilers calculated 48.91 g/100 g solvent. calculated from this value of the solubility	The molality for this solution was		
	INFORMATION		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Equilibrium was reached after 3-4 h. Identical results obtained by approaching equilibrium from above and below. Two of the data points in the table obtained after 3 hours of equili- bration, and the remaining two data points obtained after 4 h of equilibration. The metal content of each aliquot taken for	SOURCE AND PURITY OF MATERIALS: CeCl ₃ .6H ₂ 0 prepd by dissolving c.p. grade oxide in dil (1:3) HCl followed by evapn and crystn. The crystals were dried in a desic- cator over CaCl ₂ , P ₂ 0 ₅ and NaOH. The crystals analysed for the metal by titrn with Trilon B, and for Cl by the Volhard method. Found (%) for Ce: 39.20, 39.34 (calcd 39.51). Found (%) for Cl: 30.10, 29.95 (calcd 30.04). 96.8% ethanol prepd by prolonged boiling of		
analysis was determined by complexometric titration with Trilon B.	c.p. grade 93.5% ethanol with anhydr CuSO4 followed by distn. Ethanol concn detd refractometrically and pycnometrically.		
Analyses of the solids withdrawn at 20°C, 40°C and 60°C showed the solid phase to be the hexahydrate: i.e. ethanol was not found in any of the solid phases.	ESTIMATED ERROR: Soly: results apparently precise to within ± 0.8% (compilers). Temp: nothing specified.		
The hexahydrate melted at 95.5 - 96.5°C.	REFERENCES:		

COMPONENTS:	ORIGINAL MEASUREMENTS:
 Cerium chloride; CeCl₃; 	Kirmse, E.M.
[7790-86-5]	Ir. II Vases. Konf. po Teor. Rastvorov
(2) 2-Methoxyethanol; C ₃ H ₈ O ₂ ; [109-86-4]	<u>1971</u> , 200-6.
VARIABLES:	PREPARED BY:
T/K = 298	T. Mioduski
	······································
EXPERIMENTAL VALUES:	
The solubility of CeCl ₃ in 2-methoxyethanol	at 25°C was reported to be
- 10.7 mass	9
	70
The corresponding molality calculated by the	compiler is
0.486 mol	kg ⁻¹
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Nothing specified except that the solid	Nothing specified. Presumably, the
phase was found to be $CeCl_3.nC_3H_8O_2$ where $n = 2-3$.	anhydrous chloride was prepared by the method of Taylor and Carter (1).
On the basis of previous papers by the	
author compiled elsewhere in this volume,	
it is assumed that the solutions were pre-	
pared isothermally and equilibrated for several days, and that Ce determined by	
complexometric titration.	1
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES:
	1. Taylor, M.D.; Carter, C.P.
	J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.

Cerium	Chloride 10
COMPONENTS :	ORIGINAL MEASUREMENTS:
<pre>(1) Cerium chloride; CeCl₃; [7790-86-5]</pre>	Dzhuraev, Kh. Sh.; Mirsaidov, U.; Kurbanbekov, A.; Rakhimova, A.
(2) 1,1'-Oxybis-ethane (diethyl ether); C ₄ H ₁₀ 0; [60-29-7]	Dokl. Akad. Nauk Tadzh. SSR <u>1976</u> , 19, 32-4.
VARIABLES:	PREPARED BY:
T/K = 293	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of CeCl ₃ in diethyl ether at	20°C was reported to be
7.3 x 10	
The corresponding molality calculated by the	e compiler is
2.96×10^{-4}	mol kg^{-1} .
	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. Equilibrium was attained within 24 h and was verified by constancy in the Ce concentration. Both the saturated solution and the equilibrated solid phase were analysed. Ce determined by complexometric titration using methyl- thymol blue indicator and urotropine buffer. Cl determined by titration with AgNO ₃ . The solid phase corresponded to CeCl ₃ .0.1C ₄ H ₁₀ O (the solvate was dried under vacuum at 40°C prior to analysis). The pyrolysis product obtained by heating to 500°C is CeOCl.	SOURCE AND PURITY OF MATERIALS: Anhydrous CeCl ₃ prepared by the ethanol solvate method (no details given). Diethyl ether was dried with Na and distilled from LiAlH ₄ .
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES:

. . .

COMPONENTS :	ODTOTIVAL NOR COUNTRY
	ORIGINAL MEASUREMENTS:
(1) Cerium chloride; CeCl ₃ ; [7790-86-5]	Kirmse, E.M.; Dressler, H.
(2) Alkyl ethers	Z. Chem. <u>1975</u> , 15, 239-40.
VARIABLES:	
VARIABLES :	PREPARED BY:
Room temperature $T/K = 293-298$	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	
	CeCl ₃ solubility ^a
solvent	mass % mol kg ⁻¹
1-methoxyheptane; C ₈ H ₁₈ 0; [629-32-3]	
1-methoxyoctane; C ₉ H ₂₀ 0; [929-56-6]	
1-methoxyoctane; 09 ⁿ 20 ^o ; [929-50-0]	
1-methoxynonane; C ₁₀ H ₂₂ 0; [7289-51-2]	0.12 4.9 x 10 5 c
a	
^a Molalities calculated by the compilers.	
^b Solid phase dried in a vacuum desiccator ov	er P_2O_5 and analysed. The $C_8H_{18}O:CeCl_3$
ratio was less than 2	
^c Solid phases not specified.	
	INFORMATION
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were isothermal-	SOURCE AND PURITY OF MATERIALS:
ly agitated at room temperature. Method of	Nothing specified.
ascertaining equilibrium not specified.	
The anhydrous reagents were handled in a dry	
box containing P205.	
Cerium was determined by complexometric	
titration using Xylenol Orange indicator.	
The reported solubilities are mean values	
based on four determinations	
based on four determinations.	ESTIMATED ERROR:
based on four determinations.	ESTIMATED ERROR: Nothing specified.
based on four determinations.	
based on four determinations.	Nothing specified.
based on four determinations.	
based on four determinations.	Nothing specified.
based on four determinations.	Nothing specified.
based on four determinations.	Nothing specified.

Cenum	
COMPONENTS: (1) Cerium chloride; CeCl ₃ ; [7790-86-5] (2) 1,3-Dioxolane; C ₃ H ₆ 0 ₂ ; [646-06-0] VARIABLES: T/K = 298 EXPERIMENTAL VALUES: The solubility of CeCl ₃ in dioxolane at 25°C 1.0 mass The corresponding molality calculated by the 0.041 mo	ORIGINAL MEASUREMENTS: Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J. Niedergesaess, U. Z. Chem. <u>1968</u> , 8, 472-3; Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov <u>1971</u> , 200-6 PREPARED BY: T. Mioduski was reported to be %. compiler is
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The solute-solvent mixtures were isothermal- ly agitated at 25°C or at room temperature: authors state that the difference found for the solubility was within experimental error limits. Ce was determined by complexometric titra- tion. No other details given.	The anhydrous chloride was prepared by the method of Taylor and Carter (1). No other information given.
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES: 1. Taylor, M.D.; Carter, C.P. J. Inong. Nucl. Chem. <u>1962</u> , 24, 387.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cerium chloride; CeCl ₃ ;	Rossmanith, K.; Auer-Welsbach, C.
[7790-86-5]	
(2) Tetrahydrofuran; C ₄ H _g O; [109-99-9]	Monatsh. Chem. <u>1965</u> , 96, 602-5.
VARIABLES:	PREPARED BY:
Room Temperature: T/K about 293	T. Mioduski
EXPERIMENTAL VALUES:	······································
The solubility of CeCl ₃ in tetrahydrofuran a to be	t 20°C (room temperature) was reported
0.593 g per 100 ml o	of solution
$(0.024 \text{ mol } \text{dm}^{-3}, \text{ con})$	
	mpiaci).
-	·
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method employed. The solution	Sources and purities of initial materials
was equilibrated in an extractor with agita- tion for 60-80 hours at room temperature.	not specified. CeCl ₃ was prepared by conversion of the oxide by high temperature
	reaction with an excess of NH4C1 followed
Cerium was determined by the oxalate method and by titration with EDTA using Xylenol	by heating the product in a stream of dry nitrogen, and then in vacuum to remove
Orange indicator. The solvent was determin-	unreacted NH4C1.
ed by difference.	Tetrahydrofuran was distilled from $LiAlH_{L}$.
Anhydrous materials were handled in a dry	4
box through which was passed a stream of nitrogen free of carbon dioxide.	
	ESTIMATED ERROR:
The solid phase is CeCl ₃ .1.46C ₄ H ₈ O.	Nothing specified.
	REFERENCES :

COMPONENTS :	ORIGINAL MEASUREMENTS:
(1) Cerium chloride; CeCl ₃ ;	Mueller, R.
[7790-86-5]	
(2) Pyridine; C ₅ H ₅ N; [110-86-1]	2. Anorg. Allg. Chem. <u>1925</u> , 142, 130-2.
VADTADE	
VARIABLES:	PREPARED BY:
T/K = 273	T. Mioduski
Data	
EXPERIMENTAL VALUES:	
The solubility of CeCl ₃ in pyridine at 0°C w	as reported to be
1.58 g of anhydrous salt per 100 ml of	solution
(0.0641 mol dm ⁻³ , compiler).	
(U.U641 mol dm , compiler).	
AUXILIARY	INFORMATION
	· · · · · · · · · · · · · · · · · · ·
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solute-	SOURCE AND PURITY OF MATERIALS: Nothing specified.
solvent mixture was thermostated at 0°C	Nothing specified.
for 48 h. No other information given.	
	ESTIMATED EDEOD.
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES :

COMPONENTS: (1) Cerium chloride; CeCl ₃ ; [7790-86-5] (2) Hexamethylphosphorotriamide; C ₆ H ₁₈ N ₃ OP; [680-31-9]	ORIGINAL MEASUREMENTS: Mikheev, N.B.; Kamenskaya, A.N.; Konovalova, N.A.; Zhilina, T.A. Zh. Neorg. Khim. <u>1977</u> , 22, 1761-6; Russ, J. Inorg. Chem. {Engl. Transl.} <u>1977</u> , 22, 955-8.
VARIABLES:	PREPARED BY:
Room temperature: $T/K = 298 \pm 3$	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of the anhydrous salt at 25 \pm	3°C was given as
0.109 ±	0.003 mol dm ⁻³
Starting with the solvate $CeCl_3.3((CH_3)_2N)_3PO$, the solubility at 25 \pm 3°C ^a was given as
5	0.003 mol dm ⁻³
^a Table 3 in the English translation of the so 23 ± 3°C. This is probably a typographical measurements were carried out at rooom tempe	error as the text clearly states that all
	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Salt and solvent were placed in a test-tube in a dry box, and the tube agitated at room temperature ($25 \pm$ 3°C) until equilibrium was reached. Aliquots were withdrawn periodically and analysed for the metal content. Rare earth concentration was determined by complexometric titration, and by the radiometric method using the isotope Tm-170 (t_{\pm} = 169 d). Authors state that results for both methods agreed. Al- though not clearly stated, it appears that equilibrium was reached in several weeks to several months. Solid phase samples washed three times with benzene or ether and dried on a steam bath in an argon atmosphere. The solid phase was analysed and found to be CeCl ₃ .3C ₆ H ₁₈ N ₃ OP. The solvate was analysed for metal content by complexometric titrn, for chloride by the Volhard method, and the solvent was obtained by difference. IR spectra confirmed the absence of water. Structural studies of the solvate also carried out by X-ray	solvent was purified as in (2). CeCl ₃ . $3C_{6}H_{18}N_{3}OP$ prepd by dissolving the hydrate in $C_{3}H_{18}N_{3}OP$ and heating to 140-150° C for 5 m. The solvate was pptd by addition of abs ether, washing 7 times with ether, and drying over $P_{2}O_{5}$ in a stream of dry nitrogen. Yield was about 90 %. ESTIMATED ERROR: Soly: precision \pm 0.003 mol dm ⁻³ at a 95 %
analysis.	

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COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cerium chloride; CeCl ₃ ; [7790-86-5]	Welsh, T.W.B.; Broderson, H.J.
(2) Hydrazine; N ₂ H ₄ ; [302-01-2]	J. Am. Chem. Soc. <u>1915</u> , 37, 816-24.
VARIABLES:	PREPARED BY:
Room temperature (not specified)	T. Mioduski and M. Salomon

EXPERIMENTAL VALUES:

The solubility of CeCl₃ at room temperature was reported to be

0.03 g/cc

The compilers have not attempted to convert this value to mol kg^{-1} units for several reasons. First we do not know the temperature of the measurements and hence cannot obtain a value for the density of hydrazine. Second we do not know whether or not the initial salt was anhydrous or the heptahydrate as the authors did not provide this information. If the heptahydrate was used, then the results are meaningless for the obvious reasons. Third, the authors admit to problems with oxidation of the solvent and some contamination with water. Fourth, the experimental technique is so crude that in addition to the other sources of experimental error, it hardly seems justifiable to estimate the solubility in units of mol kg^{-1} .

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The soly was determined in small tubes which were loosely sealed with a cork covered with tin foil. Capillary tubing sealed to the bottom of the tube served for the passage of dry N ₂ . 1 cc of N ₂ H ₄ was added to the tube and small weighed portions of powdered CeCl ₃ added : N ₂ was allowed to bubble through the sln to insure adequate mixing. CeCl ₃ was added in this manner until no more solute would dissolve: the solubility was taken as the total weight of the added salt which dissolved up to this point. Weighings were	as described in (1). Analysis for N ₂ H ₄ yielded 99.7% purity. CeCl ₃ was "an ordin- ary pure chemical of standard manufacture." It is not clearly stated whether or not the salt was dehydrated. Authors state "water of crystallization was removed wherever it was possible to do so without decomposi- tion." Since many salts were studied in this work, the compilers cannot determine ab- solutely if the CeCl ₃ starting material was anhydrous.
made to a precision in the 10 mg range, and temperature was not controlled. Authors state that slight oxidation of N_2H_4 probably occurred, and that "slight amounts" of moisture probably were introduced into the solution. Gassing was noted upon introduc-	ESTIMATED ERROR: Soly: precision no better than 50%, and accuracy may be much poorer (compilers). Temp: unknown
tion of the solid into the solvent.	REFERENCES:
	 Welsh, T.W.B. J. Am. Chem. Soc. <u>1915</u>, 37, 497.

COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Cerium (IV) chloride; CeCl₄; [14986-52-8]</pre>	Lyubimov, E.I.; Batyaev, I.M.
<pre>(2) Tetrachlorostannate; SnC1₄; [7646-78-8]</pre>	Zh. Prikl. Khim. <u>1972</u> , 45, 1176-8.
(3) Phosphorus oxychloride; POC1 ₃ ; [10025-87-3]	
VARIABLES: •	PREPARED BY:
T/K = 293	T. Mioduski
EXPERIMENTAL VALUES:	
SnCl ₄ :POCl ₃ ratio SnC	1 ₄ concentration CeO ₂ solubility ^a
(by volume)	mol dm ⁻³ moles Ce dm ⁻³
1:50	0.17 0.007
^a Since the solubility is reported	for CeO_2 in terms of moles of $Ce dm^{-3}$,
	ubility of CeCl ₄ in units of mol dm ⁻³
	02 and CeCl ₄ takes place. Presumably
all CeO ₂ present in the initial r	mixture reacts with POCl ₃ to form the
chloride CeCl ₄ (e.g. see the com	pilation for the LaCl ₃ -SnCl ₄ -POCl ₃
system by the same authors).	
AUXILIARY	INFORMATION
METHOD / APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
Isothermal method used. POCl ₃ + SnCl ₄ solutions were prepared by volume in a dry box. The SnCl ₄ content was verified by chemical analysis for Sn. This solution and	CeO ₂ of "the first sort" was ignited at 950°C for 2 hours.
Ce02 were placed in sealed ampoules, heated to 120°C for 2 hours to increase the rate of solution, and then rotated in an air thermo- stat at 20°C for 2 hours. Without preheat- ing, equilibrium was established after 200 hours. Preheating to 120°C lowered the equilibration time at 20°C to 2 hours.	"Pure" grade SnCl ₄ and POCl ₃ were dehydrated with P_2O_5 and distilled under vacuum.
Ce was determined by the oxalate method. The reported solubilities are mean values based on 3-5 parallel determinations.	ESTIMATED ERROR: Soly: authors state the "coefficient of variance" to be less than 7%.
	Temp: precision presumably \pm 0.2K (compiler).
	REFERENCES :

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cerium bromide; CeBr ₃ ;	Rossmanith, K.
[14457-87-5]	Monatsh. Chem. <u>1966</u> , 97, 1357-64.
(2) Tetrahydrofuran; C ₄ H ₈ 0; [109-99-9]	, , ,
VARIABLES:	PREPARED BY:
Room Temperature: $T/K = 294-296$	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of CeBr ₃ in tetrahydrofuran a	t 21-23°C was reported to be
0.60 g per 100 ml of solution	
01-1-1	
AUXILIARY	INFORMATION
METHOD / APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
Isothermal method employed. The solution was equilibrated in an extractor with agita- tion for 60-80 hours at room temperature. Cerium was determined by the oxalate method	conversion of the oxide by high temperature reaction with an excess of NH_4Br followed by heating the product in a stream of dry
and by titration with EDTA using Xylenol Orange indicator. The solvent was deter- mined by difference.	nitrogen, and then in vacuum to remove un- reacted NH4Br.
	Tetrahydrofuran was distilled from LiAlH ₄ .
Anhydrous materials were handled in a dry box through which was passed a stream of nitrogen free of carbon dioxide.	
The solid phase is CeBr ₃ .4C ₄ H ₈ O.	ESTIMATED ERROR:
3 - 4 - 8 - 4 - 4	Nothing specified.
	REFERENCES:

Cerium Bromide

COMPONENTS :				ORIGINA	MEASUREMENTS .
			ORIGINAL MEASUREMENTS: Müller, R.		
<pre>(1) Cerium bromide; CeBr₃; [14457-87-5]</pre>					
(2) Pyridine; C ₅ H ₅ N; [110-86-1]			Z. Elektrochem. <u>1932</u> , 38, 227-32.		
VARIABLES:			_	PREPARE	D BY:
Temperature				M. Salo	mon and T. Mioduski
	·····				
EXPERIMENTAL V	ALUES:				
	solubilit	ies from run	number	2 ^a	
t/°C	mass %	mol %	mol	kg ⁻¹	nature of the solid phase
-5	0.436	0.0909	0.01	.153	CeBr ₃ .3C ₅ H ₅ N
0	0.907	0.149	0.02		3 5.5.
4	1.034	0.216	0.02	2751	2CeBr3.3C5H5N
8	1.213	0.255	0.03	233	CeBro, 2CeHeN
12	2.138	0.4523	0.05		CeBr3.2C5H5N
22	2.615	0.5551	0.07	070	CeBr ₃ .C ₅ H ₅ N
28	1.414	0.312	0.03	776	"
35	0.801	0.167	0.02		3CeBr3.2C5H5N
50 70	0.719 0.692	0.1502 0.1456	0.01		11 - 11
					continued
			LIARY	INFORMAT	
solutions wer phases by rap cooled filter collected in phases were a after drying filtrates and gravimetrical and ignition	thod used. Stant agitat: e separated of d filtration apparatus. weighing bot also placed in by suction. I solid phases by conver- to Ce02.	Solvent and ex n glass tubes ion. The sature from the solid n using a hear The filtrate tles, and the n weighing bo Cerium in bo s was determine sion to the open	for urated d ted or s were solid ttles th the ned xalate	Sources not spe by diss followe H ₂ S and Pyridin with fu	AND FURITY OF MATERIALS: and purities of inorganic materials cified. Anhydrous CeBr3 prepared olving metallic Ce in sulfuric acid d by reduction of Ce2(SO4)3 with high temperature reaction with HBr. e (Kahibaum) was carefully dehydrated sed KOH and fractionated. ED ERROR:
Two separate out.	Two separate experimental runs were carried out.		. (verage reproducibility about \pm 0.5% compilers). othing specified.	
				REFEREN	CES:

COMPONENTS :			T	ORIGINAL MEASUREMENTS:	
1) Cerium bromide; CeBr ₃ ; [14457-87-5]		-87-5]	Müller, R.		
(2) Pyridine; C ₅ H ₅ N; [110-86-1]		1	Z. Elektrochem. <u>193</u> 2, 38, 227-32.		
, ,	, -5.5.,				
EXPERIMENTAL	VALUES: CO	ontinued			
	solubilit	ies from ru			
t/°C	mass %	mol %	mol kg ⁻¹	nature of the solid phase	
-5	0.437	0.0912	0.01156	CeBr3.3C5H5N	
-2	0.713	0.1491	0.01891		
0	0.907	0.1944	0.02410	"	
3	1.33	0.281	0.0355	CeBr ₃ .3C ₅ H ₅ N + 2CeBr ₃ .3C ₅ H ₅ N	
4	1.02	0.214	0.0271	2CeBr3.3C5H5N	
5	0.768	0.1606	0.02038	2CeBr ₃ .3C ₅ H ₅ N + CeBr ₃ .2C ₅ H ₅ N	
8	1.218	0.255	0.03246	CeBr3.2C5H5N	
10	1.63	0.3451	0.0436	11 - 5	
12	2.15	0.4562	0.0578	11	
15	2.91	0.6195	0.0789	"	
18	3.53	0.7552	0.0963	$CeBr_{3}.2C_{5}H_{5}N + CeBr_{3}.C_{5}H_{5}N$	
22	2.613	0.555	0.07064	CeBr3.C5H5N	
25	2.12	0.4485	0.0570	"	
28	1.403	0.309	0.03746	"	
30	0.821	0.1719	0.02179	CeBr3.C ₅ H ₅ N + 3CeBr3.2C ₅ H ₅ N	
35	0.802	0.1678	0.02129	3CeBr3.2C5H5N	
40	0.791	0.165	0.02099	11	
50	0.753 ^b	0.1576	0.01997	11	
60	0.721	0.1503	0.01912		
70 80	0.691	0.145	0.01832	11	
00	0.653	0.136	0.0173		

^aMolalities calculated by the compilers.

^bSource publication gives 0.453 mass % units which is probably a typographical error. The value probably should be 0.753 mass % units which is consistent with the mol % value calculated by the author.

COMMENTS AND/OR ADDITIONAL DATA:

Since the experimental solubilities are those reported in mass % units, the compilers used these data to calculate the molalities. The author's calculations for mol % differ by around \pm 0.5 % from those calculated by the compilers using 1977 IUPAC recommended atomic masses. The compilers' calculations for mol % units are not given in any of the above tables.

Cerium Iodide

COMPONENTS: (1) Cerium iodide; CeI ₃ ; [7790-87-6] (2) Ethanol; C ₂ H ₆ 0; [64-17-5] (3) Water; H ₂ 0; [7732-18-5]	ORIGINAL MEASUREMENTS: Yastrebova, L.F.; Grigor, T.I.; Kuznetsova, G.P.; Stepin, B.D. Zh. Neorg. Khim. <u>1981</u> , 26, 2238-9; Russ, J. Inorg. Chem. (Engl. Transl.), <u>1981</u> , 26, 1203-4.	
VARIABLES:	PREPARED BY:	
Composition at 273 K	T. Mioduski and M. Salomon	
EXPERIMENTAL VALUES: solubility	ν at 0°C	
solvent mass % mass %	mol kg ⁻¹ solid phase	
с ₂ н ₅ он ^ь 78.57 59.92	2.879 Cel ₃ .9H ₂ 0	
H ₂ 0 89.51 68.26	4.129 "	
^a Results for the anhydrous salt calculated by ^b Authors' original results reported in terms		
AUXILIARY	INFORMATION	
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:	
Isothermal method used. No information was given on how equilibrium was ascertained. Aliquots of saturated solution were withdrawn	The nonohydrate, CeI ₃ .9H ₂ 0, was synthesized according to (1,2).	
and analyzed for the metal complexometrical- ly, for iodide by a potentiometric volumetric argentometric method, and for water by the Karl Fischer method. The alcohol and water contents in the mixtures ^C were found by quantitative gas chromatography. Solid phase	The alcohol was dried and purified by "recommended" methods.	
compositions were determined by Schreine- makers' method of residues.	specified.	
^C These statements indicate that the authors	ESTIMATED ERROR:	
studied the ternary system over a wide range of compositions. However no phase diagram was given, and the only numerical results	Nothing specified.	
reported are those given in the data table above. The phase diagram is stated to be similar to that for the NdI ₃ - $H_2O - C_4H_9OH$ system (see the compilation for this system).	REFERENCES: 1. Yakimova, Z.P.; Kuznetsova, G.P.; Yastrebova, L.F.; Stepin, B.D. Zh. Neorg. Khim. <u>1977</u> , 22, 251. 2. Beloucoup A.B.; Kuznetsova, C.B.; Pukk	
	2. Belousova, A.P.; Kuznetsova, G.P.; Rukk, N.S.; Stepin, B.D. Zh. Neorg. Khim. 1979, 24, 1410.	

COMFORENTS: ORIGINAL MEASUREMENTS: (1) Cortum iodide; CeI ₃ ; [7790-87-6] Vastrabura, E. F.; Grigor, T. I.; Kanctsova, C. F.; Stepin, B. D. (2) 1-Butanol; C ₄ H ₁₀ 0; [713-36-3] J. N. Mcorg. K.K.m. 1981, 26, 2238-9; Ruds. J. Inock, Chem. [Eng7: Transl.], 1981, 24, 1203-4. (3) Water; H ₂ 0; [7732-18-5] J.N. Mcorg. K.K.m. 1981, 26, 2238-9; Ruds. J. Inock, Chem. [Eng7: Transl.], 1981, 24, 1203-4. VARIABLES: PREPARED BY: Composition at 273 K T. Mieduski and M. Salomon EXPERIMENTAL VALUES: solubility at 0°C CeI ₃ ,9H ₂ 0 CeI ₃ solvent ^b mass 7 mass 7 mass 7 mass 7 cel 4.129 H ₂ 0 89.51 68.26 4.129 H ₂ 0 89.51 68.26 4.129 ^a Results for the anhydrous salt calculated by the compilers. b bAuthors' original results reported in terms of the solubility of the nonchydrate in the pure calculate tothat at equilibrium the solvent contains 76.87 mass 7 alcohol and 23.13 mass 7 water. METHOD/APPARATUS/PROCEDURE: SOURCE AND PURITY OF MATERIALS; Tothermal method used. No information was alven on how equilibrium was ascertained. Alignets of a protentionatic volumentic contains 76.87 mass 7 alcohol and 23.13 mass 7 water. METHOD/APPARATUS/PROCEDURE:	COMPONENTS:				
 (2) 1-Butanol; C₄L₁₀O; [71-36-3] (3) Water; H₂O; [7732-18-5] (3) Water; H₂O; [7732-18-5] (4) Water; H₂O; [7732-18-5] (5) Water; H₂O; [7732-18-5] (7) Water; H₂O; [7732-18-5] (8) Water; Water; H₂O; [7732-18-5] (8) Water; Water; H₂O; [7732-18-5] (8) Water; Wa		Cet • [7790-87	-61		
(3) Water; H ₂ O; [7732-18-5] (3) Water; H ₂ O; [7732-18-5] (4) WARLABLES: Composition at 273 K (5) Water: H ₂ O; [7732-18-5] (7) WARLABLES: Composition at 273 K (6) WARLABLES: Composition at 273 K (7) Markada Ma		2			
Composition at 273 K EXPERIMENTAL VALUES: solubility at 0°C CeI ₃ .9H ₂ 0 ceI ₃ .9 solvent ^b mass X mass X mol kg ⁻¹ solid phase n-C ₄ H ₂ OH 55.90 H ₂ O 89.51 68.26 Authors' original results reported in terms of the solubility of the nonohydrate in the pure alcohol. Accounting for the waters of bydration, the compilers calculate that at equilibrium the solvent contains 76.87 mass X alcohol and 23.13 mass X water. METROD/APPARATUS/FROCEDURE: Tothermal method used. No information was affiven on how equilifyitum was ascertined. Alfquots of saturated solution were withdrawn and analyzed for the method. The alcohol and vater for foidde by a potentiometric volumetric Mart fischer method. The alcohol and vater Schreinemakors' method of residues. These statements indicate that the authors studied the termary system (see favon in by calculate to bar studied the termary system over a wide range of compositions. However no phase diagram studied the termary system (see favon in be aktions setudies the termary system (see favon in be aktions studies the termary system (see favon in be aktions studies the termary system (see the compliane is stated to be similar to that for the NI ₂ - H ₀ - C ₄ ⁴ -90 system (see the compliation for King 10, 27, 27, 21, 10, 27, 21, 21, 20, 20, 21, 20, 21, 20, 21, 21, 20, 21, 20, 21, 21, 20, 21, 21, 21, 21, 21, 21, 21, 21, 21, 21	•	10		Inorg. Chem.	im. <u>1981</u> , 26, 2238–9; Russ. J. [Engl. Transl.], <u>1981</u> , 26,
EXPERIMENTAL VALUES: solubility at 0°C CeI ₃ .9H ₂ 0 ceI ₃ .9H ₂ 0 n-C ₄ H ₉ OH h ₂ 0 Results for the anhydrous salt calculated by the compilers. ^b Authors' original results reported in terms of the solubility of the nonohydrate in the pure alcohol. Accounting for the waters of hydration, the compilers calculate that at equilibrium the solvent contains 76.87 mass % alcohol and 23.13 mass % water. ^{AUXILLARY INFORMATION} METROD/APPARATUS/PROCEDURE: Soluber in the solvent contains 76.87 mass % alcohol and 23.13 mass % water. ^{AUXILLARY INFORMATION} METROD/APPARATUS/PROCEDURE: Soluber in the solvent contains 76.87 mass % alcohol and 23.13 mass % water. ^{AUXILLARY INFORMATION} METROD/APPARATUS/PROCEDURE: Soluber in the solvent contains 76.87 mass % alcohol and 23.13 mass % water. ^{AUXILLARY INFORMATION} METROD/APPARATUS/PROCEDURE: Soluber in the solvent contains 76.87 mass % alcohol and 23.13 mass % water. ^{AUXILLARY INFORMATION} METROD/APPARATUS/PROCEDURE: Soluber in the solvent contains 76.87 mass % alcohol and 23.13 mass % water. ^{AUXILLARY INFORMATION} METROD/APPARATUS/PROCEDURE: The solvent of the metal complexometrically, for indide by a ptentionetric volumetric angenerations was diven, and the only numerical results reported are those given in the data tables studied the ternary system over a wide range of compositions. However no phase diagram mas given, and the only numerical results reported are those given in the data tables studied the ternary system over a wide range of compositions. However no phase diagram reported are those given in the data table showe. The Phase diagram is stated to be similar to that for the Nij ₂ -H ₀ O - CH ₂ OH system (see the compliation for file). EXERENCES: 1. Yakimova, Z.P.; Kunetsova, G.P.; Yastrebova, L.F.; Stepfin, B.D. Žh. Neorg Yastem (see the compliation for file).	VARIABLES:			PREPARED BY:	
solubility at 0°C CeI ₃ .9H ₂ O CeI ₃ .9H ₂ O solid phase n-C ₄ H ₅ OH Algobit 55.90 ALL Colspan="2">CeI ₃ .9H ₂ O H ₂ O CeI ₃ .9H ₂ O """"""""""""""""""""""""""""""""""	Composition at 273 K			T. Mioduski an	nd M. Salomon
CeI ₃ .9H ₂ 0 CeI ₃ ^a solvent ^b mass % mass % mol kg ⁻¹ solid phase n-c ₄ H ₂ OH 55.90 42.63 1.427 CeI ₃ .9H ₂ O H ₂ O B9.51 68.26 4.129 " ***********************************	EXPERIMENTAL VALUES:			<u> </u>	
solvent ^b mass X mol kg ⁻¹ solid phase n-C ₄ H ₉ OH 55.90 42.63 1.427 CeI ₃ .9H ₂ O H ₂ O 89.51 68.26 4.129 " ^a Results for the anhydrous salt calculated by the compilers. " ^b Authors' original results reported in terms of the solubility of the nonohydrate in the pure alcohol. Accounting for the waters of hydration, the compilers calculate that at equilibrium the solvent contains 76.87 mass X alcohol and 23.13 mass X water. METHOD/APPARATUS/PROCEDURE: SOURCE AND PURITY OF MATERIALS: The nonohydrate, CeI ₃ .9H ₂ O, was synthesized according to (1,2). The nonohydrate, CeI ₃ .9H ₂ O, was synthesized according to (1,2). Aliguest for the metal complexometrically the alcohol was dried and purified by recommended methods. The source and purify of water was not specified. These statements indicate that the authors studied the terary system over a wide range of compositions. However no phase diagram was given, and the only numerical results ESTIMATED ERROR: These statements indicate that the authors studied the terary system over a wide range of compositions. However no phase diagram was given, and the only numerical results Nothing specified. REFERENCES: . Yakimova, Z.P.; Kuznetsova, G.P.; More Sova, G.P.; Stepfin, B.D. Zh. Neorg Khúm. 1977, 22, 251.			solubilit	y at O°C	
n-C ₄ H ₉ OH 55.90 42.63 1.427 CeI ₃ .9H ₂ O H ₂ O 89.51 68.26 4.129 " ^a Results for the anhydrous salt calculated by the compilers. ************************************		Cel ₃ .9H ₂ 0	Ce	1 ₃ ^a	
H20 89.51 68.26 4.129 " a Results for the anhydrous salt calculated by the compilers. Authors' original results reported in terms of the solubility of the nonohydrate in the pure alcohol. Accounting for the waters of hydration, the compilers calculate that at equilibrium the solvent contains 76.87 mass % alcohol and 23.13 mass % water. METHOD/APPARATUS/PROCEDURE: SOURCE AND PURITY OF MATERIALS: The nonohydrate, Cel_3.9H20, was synthesized according to (1,2). The alcohol was dried and purified by recommended methods. Autilitative gas chromatography. Solid ohase compositions were determined by Schreinemakers' method of residues. ^C The source and purity of water was not specified. These statements indicate that the authors studied the terrary system over a wide range was given, and the only numerical results reported are those given in the data table above. The Phase diagram is stated to be similar to that for the Nd1 - H,0 - C4B0H Nothing specified. REFERENCES: 1. Yakimova, Z.P.; Kuznetsova, G.P.; Yastrebova, I.F.; Stepin, B.D. Zh. Neorg Khim. 1977, 22, 251.	solvent ^b	mass %	mass %	mol kg ⁻¹	solid phase
AUXILIARY INFORMATION AUXILIARY INFORMATION METROD/APPARATUS/PROCEDURE: Sothermal method used. No information was given on how equilibrium was ascertained. Niquots of saturated solution were withdrawn and analyzed for the metal complexometrically. Tor foddle by a potentiometric volumetric auxiliart in the mixtures were found by quantitative gas chromatography. Solid these statements indicate that the authors studied the terrary system over a wide range of compositions. However no phase diagram was given, and the only numerical results These statements indicate that the authors studied the terrary system over a wide range of compositions. However no phase diagram was given, and the only numerical results reported are those given in the data table above. The Phase diagram is stated to be similar to that for the Nal ₃ - H ₀ - C ₄ H ₀ OH REFERENCES: 1. Yakimova, Z.P.; Kuznetsova, G.P.; Yakimova, Z.P.; Yakimova, Z.P.; Yakimova, Z.P.; Yakimova, Z.P.; Yakimova, Z.P.; Yakimova, Z.P.; Yakimova, Z.P.; Yakimova, Z.P.; Yakimova, Z.P.; Yakimova, Z.P.; Yakimova, Z.P.; Yakimova, Z.P.;	n-C4H9OH	55.90	42.63	1.427	Cel ₃ .9H ₂ O
AUXILIARY INFORMATION AUXILIARY INFORMATION AUXILIARY INFORMATION AUXILIARY INFORMATION AUXILIARY INFORMATION AUXILIARY INFORMATION METHOD/APPARATUS/PROCEDURE: Isothermal method used. No information was given on how equilibrium was ascertained. Aliquots of saturated solution were withdrawn and analyzed for the metal complexemetrically, for iodide by a potentiometric volumetric argentometric method, and for water by the Garl Fischer method. The alcohol and water contents in the mixtures were found by quantitative gas chromatography. Solid phase compositions were determined by Schreinemakers' method of residues. ^C These statements indicate that the authors studied the terrary system over a wide trange of compositions. However no phase diagram was given, and the only numerical results reported are those given in the data tabla bove. The Fhase diagram is started to be similar to that for the NdI ₃ - H ₀ - C4H ₀ OH System (see the compliation for this ^b AUXILIARY INFORMATION AUXILIARY INFORMATION AUXILIARY INFORMATION AUXILIARY INFORMATION SOURCE AND PURITY OF MATERIALS: The nonohydrate, CeI ₃ .9H ₀ 0, was synthesized acroding to (1, 2). The alcohol was dried and purified by recommended methods. ESTIMATED ERROR: Nothing specified. REFERENCES: 1. Yakimova, Z.P.; Kuznetsova, G.P.; Yastrebova, L.F.; Stepin, B.D. Zh. Neovy Khúm. <u>1977</u> , 22, 251.	^H 2 ⁰	89.51	68.26	4.129	11
AUXILIARY INFORMATION METHOD/APPARATUS/PROCEDURE: Source AND PURITY OF MATERIALS: The nonhydrate, Cel ₃ .9H ₂ O, was synthesized according to (1,2). Source AND PURITY OF MATERIALS: The nonhydrate, Cel ₃ .9H ₂ O, was synthesized according to (1,2). The alcohol was dried and purified by argentometric method, and for water by the Karl Fischer method. The alcohol and water Contents in the mixtures ^C were found by guantitative gas chromatography. Solid phase compositions were determined by Schreinemakers' method of residues. ^C These statements indicate that the authors studied the ternary system over a wide range of compositions. However no phase diagram was given, and the only numerical results reported are those given in the data table above. The Phase diagram is stated to be similar to that for the NdI ₃ - H ₂ O - C4H ₂ OH	a Results for the anh	ydrous salt calc	culated by	the compilers.	
METHOD/APPARATUS/PROCEDURE: Isothermal method used. No information was given on how equilibrium was ascertained. Aliquots of saturated solution were withdrawn and analyzed for the metal complexometrically, for iodide by a potentiometric volumetric argentometric method, and for water by the Karl Fischer method. The alcohol and water contents in the mixtures ^C were found by quantitative gas chromatography. Solid phase compositions were determined by Schreinemakers' method of residues. ^C These statements indicate that the authors studied the ternary system over a wide range of compositions. However no phase diagram was given, and the only numerical results reported are those given in the data table above. The Phase diagram is stated to be similar to that for the NdI ₃ - H ₂ O - C ₄ H ₉ OH system (see the compilation for this					
Isothermal method used. No information was given on how equilibrium was ascertained. Aliquots of saturated solution were withdrawn and analyzed for the metal complexometrically, for iodide by a potentiometric volumetric argentometric method, and for water by the Karl Fischer method. The alcohol and water contents in the mixtures ^C were found by quantitative gas chromatography. Solid phase compositions were determined by Schreinemakers' method of residues. ^C These statements indicate that the authors studied the ternary system over a wide range of compositions. However no phase diagram was given, and the only numerical results reported are those given in the data table above. The Phase diagram is stated to be similar to that for the NdI ₃ - H ₂ O - C ₄ H ₉ OH system (see the compilation for this		ΔΙΙΥΤΙ Ι ΔΡΥ ΙΝΕΟΡΜΑΤΙΟΝ			
Isothermal method used. No information was given on how equilibrium was ascertained. Aliquots of saturated solution were withdrawn and analyzed for the metal complexometrically, for iodide by a potentiometric volumetric argentometric method, and for water by the Karl Fischer method. The alcohol and water contents in the mixtures ^C were found by quantitative gas chromatography. Solid phase compositions were determined by Schreinemakers' method of residues. ^C These statements indicate that the authors studied the ternary system over a wide range of compositions. However no phase diagram was given, and the only numerical results reported are those given in the data table above. The Phase diagram is stated to be similar to that for the NdI ₃ - H ₂ O - C ₄ H ₂ OH system (see the compilation for this			AUXILIARY	INFORMATION	
 argentometric method, and for water by the Karl Fischer method. The alcohol and water contents in the mixtures^C were found by quantitative gas chromatography. Solid phase compositions were determined by Schreinemakers' method of residues. These statements indicate that the authors studied the ternary system over a wide range of compositions. However no phase diagram was given, and the only numerical results reported are those given in the data table above. The Phase diagram is stated to be similar to that for the NdI₃ - H₂O - C4H₉OH system (see the compilation for this recommended methods. recommended methods. The source and purity of water was not specified. The source and purity of water was not specified. ESTIMATED ERROR: Nothing specified. REFERENCES: Yastrebova, L.F.; Stepin, B.D. Zh. Neong Khim. 1977, 22, 251. 	METHOD / APPARATUS / PROC		AUXILIARY	<u></u>	RITY OF MATERIALS.
These statements indicate that the authors studied the ternary system over a wide range of compositions. However no phase diagram was given, and the only numerical results reported are those given in the data table above. The Phase diagram is stated to be similar to that for the NdI ₃ - H ₂ O - C ₄ H ₉ OH system (see the compilation for this	Isothermal method use given on how equilibn Aliquots of saturated and analyzed for the	CEDURE: ed. No informat rium was ascerta d solution were metal complexom	tion was lined. withdrawn hetrically	SOURCE AND PU The nonohydrat according to (e, CeI ₃ .9H ₂ O, was synthesized 1,2).
studied the ternary system over a wide range of compositions. However no phase diagram was given, and the only numerical results reported are those given in the data table above. The Phase diagram is stated to be similar to that for the NdI ₃ - H ₂ O - C ₄ H ₉ OH system (see the compilation for this REFERENCES: 1. Yakimova, Z.P.; Kuznetsova, G.P.; Yastrebova, L.F.; Stepin, B.D. Zh. Neory Khim. 1977, 22, 251.	Isothermal method use given on how equiliby Aliquots of saturated and analyzed for the for iodide by a poter argentometric method. Karl Fischer method. Contents in the mixto quantitative gas chro phase compositions we	CEDURE: ed. No informat rium was ascerta d solution were metal complexom ntiometric volum , and for water The alcohol an ures were found smatography. So ere determined b	tion was ined. withdrawn hetrically, hetric by the hd water by by	SOURCE AND PU The nonohydrat according to (The alcohol wa recommended me The source and	e, CeI ₃ .9H ₂ O, was synthesized 1,2). As dried and purified by ethods.
above. The Phase diagram is stated to be similar to that for the NdI ₃ - H_2O - C_4H_9OH system (see the compilation for this	Isothermal method use given on how equilibu Aliquots of saturated and analyzed for the for iodide by a poter argentometric method. Karl Fischer method. Contents in the mixtu quantitative gas chro phase compositions we	CEDURE: ed. No informat rium was ascerta d solution were metal complexom ntiometric volum , and for water The alcohol an ures were found smatography. So ere determined b	tion was ined. withdrawn hetrically, hetric by the hd water by by	SOURCE AND PUR The nonohydrat according to (The alcohol wa recommended me The source and specified.	e, CeI ₃ .9H ₂ 0, was synthesized 1,2). as dried and purified by ethods.
N.S.; Stepin, B.D. Zh. Neorg. Khim.	Isothermal method use given on how equilib Aliquots of saturated and analyzed for the for iodide by a poter argentometric method. Karl Fischer method. contents in the mixtu quantitative gas chro phase compositions we Schreinemakers' metho "These statements ind studied the ternary of compositions. Ho was given, and the composition	CEDURE: ed. No informat rium was ascerta d solution were metal complexom ntiometric volum , and for water The alcohol an ures ^C were found omatography. So ere determined b od of residues. ^C dicate that the system over a w owever no phase only numerical r	tion was ined. withdrawn hetrically hetric by the d water by bid y authors hide range diagram results	SOURCE AND PUR The nonohydrat according to (The alcohol wa recommended me The source and specified. ESTIMATED ERRO Nothing speci	e, CeI ₃ .9H ₂ O, was synthesized 1,2). Is dried and purified by thods. purity of water was not

Centin Iodide		
COMPONENTS: (1) Cerium iodide; CeI ₃ ; [7790-87-6] (2) Tetrahydrofuran; C ₄ H ₈ 0; [109-99-9] VARIABLES: T/K = 293 EXPERIMENTAL VALUES: The solubility of CeI ₃ in tetrahydrofuran at	ORIGINAL MEASUREMENTS: Kachkimbaeva, S.A.; Chalova, E.P.; Bleshinskii, S.V. Khim. Kompleks. Soedin. Redk. Soput- stvuyushchikh Elem. <u>1970</u> , 122-6. PREPARED BY: T. Mioduski	
AUXILIARY	INFORMATION	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were equilibrat- ed isothermally by agitation. The phases were separated by decantation, and in some cases by centrifuging. Ce determined by the oxalate method. Iodide determined by titration with an AgNO ₃ solution (the Volhard method).	SOURCE AND PURITY OF MATERIALS: Cel ₃ prepared by heating "cp" grade I ₂ with excess metallic Ce (Ce-E-1) in a sealed ampoule, and the Cel ₃ collected by sublima- tion to the cold part of the ampoule. Analyses for Ce and I revealed the presence of Cel ₂ . The I/Ce ratio was 2.82. "C.p." grade tetrahydrofuran (GDR), b.p. = 65.6°C was treated with NaOH and Na, and then distilled from metallic sodium. ESTIMATED ERROR: Nothing specified. REFERENCES:	

COMPONENTS:	ORIGINAL MEASUREMENTS:
 Praseodymium fluoride; PrF₃; [13709-46-1] Methanol; CH₄0; [67-56-1] 	Kirmse, E.M. Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85-90.
VARIABLES:	PREPARED BY:
Room temperature	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of PrF3 in methanol at room	n temperature was reported to be
0.01 mass	3 %

The corresponding molality calculated by the compiler is

 $5.1 \times 10^{-4} \text{ mol kg}^{-1}$

The solid phase was dried in a desiccator over P_4O_{10} and the Pr:F ratio found to equal almost 1:3.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE: Isothermal method. About 100 mg of PrF ₃ was added to 10-20 cm ³ of solvent, and the mix- ture mechanically agitated at room tempera-	was dissolved in HCl and the fluoride precipitated by addition of aq HF. The
ture for 100 h. 5-10 g of saturated solu- tion were removed by decanting or by centri- fuging, and the solution evaporated to dry- ness. The residue was heated with about 10	solid produced was PrF ₃ .0.5H ₂ O and was de- hydrated by washing with acetone followed by drying at 310°C for 120 hours.
cm^3 of 10% KOH solution for 1-2 h to obtain solid Pr(OH) ₃ and a basic F ⁻ solution. The precipitate was washed, dissolved in aq HC1, and Pr determined several times by complexometric titration with potentiometric	The solvent was dried and purified by "standard methods."
end-point detection (1). The fluoride con- tent in the filtrate was determined photo- metrically using Al-Eriochrome cyanine color lake indicator (2).	ESTIMATED ERROR: Soly: results with relative errors exceeding 50% were rejected.
The reported solubility is a mean of "numerous parallel determinations," or "at least two parallel determinations."	Temp: unknown. REFERENCES: 1. Schilbach, U.; Kirmse, E.M. Z. Chem. <u>1974</u> , 14, 484.
	 Schilbach, U.; Hetze, I.; Kirmse, E.M. Chemia Analityczna <u>1975</u>, 20, 33.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Praseodymium fluoride; PrF ₃ ;	Dressler, H.
[13709-46-1]	
(2) 1-(Chloromethoxy) butane;	Dissertationschrift. Paed. Inst. Koethen. GDR. 1980.
$C_4H_{11}C10; [2351-69-1]$	<u></u>
VARIABLES:	PREPARED BY:
Room Temperature	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of PrF3 in chloromethyl n-but	yl ether was reported to be
0.03 mass %	
and	
$1.52 \times 10^{-4} \text{ mol/100}$	g of solution.
The corresponding molality calculated by the	compiler is
$1.52 \times 10^{-3} \text{ mol kg}^{-1}$	
1.52 x 10 mol kg	
In the solid phase the Pr:F:ether ratio was	tound to be
1:2.90:0.23.	
	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Method analogous to that described in (1).	It appears that the fluoride was prepared
No other information available.	as in (1). In spite of drying the fluoride by two methods at 573 K, the Pr:F:H ₂ O ratio
	was 1:3.00:0.38.
	No other information available.
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES:
	 Kirmse, E.M. Wiss. Hefte, Paed. Inst. Koethen. <u>1978</u>, 2, 85.

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COMPONENTS:	ORIGINAL MEASUREMENTS:
 Praseodymium fluoride; PrF₃; 	Dressler, H.
[13709-46-1]	
(2) 1-Methoxydecane; $C_{11}H_{24}0;$	Dissertationschrift. Paed. Inst. Koethen. GDR. <u>1980</u> .
[7289-52-3]	
VARIABLES:	PREPARED BY:
Room Temperature	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of PrF ₃ in methyl n-decyl ethe	er was reported to be
0.02 mass	%
and	
1.01 x 10^{-4} mol/10	0 g sln
The corresponding molality calculated by the	compiler is
1.01 × 10	$^{-3}$ mol kg ⁻¹ .
In the solid phase the Pr:F:ether ratio was f	ound to be
1:2.91:0.1	0.
	THEODINETTON
	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Method analogous to that described in (1). No other information available.	It appears that the fluoride was prepared as in (1). In spite of drying the fluoride by two methods at 573 K, the Pr:F:H ₂ O ratio was 1:3.00:0.38.
	No other information available.
	ESTIMATED ERROR:
	Nothing specified.
	Specifica.
	REFERENCES :
	 Kirmse, E.M. Wiss. Hefte, Paed. Inst. Koethen. <u>1978</u>, 2, 85.

COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Praseodymium fluoride; PrF₃ [13709-46-1]</pre>	Rossmanith, K.
(2) Tetrahydrofuran; C ₄ H ₈ 0; [109-99-9]	Monatsh. Chem. <u>1966</u> , 97, 1357–64.
VARIABLES:	PREPARED BY:
Room Temperature: T/K - 294-296	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of PrBr ₃ in tetrahydrofuran at	: 21-23 ⁰ C was reported to be
0.62 g per 100 ml of solut:	lon (0.016 mol dm ⁻³ , compiler).
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution was equilibrated in an extractor with agita- tion for 60-80 hours at room temperature. Praseodymium was determined by the oxalate method and by titration with EDTA using Xylenol Orange indicator. The solvent was determined by difference. Anhydrous materials were handled in a dry box through which was passed a stream of nitrogen free of carbon dioxide. The solid phase is PrBr ₃ .4C ₄ H ₈ 0.	SOURCE AND PURITY OF MATERIALS: Sources and purities of initial materials not specified. PrBr ₃ was prepared by conversion of the oxide by high temperature reaction with an excess of NH ₄ Br followed by heating the product in a stream of dry nitrogen, and then in vacuum to remove un- reacted NH ₄ Br. Tetrahydrofuran was distilled from LiAlH ₄ . ESTIMATED ERROR: Nothing specified. REFERENCES:

<pre>COMPONENTS: (1) Praseodymium fluoride; PrF₃; [13709-46-1] (2) Tributyl phosphate; C₁₂H₂₇O₄P; [126-73-8]</pre>	ORIGINAL MEASUREMENTS: Kirmse, E.M. Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85-90.
VARIABLES: Room temperature	PREPARED BY: T. Mioduski
EXPERIMENTAL VALUES:	

The solubility of PrF_3 in $[CH_3(CH_2)_3]_3P(0)$ at room temperature was given as

0.02 mass %

The corresponding molality calculated by the compiler is

 $1.0 \times 10^{-3} \text{ mol kg}^{-1}$

The solid phase was dried in a desiccator over $P_4^{0}_{10}$ and the Pr:F ratio determined to be almost 1:3.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS;
Isothermal method. About 100 mg of PrF_3 was added to 10-20 cm ³ of solvent, and the mixture mechanically agitated at room temp- erature for 100 h. 5-10 g of saturated solution were removed by decanting or by centrifuging, and the solution evaporated to dryness. The residue was heated with about 10 cm ³ of 10% KOH solution for 1-2 h to obtain solid Pr(OH) ₃ and a basic F- solution The precipitate was washed, dissolved in aq HC1, and Pr determined several times by complexometric titration with potentiometric	The solvent was dried and purified by "standard methods."
end-point detection (1). The fluoride content in the filtrate was determined photometrically using Al-Eriochrome cyanine color lake indicator (2). The reported solubility is a mean of	ESTIMATED ERROR: Soly: results with relative errors exceed- ing 50% were rejected. Temp: unknown.
	REFERENCES :
"numerous parallel determinations," or "at least two parallel determinations."	 Schilbach, U.; Kirmse, E.M. Z. Chem. <u>1974</u>, 14, 484. Schilbach, U.; Hetze, I.; Kirmse, E.M. Chemia Analityczna <u>1975</u>, 20, 33.

COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Preseodymium fluoride; PrF₃; [13709-46-1]</pre>	Kirmse, E.M.
[13/09-46-1]	Wiss. Hefte, Paed. Inst. Koethen
(2) Dimethylsulfoxide; C ₂ H ₆ OS;	<u>1978</u> , 2, 85–90.
[67-68-5]	
VARIABLES:	PREPARED BY:
Room temperature	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of PrF ₃ in (CH ₃) ₂ SO at room to	emperature was given as
5 5 2	
0.03 mass %	
The corresponding molality calculated by the	compiler is
• • • •	-
1.5×10^{-3}	mol kg -
The solid phase was dried in a desiccator ov	er P.O. and the $Pr:F$ ratio found to be
almost 1:3.	
1	
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method. About 100 mg of PrF3	Pr_60_{11} (source and purity not specified) was
was added to 10-20 cm ³ of solvent, and the	dissolved in HCl and the fluoride precipi-
mixture mechanically agitated at room temp-	tated by addition of aq HF. The solid pro-
erature for 100 h. 5-10 g of saturated	duced was $PrF_{3.0.5H_20}$ and was dehydrated
solution were removed by decanting or by	by washing with acetone followed by drying
centrifuging, and the solution evaporated to dryness. The residue was heated with about	at 310°C for 120 hours.
10 cm^3 of 10% KOH solution for 1-2 h to	The solvent was dried and purified by
obtain solid $Pr(OH)_3$ and a basic F ⁻ solution	
The precipitate was washed, dissolved in aq	
HC1, and Pr determined several times by	
complexometric titration with potentiometric	
end-point detection (1). The fluoride content in the filtrate was determined	ESTIMATED ERROR:
photometrically using Al-Eriochrome cyanine	Soly: results with relative errors exceed-
color lake indicator (2).	ing 50% were rejected.
	Temp: unknown.
The reported solubility is a mean of	DEFEDENCES.
"numerous parallel determinations," or "at least two parallel determinations."	REFERENCES: 1. Schilbach, U.; Kirmse, E.M. Z. Chem.
TEASE LWO PATAILET GELETMINACIONS.	1974, 14, 484.
	 Schilbach, U.; Hetze, I.; Kirmse, E.M. Chemia Analityczna <u>1975</u>, 20, 33.
	<u> </u>

COMPONENTS:	ORIGINAL MEASUREMENTS:	
 (1) Praseodymium fluoride; PrF₃; [13709-46-1] (2) Pyridine; C₆H₅N; [110-86-1] 	Kirmse, E.M. Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85-90.	
VARIABLES:	PREPARED BY:	
Room temperature	T. Mioduski	
EXPERIMENTAL VALUES:		
The solubility of PrF_3 in pyridine at room temperature was reported to be 0.07_5 mass %		
The corresponding molality calculated by the compiler is $3.8 \times 10^{-3} \text{ mol kg}^{-1}$		
The solid phase was dried in a desiccator over $P_4^0{}_{11}$ and the Pr:F ratio found to equal almost 1:3.		

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE: Isothermal method. About 100 mg of PrF3 was added to 10-20 cm ³ of solvent, and the mixture mechanically agitated at room tem- perature for 100 h. 5-10 g of saturated solution were removed by decanting or by centrifuging, and the solution evaporated to dryness. The residue was heated with about 10 cm ³ of 10% KOH solution for 1-2 h to obtain solid Pr(OH)3 and a basic F ⁻ solution The precipitate was washed, dissolved in aq HC1, and Pr determined several times by complexometric titration with potentiometric end-point detection (1). The fluoride content in the filtrate was determined photometrically using Al-Eriochrome cyanine color lake indicator (2). The reported solubility is a mean of "numerous parallel determinations," or "at least two parallel determinations."	The solvent was dried and purified by "standard methods."

COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Praseodymium fluoride; PrF₃; [13709-46-1]</pre>	Galkin, N.P.; Shishkov, Yu.D. Khomyakov, V.I.
<pre>(2) Acidic nitrosyl fluoride; NOF.3HF; [14947-17-2]</pre>	Radiokhimiya <u>1978</u> , 20, 136–41; Soviet Radiochem. (Engl. Transl.) <u>1978</u> , 20, 109–13.
VARIABLES:	PREPARED BY:
Room temperature	T. Mioduski
Noom cemperature	I. MIUUUSKI
EXPERIMENTAL VALUES:	
The solubility of PrF_3 in acidic nitrosyl fluto be	oride at room temperature was reported
0.06 mass %	
The molality calculated by the compiler is	
3.0×10^{-3} mol	kg ^{−⊥}
AUXILIARY	INFORMATION
METHOD /APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
Isothermal method employed. The solute-	PrF3 was at least 99% pure.
solvent mixture was placed in a Teflon vessel and mechanically agitated at room	NOF.3HF prepared by saturation of liquid
temperature for 10 h. The reaction mixture	HF with NOF, and was distilled twice at
was allowed to settle for 24 h and the supernatant saturated solution was analyzed	95°C before use. The melting point of acidic nitrosyl fluoride was 3.8°C.
for the Pr content. An aliquot was evaporat-	-
ed to dryness under vacuum at 100-150°C, and	
the dry residue dissolved and analyzed (the method of analysis not specified).	
Presumably, the solid phase is anhydrous	
PrF ₃ (compiler).	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES :
1	

<pre>COMPONENTS: (1) Praseodymium chloride; PrCl₃; [10361-79-2] (2) Hexachloro-1,3-butadiene; C₄Cl₆; [87-68-3]</pre>	ORIGINAL MEASUREMENTS: Shevtsova, Z.N.; Korshunov, B.G.; Safonov, V.V.; Kogan, L.M.; Gudkova, V.I. Zh. Neorg. Khim. <u>1968</u> , 13, 3096-9; Russ, J. Inorg. Chem. (Engl. Transl.) <u>1968</u> , 13, 1596-8.
VARIABLES:	PREPARED BY:
Temperature	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES: Composition, densities, viscosities and r	refractive indices of saturated solutions.

	solubi	11tv ^a				nature of the
t/°C		mol kg ⁻¹	$d/g cm^{-3}$	n/p	n _D ²⁰	solid phase
25	0.039	0.00158	1.679	0.0386	1.5565	PrC13.4.5H20
50	0.041	0.00166	1.646	0.0309	1.5554	11
75	0,062	0.00251	1.612	0.0249	1.5550	PrC1 ₃ .2H ₂ 0

^aMolalities calculated by the compilers.

AUXILIARY INFORMATION

METHOD/APPAR	RATUS/PRO	CEDURE :
Isothermal	method.	Equilibrium attained
after 12 d at 75°C.	at 25°C,	10 d at 50°C, and 7 d

Initial salt, liquid phases and solid phases analysed for Pr by the oxalate method or by titration with Trilon B using Xylene Orange indicator, and for chloride by the Volhard method. Presumably water was found by difference. Solid phase compositions confirmed by X-ray analysis. SOURCE AND PURITY OF MATERIALS: PrCl₃.7H₂O prepd by dissolving 99.5% Pr₂O₃ in HCl, evaporating and cooling, recrystallizing, and drying in a desiccator. The oxide contained oxide impurities of other rare earths and Fe (0.01%), Ca ((0.01-0.05%), and Cu (0.01%). The product was analysed for metal and halide (mass %): Pr 37.70%, Cl 28.85%, H₂O 33.45%. Purified columnt (method act according) had

Purified solvent (method not specified) had the following properties:

$$d_4^{20} = 1.6807 \text{ g cm}^{-3}$$
, and $n_D^{20} = 1.5543$.

ESTIMATED ERROR:

Soly: nothing specified.

Temp: accuracy \pm 0.1 K (authors).

REFERENCES:

COMPONENTS: (1) Praseodymium chloride; PrCl ₃ ;			
	ORIGINAL MEASUREMENTS: Grigorovich, Z.I.		
[10361-79-2]			
(2) Methanol; CH ₄ 0; [67-56-1]	Zh. Neorg. Khim. <u>1963</u> , 8, 986-9.		
4			
VARIABLES:	PREPARED BY:		
Temperature	T. Mioduski		
	1. Midduski		
EXPERIMENTAL VALUES:			
	solubility ^a		
.0			
t/ ^o C mass ;	mol kg ⁻¹		
0 45.02	3.312		
25 53.69	4.689		
50 59.94	6.051		
50 57774	0.031		
a	-0		
^a Molalities calculated by the compiler. At $\frac{1}{2}$	25°C the solid phase is		
PrC1 ₃ .3.5CH ₃ OH.			
AUXILIARY	INFORMATION		
	SOURCE AND PURITY OF MATERIALS:		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were	SOURCE AND PURITY OF MATERIALS: PrCl ₂ prepared by dissolving "experimental"		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days.	SOURCE AND PURITY OF MATERIALS: PrCl ₃ prepared by dissolving "experimental" grade oxide in distilled HC1. The resulting		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid	SOURCE AND PURITY OF MATERIALS: PrCl ₃ prepared by dissolving "experimental" grade oxide in distilled HC1. The resulting chloride was dehydrated by treatment with		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details	SOURCE AND PURITY OF MATERIALS: PrCl ₃ prepared by dissolving "experimental" grade oxide in distilled HC1. The resulting		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid	SOURCE AND PURITY OF MATERIALS: PrCl ₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1).		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alcohol adduct was studied thermographi-	SOURCE AND PURITY OF MATERIALS: PrCl ₃ prepared by dissolving "experimental" grade oxide in distilled HC1. The resulting chloride was dehydrated by treatment with		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given).	SOURCE AND PURITY OF MATERIALS: PrCl ₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alcohol adduct was studied thermographi-	SOURCE AND PURITY OF MATERIALS: PrCl ₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alcohol adduct was studied thermographi-	SOURCE AND PURITY OF MATERIALS: PrCl ₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alcohol adduct was studied thermographi-	SOURCE AND PURITY OF MATERIALS: PrCl ₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alcohol adduct was studied thermographi-	SOURCE AND PURITY OF MATERIALS: PrCl ₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by "standard methods." ESTIMATED ERROR:		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alcohol adduct was studied thermographi-	SOURCE AND PURITY OF MATERIALS: PrCl ₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by "standard methods." ESTIMATED ERROR: Soly: authors claim accuracy to be about		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alcohol adduct was studied thermographi-	SOURCE AND PURITY OF MATERIALS: PrCl ₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by "standard methods." ESTIMATED ERROR: Soly: authors claim accuracy to be about 0.05 %.		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alcohol adduct was studied thermographi-	<pre>SOURCE AND PURITY OF MATERIALS: PrCl₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by "standard methods."</pre> ESTIMATED ERROR: Soly: authors claim accuracy to be about 0.05 %. Temp: nothing specified.		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alcohol adduct was studied thermographi-	<pre>SOURCE AND PURITY OF MATERIALS: PrCl₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by "standard methods."</pre> ESTIMATED ERROR: Soly: authors claim accuracy to be about 0.05 %. Temp: nothing specified. REFERENCES:		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alcohol adduct was studied thermographi-	<pre>SOURCE AND PURITY OF MATERIALS: PrCl₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by "standard methods." ESTIMATED ERROR: Soly: authors claim accuracy to be about 0.05 %. Temp: nothing specified. REFERENCES: 1. Freeman, I.H. J. Inorg. Nucl. Chem.</pre>		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alcohol adduct was studied thermographi-	<pre>SOURCE AND PURITY OF MATERIALS: PrCl₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by "standard methods."</pre> ESTIMATED ERROR: Soly: authors claim accuracy to be about 0.05 %. Temp: nothing specified. REFERENCES:		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alcohol adduct was studied thermographi-	<pre>SOURCE AND PURITY OF MATERIALS: PrCl₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by "standard methods." ESTIMATED ERROR: Soly: authors claim accuracy to be about 0.05 %. Temp: nothing specified. REFERENCES: 1. Freeman, I.H. J. Inorg. Nucl. Chem.</pre>		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alcohol adduct was studied thermographi-	<pre>SOURCE AND PURITY OF MATERIALS: PrCl₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by "standard methods." ESTIMATED ERROR: Soly: authors claim accuracy to be about 0.05 %. Temp: nothing specified. REFERENCES: 1. Freeman, I.H. J. Inorg. Nucl. Chem.</pre>		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alcohol adduct was studied thermographi-	<pre>SOURCE AND PURITY OF MATERIALS: PrCl₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by "standard methods." ESTIMATED ERROR: Soly: authors claim accuracy to be about 0.05 %. Temp: nothing specified. REFERENCES: 1. Freeman, I.H. J. Inorg. Nucl. Chem.</pre>		
COMPONENTS:	ADTAINAT MELOUIDEN CHIPE		
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	ORIGINAL MEASUREMENTS:		
(1) Praseodymium chloride; PrCl ₃ ; [10361-79-2]	Grigorovich, Z. I.		
(2) Ethanol; C_2H_60 ; [64-17-5]	Zh. Neorg. Khim. <u>1963</u> , 8, 986-9.		
VARIABLES:	PREPARED BY:		
Temperature	T. Mioduski		
EXPERIMENTAL VALUES:	<i>a</i>		
	solubility ^a		
t/ ^o C mass	% mol kg ⁻¹		
0 37.29	2.405		
25 43.76	3.147		
50 47.56	3.668		
AUXILIARY	INFORMATION		
METHOD /APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:		
Isothermal method used. Solutions were thermostated and equilibrated for 3 days.	SOURCE AND FURITI OF MATERIALS:		
Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details	PrC1, prepared by dissolving "experimental"		
Both the saturated solutions and the solid	PrCl ₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with		
Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alcohol adduct was studied thermographi-	PrCl ₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by		
Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alcohol adduct was studied thermographi-	PrCl ₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by		
Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alcohol adduct was studied thermographi-	PrCl ₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by "standard methods." ESTIMATED ERROR: Soly: authors claim accuracy to be about		
Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alcohol adduct was studied thermographi-	<pre>PrCl₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by "standard methods." ESTIMATED ERROR: Soly: authors claim accuracy to be about 0.05%.</pre>		
Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alcohol adduct was studied thermographi-	<pre>PrCl₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by "standard methods." ESTIMATED ERROR: Soly: authors claim accuracy to be about 0.05%. Temp: nothing specified. REFERENCES: 1. Freeman, I.H. J. Inorg. Nucl. Chem.</pre>		

COMPONENTS:	······································			ORIGINAL MEASUREMENTS:			
<pre>(1) Praseodymium chloride; PrCl₃; [10361-79-2]</pre>		Sakharova, N.N.; Sakharova, Yu.G.; Ezhova, T.A.; Izmailova, A.A.					
(2) Ethanol; C ₂ H ₆ 0; [64-17-5]							
(3) Water: H ₂ 0; [7732-18-5]		Zh. Neorg. Khim. <u>1975</u> , 20, 1479–83; Russ. J. Inorg. Chem. (Engl. Transl.) <u>1975</u> , 20, 830–2.					
VARIABLES:		· · · · · · · · · · · · · · · · · · ·		PREPARED BY:			
Temperature			T. Mioduski and	M. Salomon			
EXPERIMENTAL VALUES:			, <u>, ,</u>				
solubility of PrCl ₃ .6H ₂ 0 in 96.8			% с ₂ н ₆ он ^а				
	sample 1 sample 2 sample		•				
t/°C	g/100 g ^b	g/100 g	g/100 g	g/100 g	g/100 g	mol kg ^{-1c}	
20	43.22	43.49	43.26	43.08	43.32	1.219	
30	45.01	45.21	44.90	45.00	45.03	1.267	
40	48.35	48.46	48.23	48.14	48.29	1.359	
50	54.42	54.41	54.20	54.46	54.37	1.530	
60	63.02	62.98	63.11	63.06	63.04	1.774	
^a It is not	clearly stat	ed whether th	e mixture	is 96.8 mass %	or 96.8 volume	e % ethanol.	
^b Solubiliti	es reported.	as grams of h	exahydrat	e in 100 g of so	lvent.		
C _{Molalities}	calculated	by the compile	ers.				
		A	UXILIARY	INFORMATION			
METHOD/APPA	RATUS/PROCEDU	JRE :		SOURCE AND PURIT	Y OF MATERIAL	S:	
F		Equilibrium		PrCl ₃ .6H ₂ O prepo	a by dissolving (3) HCl follow	ved by evapn and	
1		dentical resul			•	ried in a desic-	
-	•••••	quilibrium fro data points in				OH. The crystals	
		er 3 h of equ		analysed for the			
		two data poin	nts were	B, and for Cl by Found (%) for P		55 (calcd 39.64).	
obtained af	ter 4 h of e	quilibration.				LO (calcd 29.97).	
The metal c	ontent in ea	ch aliquot tal	ken for	96.8% ethanol p			
analysis wa		by complexom		c.p. grade 93.5 followed by dist refractometrica	tn. Ethanol d	oncn determined	
		withdrawn at 2 e solid phase		ESTIMATED ERROR: Soly: results an	parently pred	ise to within	
the hexahyd		thanol was not		Soly: results apparently precise to within ± 0.7 % (compilers).			
-	-		4°C.	Temp: nothing sp	pecified.		
				REFERENCES:			
The hexahyd	rate melted	at 113.4 - 114	4°C.	REFERENCES :			

COMPONENTS: (1) Praseodymium chloride; PrCl ₃ ; [10361-79-2]	EVALUATOR: Tomasz Mioduski Institute of Nuclear Research Warsaw, Poland and
(2) 1-Propanol; C ₃ H ₈ O; [71-23-8]	Mark Salomon USA ET & DL Ft. Monmouth, NJ, U.S.A.

CRITICAL EVALUATION:

The solubility of PrCl₃ in 1-propanol has been reported by Kirmse (1) for 298.2 K, and by Grigorovich (2) for 273.2 K, 298.2 K, and 323.2 K. The data reported by these two authors for 298.2 K are in serious disagreement with one another. For example Kirmse reported a solubility of 1.24 mol kg⁻¹ and a solid phase of PrCl₃·C₃H₇OH whereas Grigorovich reported a solubility of 1.907 mol kg⁻¹ and a solid phase of PrCl₂·2C₃H₇OH.

The source of this disagreement is unknown, and thus the more accurate data cannot be identified. Thus we are not able to propose any *tentative* solubility data for $PrCl_3$ in 1-propanol at this time.

REFERENCES

1. Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov 1971, 200.

2. Grigorovich, Z.I. Zh. Neorg. Khim. <u>1963</u>, 8, 986.

	······				
COMPONENTS: (1) Praseodymium chloride	e: PrCl.:		AL MEASUREMEN se, E. M.	TS:	
[10361-79-2]	-,3,			po Teor. Rastvorov	
(2) Alcohols			<u>1971</u> , 200-6.		
VARIABLES:		PREPAR	ED BY:		
T/K = 298		T. Mi	ioduski and M.	. Salomon	
EXPERIMENTAL VALUES:		. I			
	т		lubd 1 den ^a		
solvent		3^{101}	lubility ^a mol kg ⁻¹	nature of the solid phase	
1,2-ethanediol; C ₂ H ₆ O	; [107-21-1] 3		-	PrC1 ₃ .3C ₂ H ₆ 0 ₂	
	; [71-23-8] 2			PrCl ₃ .C ₃ H ₈ 0	
2-propen-1-o1 ^b ; C ₃ H ₆ 0	; [107-18-6]	39.5	2.64	PrCl ₃ .C ₃ H ₆ 0	
^b In the original paper th author kindly identified	the solvent was spec	llyl alco	ohol.	n, opon request, the	
	AUXILIAR	Y INFORM	ATION		
METHOD/APPARATUS/PROCEDURE:		SOURCE	E AND PURITY C	DF MATERIALS:	
Only the nature of the sol reported. Experimental de but were probably similar of the author which are co this volume.	lid phase was etails not given, to previous works	Noth: work prob	ing specified by the author	, but based on previous r the anhydrous salt was by the method of Taylor	
		ESTIM	ATED ERROR:		
		Noth	ing specified		
			<u></u>		
		1. T	ENCES: aylor, M.D.; . Inorg. Nucl	Carter, C.P. . Chem. <u>1962</u> , 24, 387.	
1					

۵٬۰۰۰ ۲۰۰۰ ۲۰۰۰ ۲۰۰۰ ۲۰۰۰ ۲۰۰۰ ۲۰۰۰ ۲۰۰۰			
COMPONENTS: (1) Praseodymium chloride; PrCl ₃ ; [10361-79-2] (2) 1-Propanol; C ₃ H ₈ 0; [71-23-8]	ORIGINAL MEASUREMENTS: Grigorovich, Z. I. Zh. Neorg. Khim. <u>1963</u> , 8, 986-9.		
VARIABLES: Temperature	PREPARED BY: T. Mioduski		
The second s			
EXPERIMENTAL VALUES:	solubility ^a		
t/ ⁰ C mass	% mol kg ⁻¹		
0 30.08	1.740		
25 32.04	1.907		
50 33.10	2.001		
AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alcohol adduct was studied thermographi- cally.	SOURCE AND PURITY OF MATERIALS: PrCl ₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by "standard methods."		

(1) Praseodymium chloride; PrCl ₃ ;	ORIGINAL MEASUREMENTS:		
[10361-79-2]	Grigorovich, Z.I.		
(2) 1-Butanol; C ₄ H ₁₀ 0; [71-36-3]	Zh. Neorg. Khim. <u>1963</u> , 8, 986-9.		
VARIABLES:	PREPARED BY:		
Temperature	T. Mioduski		
EXPERIMENTAL VALUES:			
	solubility ^a		
t/ ^o C mass 3	mol kg ⁻¹		
0 15.42	0.737		
25 23.62	1.251		
50 31.78	1.884		
AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details	SOURCE AND PURITY OF MATERIALS: PrCl ₂ prepared by dissolving "experimental"		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid	SOURCE AND PURITY OF MATERIALS: PrCl ₃ prepared by dissolving "experimental" grade oxide in distilled HC1. The resulting chloride was dehydrated by treatment with		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alochol adduct was studied thermographi-	SOURCE AND PURITY OF MATERIALS: PrCl ₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alochol adduct was studied thermographi-	SOURCE AND FURITY OF MATERIALS: PrCl ₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alochol adduct was studied thermographi-	SOURCE AND PURITY OF MATERIALS: PrCl ₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by "standard methods." ESTIMATED ERROR: Soly: authors claim accuracy to be about		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alochol adduct was studied thermographi-	SOURCE AND PURITY OF MATERIALS: PrCl ₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by "standard methods." ESTIMATED ERROR: Soly: authors claim accuracy to be about 0.05 %.		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for PrCl ₃ (no details were given). The alochol adduct was studied thermographi-	<pre>SOURCE AND PURITY OF MATERIALS: PrCl₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by "standard methods."</pre> ESTIMATED ERROR: Soly: authors claim accuracy to be about 0.05 %. Temp: nothing specified. REFERENCES: 1. Freeman, I. H. J. Inorg. Nucl. Chem.		

COMPONIENTE	ORIGINAL MEASUREMENTS:
COMPONENTS: (1) Praseodymium chloride; PrCl ₃ ;	Grigorovich, Z.I.
[10361-79-2]	Zh. Neorg. Khim. <u>1963</u> , 8, 986-9.
(2) 1-Pentanol; $C_5H_{12}O;$ [71-41-0]	
VARIABLES:	PREPARED BY:
Temperature	T. Mioduski
EXPERIMENTAL VALUES:	
	solubility ^a
t/ ^o C mass	% mol kg ⁻¹
0 17.48	0.857
25 24.35	1.302
50 23.37	1.233
^A Molalities calculated by the compiler. At PrCl ₃ .3C ₅ H ₁₁ OH.	25°C the solid phase is
3 2 11	
	INFORMATION
	······································
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were	SOURCE AND PURITY OF MATERIALS: PrCl ₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting
thermostated and equilibrated for 3 days. Both the saturated solutions and the solid	grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with
phase were analyzed for PrCl ₃ (no details were given).	thionyl chloride (1).
The alcohol adduct was studied thermographi-	The alcohol was purified and dried by "standard methods."
cally.	
	ESTIMATED ERROR: Soly: authors claim accuracy to be about
	0.5 %.
	Temp: nothing specified.
	REFERENCES: 1. Freeman, I. H. J. Inorg. Nucl. Chem. <u>1958</u> , 7, 286.

Praseodymium Chloride						
COMPONENTS: (1) Praseodymium chloride; PrCl ₃ ; [10361-79-2] (2) Ethers		ORIGINAL MEASUREMENTS: Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J.; Oelsner, L.; Niedergesaess, U. Z. Chem. <u>1968</u> , 8, 472-3. Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov. <u>1971</u> , 200-6.				
VARIABLES:		PREPARED BY:	PREPARED BY:			
Room temperature: T/K around 298		T. Mioduski	T. Mioduski and M. Salomon			
EXPERIMENTAL VALUES:						
			PrCl ₃ solu	bility ^{a,b}		
solvent			mass %	mol kg ⁻¹		
1-ethoxy-2-methoxyethane;	c ₅ H ₁₂ 0 ₂ ;	[5137-45-1]	0.04	0.0016		
1,3-dioxolane;	^c 3 ^H 6 ⁰ 2;	[646-06-0]	0.9	0.037		
1,4-dioxane;	c ₄ H ₈ 0 ₂ ;	[123-91-1]	0.04	0.0016		
^a Molalities calculated by t	he compilers.					
^b Nature of solid phases not	specified.					
<u></u>	AUXILIARY	INFORMATION				
METHOD /APPARATUS /PROCEDURE ·			URITY OF MATE	PTALS.		
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were isother- mally agitated at 25°C or at room tempera- ture. Authors state that the difference found for: the solubility was within exper- imental error limits.		The anhydro method of T		repared by the ter (1).		
Pr was determined by completion.	exometric titra-					

No other details given.

ESTIMATED ERROR:

Nothing specified.

REFERENCES:

 Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u>, 24, 387.

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COMPONENTS:	ORIGINAL MEASUREMENTS:			
(1) Praseodymium chloride; PrCl ₃ ; [10361-79-2]	Kirmse, E.M.			
	Tr. II Vses. Konf. po Teor. Rastvorov			
(2) Alkoxy-ethanols	<u>1971</u> , 200-6.			
VARIABLES:	PREPARED BY:			
T/K = 298	T. Mioduski and M. Salomon			
21 1 270				
EXPERIMENTAL VALUES:				
Pi	Cl ₃ solubility ^a			
	nature of the nss % mass kg ⁻¹ solid phase			
2-methoxyethanol; C ₃ H ₈ 0 ₂ ; [109-86-4] 12	2.8 0.594 $PrCl_3.nC_3H_8O_2$ (n = 2-3)			
2-ethoxyethanol; C ₄ H ₁₀ O ₂ ; [110-80-5] 16	0.2 0.782 PrCl ₃ .2C ₄ H ₁₀ O ₂			
^a Molalities calculated by the compilers.				
AUXILIARY	INFORMATION			
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:			
Experimental details not given, but were probably similar to previous works of the	Nothing specified, but based on previous work by the authors the anhydrous salt was			
author which are compiled throughout this	probably prepared by the method of Taylor and Carter (1).			
volume.	and valler (1).			
	1			
	ESTIMATED ERROR:			
	Nothing specified.			
	REFERENCES: 1. Taylor, M.D.; Carter, C.P.			
	J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.			
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COMPONENTS :		ORIGINAL MEASUREMENTS:			
(1) Praseodymium chloride;	PrCl ₃ ;	Kirmse, E. M.; Dressler, H.			
[10361-79-2]		Z. Chem. <u>1975</u> , 15, 239–40.			
(2) Alkyl ethers					
VARIABLES:		PREPARED BY:	<u></u>	·····	
Room Temperature (293-298 K)			and M. Salomon		
-					
EXPERIMENTAL VALUES:			· · · · · ·	····	
				, a	
			PrCl ₃ solubil:		
solvent			mass %	mol kg ⁻¹	
1-methoxyheptane;	с _{8^н18} 0; ([629-32-3]	0.8 ^b	0.033	
1-methoxyoctane;	C ₉ H ₂₀ 0; [[929-56-6]	0.07	0.0028	
1-methoxynonane;	C ₁₀ H ₂₂ 0;	[7289-51-2]	0.06	0.0024	
^a Molalities calculated by th	e compilers.				
^b Solid phase dried in a vacu PrCl ₃ ,2C ₈ H ₁₈ 0. Composition	um desiccator ou	ver P ₂ 0 ₅ . Anal	lysis yielded t	he composition	
18 ¹	o of other source	i philoes hot b	p		
	AUXILIARY	INFORMATION			
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PU	RITY OF MATERIA	LS:	
The solute-solvent mixtures mally agitated (at room temp		Nothing spec	ified.		
equilibrium was attained. T	he anhydrous				
reagents were handled in a d ing $P_A 0_{10}$. Pr was determine	ed by complexo-				
metric fitration using Xylen cator.	ol Orange indi-				
The reported solubilities ar based on four determinations	e mean values				
		ESTIMATED ERF			
		Nothing spec	111ed.		
		REFERENCES:			

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COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Praseodymium chloride; PrCl₃; [10361-79-2]</pre>	Rossmanith, K.; Auer-Welsbach, C. Monatsch. Chem. <u>1965</u> , 96, 602-5.
(2) Tetrahydrofuran; C ₄ H ₈ 0; [109-99-9]	
VARIABLES:	PREPARED BY:
Room Temperature: T/K about 293	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of PrCl ₃ in tetrahydrofuran a	t 20° C (room temperature) was reported to be
0.590 g per 10	00 ml of solution
(0.0239 mot di	m ⁻³ , compiler).
	, comprisi/.
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method employed. The solution	Sources and purities of initial materials
was equilibrated in an extractor with agita-	not specified. PrCl ₃ was prepared by con-
tion for 60-80 hours at room temperature.	version of the oxide by high temperature reaction with an excess of NH4Cl followed
Praseodymium was determined by the oxalate	by heating the product in a stream of dry
method and by titration with EDTA using	nitrogen, and then in vacuum to remove
Xylenol Orange indicator. The solvent was determined by difference.	unreacted NH ₄ C1.
	Tetrahydrofuran was distilled from LiAlH ₄ .
Anhydrous materials were handled in a dry	
box through which was passed a stream of nitrogen free of carbon dioxide.	j (
-	ESTIMATED ERROR:
The solid phase is PrCl ₃ .2.00C ₄ H ₈ 0.	Nothing specified.
	REFERENCES:

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COMPONENTS :		ORIGINAL MEASUREMENTS:			
<pre>(1) Praseodymium chloride; PrCl₃; [10361-79-2]</pre>		Korovin, S.S.; Galaktionova, O.V.; Lebedeva, E.N.; Voronskaya, G.N. Zh. Neorg. Khim. <u>1975</u> , 20, 908-14;			
<pre>(2) Tributylphosphate; C [126-73-8]</pre>	Russ. J. Inorg. Chem. Engl. Transl. 1975, 20, 508-11.				
VARIABLES:					
		PREPARED BY:	N 0-1		
One Temperature: 25 ⁰ C		T. Mioduski and	M. Salomon		
EXPERIMENTAL VALUES:			<u></u>		
	Composition of sat	urated solution			
mass % mol/kg sln	$g dm^{-3}$	mol dm^{-3}	mol kg ⁻¹ (compiler)	density/g cm ⁻³	
30.0 1.21	356.5	1.45	1.73	1.24	
The solid phase is PrCl ₃					
	AUXILIARY	INFORMATION			
METHOD/APPARATUS/PROCEDURE: Saturated solutions prepar		SOURCE AND PURI		IALS: by chlorination of	
with magnetic stirring. E	Quilibrium was	Pr ₂ 0 ₂ with CC1	vapor (1,2). Source and	
attained after 25-30 d. T centrifuged and an aliquot	he solution was for analysis taken	puřity of mater analyzed gravit		nd C1 by Volhard's	
and added to methanol and	pptd with aq NH ₃ .	method. Tribut	ylphosphate	(TBP) was puri-	
The pptd Pr(OH) ₃ was washe heated to the oxide for gr				od." No addition-	
The solid phase was analyz					
given) for phosphorous and PrCl ₃ was found. All oper					
formed in a dry box throug of argon was passed.					
The major objective of thi	s work was to	ESTIMATED ERROR	:		
establish the nature of co TBP and PrCl ₃ in solution.	Additional	No estimates po	ossible.		
studies with unsaturated s spectra, viscosity, molar	conductivities)				
are discussed in the sourc	e paper.	REFERENCES: 1. Korshunov, 1 Bukhtiyarov Zh. Neorg.	V.V.; Shev	tsova, Z.N.	
		2. Novikov, G. Zh. Prikl.			

COMPONENTS: (1) Praseodymium ([10361-79-2]			ORIGINAL MEASUREMENT	rs:	
[10361-79-2]	chloride: PrCl.		Kirmse, E.M.		
[10307-13-6]		1			Reiduction
(2) Alkyl amines			Tr. II Vses. Konf. <u>1971</u> , 200–6.	ро Теол.	RASILONOV
VARIABLES:			PREPARED BY:		
T/K = 298			T. Mioduski and M.	Salomon	
EXPERIMENTAL VALUES:					
				PrCl ₃ sol	ubility ^a
				5	_
solvent				mass %	mol kg ⁻¹
1-propanamine;	n-C ₃ H ₉ N;	[107-10	-8]	22.2	1.15
2-propanamine;	iso-C _a H _o N;	[75-31-	0]	0.08	0.0032
		[107 11	01	0.05	0.0020
2-propen-1-amine ^b	^C 3 ^H 7 ^N ;	[107-11	-9]	0.05	0.0020
a Molalities calcula					
		JXILIARY	INFORMATION		
METHOD/APPARATUS/PRO Experimental detail probably similar to author which are co volume. Nature of solid pha	CEDURE: s not given, but to previous works of mpiled throughout	were f the this	INFORMATION SOURCE AND PURITY ON Nothing specified, work by the author probably prepared 1 and Carter (1).	but based the anhyd	on previous rous salt was

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Praseodymium chloride; PrCl ₃ ; [10361-79-2]	Mikheev, N.B.; Kamenskaya, A.N.; Konovalova, N.A.; Zhilina, T.A.
(2) Hexamethylphosphorotriamide; C ₆ H ₁₈ N ₃ OP; [680-31-9]	Zh. Neorg. Khim. <u>1977</u> , 22, 1761-6; Russ, J. Inorg. Chem. (Engl. Transl.) <u>1977</u> , 22, 955-8.
VARIABLES:	PREPARED BY:
Room temperature: T/K = 298 <u>+</u> 3	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of the anhydrous salt at 25 \pm	3°C was given as
	$0.003 \text{ mol } dm^{-3}$
0.113 <u>-</u>	
Starting with the solvate $PrC1_3.3((CH_3)_2N)_3PO$	
0.128 ±	0.001 mol dm ⁻³
^a Table 3 in the English translation of the so $23 \pm 3^{\circ}$ C. This is probably a typographical measurements were carried out at $25 \pm 3^{\circ}$ C.	urce paper states the temperature to be error as the text clearly states that all
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AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Salt and solvent were placed in a test-tube in a dry box, and the tube agitated at room temperature ($25 \pm 3^{\circ}$ C) until equilibrium was reached. Aliquots were withdrawn periodically and analysed for	SOURCE AND PURITY OF MATERIALS: Anhyd PrCl ₃ prepd similarly to that in (1) by subliming NH_4 Cl from a mixt of PrCl ₃ and 6 moles of NN_4 Cl in a stream of inert gas at 200-400°C (PrOCl content less than 3 %). The solvent was purified as in (2).
the metal content. Rare earth concentration was determined by complexometric titration, and by the radiometric method using the isotope Tm-170 ($t_1 = 169$ d). Authors state that results for both methods agreed. Al- though not clearly stated, it appears that equilibrium was reached in several weeks to several months.	PrCl ₃ . $3C_{6}H_{18}N_{3}OP$ prepd by dissolving the hydrate in $C_{3}H_{18}N_{3}OP$ and heating to 140-145°C for 5 m. The solvate was pptd by addition of abs ether, washing 7 times with ether, and drying over $P_{2}O_{5}$ in a stream of dry nitrogen. Yield was about 90 %.
Solid phase samples washed three times with	ESTIMATED ERROR: -3
benzene or ether and dried on a steam bath in an argon atmosphere. The solid phase was	Soly: precision \pm 0.001 mol dm ⁻³ at a 95 % level of confidence (authors).
analyzed and found to be PrCl ₃ .3C ₆ H ₁₈ N ₃ OP. The solvate was analysed for metal content by complexometric titrn, for chloride by the	Temp: precision ± 3 K. REFERENCES: 1. Taylor, M.D.; Carter, C.P. J. Inong.
Volhard method, and the solvent was obtained by difference. IR spectra confirmed the absence of water. Structural studies of the	 Nucl. Chem. <u>1962</u>, 24, 387. Fomicheva, M.G.; Kessler, Yu.M.; Zabusova,
solvate also carried out by X-ray analysis.	S.E.; Alpatova, N.M. Elektrokhimiya 1975, 11, 163.
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COMPONENTS:		
 Praseodymium chloride; PrCl₃; 	ORIGINAL MEASUREMEN Lyubimov, E.I.; B	
[10361-79-2]		<u>1972</u> , 45, 1176-8.
<pre>(2) Tetrachlorostannate; SnCl₄; [7646-78-8]</pre>		
(3) Phosphorus oxychloride; POCl ₃ ; [10025-87-3]		
VARIABLES:	PREPARED BY:	
T/K = 293	T. Mioduski	
Concentration of SnCl ₄		
EXPERIMENTAL VALUES:		
	, concentration	
(by volume)	nol dm ⁻³	moles $Pr dm^{-3}$
0)	0.013
•	, 0.035	0.10
	0.085	0.20
1:50).17	0.31
).33	0.27
	0.59	0.12
1:10).78	0.11
^A This is also the solubility of PrCl ₃ in th Quantitatively converted to the chloride a	SnCl4-POCl3 mixture cording to	es because the oxide is
$Pr_2O_3 + 6POCI_3$ Thus the equilibrated solutions should act system containing SnCl ₄ , PrCl ₃ , $P_2O_3Cl_4$ an soluble).		
Thus the equilibrated solutions should act system containing SnCl ₄ , PrCl ₃ , $P_2O_3Cl_4$ and	ally be considered	
Thus the equilibrated solutions should act system containing SnCl ₄ , PrCl ₃ , P ₂ O ₃ Cl ₄ an soluble).	ally be considered and a second se	
Thus the equilibrated solutions should act system containing SnCl ₄ , PrCl ₃ , P ₂ O ₃ Cl ₄ an soluble).	ally be considered to the compiles	r assumes P ₂ 0 ₃ Cl ₄ is
Thus the equilibrated solutions should act system containing SnCl ₄ , PrCl ₃ , P ₂ O ₃ Cl ₄ an soluble).	INFORMATION SOURCE AND PURITY OF Pr6011 of "the fin Pr203 with hydroget "Pure" grade SnCl4 with P205 and dist	r assumes P ₂ 0 ₃ Cl ₄ is

COMPONENTS:	ORIGINAL MEASUREMENTS:
 Praseodymium bromide; PrBr₃; [13536-53-3] 	Kirmse, E. M.
<pre>(2) 1,2-Diethoxyethane; C₆H₁₄O₂; [629-14-1]</pre>	Tr. II Vses. Konf. po Teor. Rastvorov <u>1971</u> , 200-6.
VARIABLES:	PREPARED BY:
T/K = 298	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	
The solubility of PrBr ₃ in 1,2-diethoxyethar	ne at 25 ⁰ C was given as
0.6 mass %	
The corresponding value of the molality calc	culated by the compiler is
0.016 mol kg ⁻¹	
The nature of the solid phase was not specif	ied.
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume.	Nothing specified, but based on previous work by the author the anhydrous salt was probably prepared by the method of Taylor and Carter (1).
	ESTIMATED ERROR:
	Nothing specified.
	DEPEndence
	REFERENCES: 1. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.

Praseodym	ium Bromide	14 [.]
COMPONENTS:	ORIGINAL MEASUREMENTS:	
<pre>(1) Praseodymium bromide; PrBr₃; [13536-53-3]</pre>	<pre>Kirmse, E.M.; Zwietasch, K.J.; Tirschmann J.; Oelsner, L.; Niedergesaess, U. Z. Chem. <u>1968</u>, 8, 472-3.</pre>	3
(2) 1,4-Dioxane; C ₄ H ₈ 0 ₂ ; [123-91-1]	Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov. <u>1971</u> , 200-6.	
VARIABLES:	PREPARED BY:	
Room temperature: T/K around 298	T. Mioduski	
EXPERIMENTAL VALUES:	<u> </u>	
The solubility of PrBr ₃ in p-dioxane at arou	und 25 [°] C was given as	
0.3 ₅ mass %		
The corresponding molality calculated by the	e compiler is	
9.2 x 10 ⁻³ mol	kg ⁻¹	
The nature of the solid phase was not speci:	fied.	
AUXILIARY	INFORMATION	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were isother- mally agitated at 25°C or at room tempera- ture. Authors state that the difference	SOURCE AND PURITY OF MATERIALS; The anhydrous salt was prepared by the method of Taylor and Carter (1).	
found for the solubility was within experi- mental error limits.	No other information given.	
Pr was determined by complexometric titra- tion.		
No other details given.		
	ESTIMATED ERROR:	
	Nothing specified.	

REFERENCES: Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u>, 24, 387.

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COMPONENTS: (1) Praseodymium [13536-53-3] (2) Alkyl amines	, i i i i i i i i i i i i i i i i i i i		ORIGINAL MEASURE Kirmse, E. M. Tr. II Vses. K. <u>1971</u> , 200-6.		Rastvorov
VARIABLES: T/K = 298			PREPARED BY: T. Mioduski and	d M. Salomon	
EXPERIMENTAL VALUES	S:		I		
solvent				PrBr ₃ sol mass %	lubility ^a mol kg ⁻¹
1-propanamine;	n-C3 ^H 9 ^N ;	[107-10	9-8]	21.6	0.724
2-propanamine;		[75-31-		9.6	0.279
1-butanamine;	n-C4 ^H 11 ^N ;	[109-73	9]	9.2	0.266
2-butanamine;	sec-C4 ^H 11 ^N ;	[13952-	·84-6]	26.5	0.947
di-2-butylamine;	(sec-C ₄ H ₉) ₂ NH;	[626-23	-3]	0.04	0.0011
		AUXILIARY	INFORMATION		
probably similar author which are volume.	ROCEDURE: ils not given, but to previous works compiled throughou hases not specifie	of the t this	SOURCE AND PURIT Nothing specifi work by the aut probably prepar and Carter (1)	led, but based thor the anhyd red by the met	l on previous lrous salt was

Press,	
COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Praseodymium iodide; PrI₃; [13813-23-5]</pre>	Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J.; Oelsner, L.; Niedergeases, U. Z. Chem. <u>1968</u> , 8, 472-3.
(2) 1,4-Dioxane; C ₄ H ₈ O ₂ ; [123-91-1]	Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov. <u>1971</u> , 200-6.
VARIABLES:	PREPARED BY:
Room temperature: T/K around 298	T. Mioduski
EXPERIMENTAL VALUES:	
	25° and after as
The solubility of PrI3 in p-dioxane at about	25 C was given as
2.7 mass %	
The corresponding molality calculated by the	e compiler is
0.053 mol kg ⁻¹	
The nature of the solid phase was not specif	ied.
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The solute-solvent mixtures were isother- mally agitated at 25°C or at room tempera-	The anhydrous salt was prepared by the method of Taylor and Carter (1).
ture. Authors state that the difference found for the solubility was within experi-	No other information given.
mental error limits.	
Pr was determined by complexometric titra- tion.	
No other details given.	
WO AFHET AFFETTS RIACH.	
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES: 1. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.

COMPONENTS: (1) Praseodymium [13813-23-5] (2) Alkyl amines	5		ORIGINAL MEASUREME Kirmse, E.M. Tr. II Vses. Kont 1971, 200-6.		Rastvorov
VARIABLES:			PREPARED BY:		
T/K = 298			T. Mioduski and M	I. Salomon	
EXPERIMENTAL VALUE	S:				-
				PrI3 solu	ubility ^a
solvent				mass %	mol kg ⁻¹
1-propanamine;	n-C ₃ H ₉ N;	[107-10	-8]	15.5	0.352
2-propanamine;	iso-C ₃ H ₉ N;	[75-31-	[0]	5.3	0.107
l-butanamine;	n-C ₄ H ₁₁ N;	[109-73	-9]	19.6	0.467
2-butanamine;	<pre>sec-C4H11N;</pre>	[13952-	84-6]	2.5	0.049
		AUXILIARY	INFORMATION		
probably similar author which are volume.	ils not given, but to previous works o compiled throughout	of the t this	SOURCE AND PURITY Nothing specified work by the autho probably prepared and Carter (1).	, but based r the anhyd	l on previous Irous salt was
Nature of solid p	hases not specified	d.			
			ESTIMATED ERROR: Nothing specified		<u></u>
			REFERENCES: 1. Taylor, M.D.; J. Inorg. Nucl		

<pre>COMPONENTS: (1) Praseodymium iodide ; PrI₃; [13813-23-5] (2) N,N-Dimethylformamide; C₃H₇NO; [68-12-2]</pre>	ORIGINAL MEASUREMENTS: Moeller, T.; Galasyn, V. J. Inorg. Nucl. Chem. <u>1962</u> , 12, 259-65.
VARIABLES: T/K = 298.15	PREPARED BY: M. Salomon
EXPERIMENTAL VALUES:	
The solubility of PrI ₃ in HCON(CH ₃) ₂ at 25 ^o C 735.8 g	-
and as 0.6650 m	nol dm ⁻³
The solid phase is the solvate PrI, 8HCON(CH, method) of this solvate given as 90.5 - 92.50) ₂ . The melting point (sealed tube C.
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Authors state that solubilities were deter- mined by analysis of aliquots after equili- bration at 25 ± 0.025°C, and that techniques were generally similar to those described in (1). The rare earth content was determined by complexometric titration with EDTA at 60°C. Iodide was determined by the Volhard method, and carbon, hydrogen, and nitrogen by usual microanalytical techniques. REFERENCES: 1. Moeller, T.; Cullen, G.W. J. Inorg. Nucl.	SOURCE AND PURITY OF MATERIALS: The initial material was the rare earth oxide of 99.9+% purity. Iodides were prepd by two methods. 1. Acetyl iodide method (2) where the hydrated acetate is treated with acetyl iodide in benzene. Acetyl iodide prepd as in (3). 2. The iodide was prepd by metathesis by reaction of the hydrated PrCl ₃ with KI in DMF followed by addition of benzene and distillation of the benzene- water azeotrope. For both preparations the solvate PrI ₃ .8DMF was recrystallized from DMF by addition of ether.
Chem. <u>1959</u> , 10, 148. 2. Watt, G.W.; Gentile, P.S.; Helvenston, E. P. J. Am. Chem. Soc. <u>1955</u> , 77, 2752.	The solvent, DMF, was prepared as in (4,5), and its electrolytic conductance was $\geq 3.7 \times 10^{-7} \text{ S cm}^{-1}$ at 25°C.
 Biltz, H.; Biltz, W. Laboratory Methods of Inorganic Chemistry (2nd Edition). John Wiley. N.Y. <u>1928</u>. Leader, G.R.; Gormley, J.F. J. Am. Chem. 27 5721 	ESTIMATED ERROR: Soly: precision around \pm 0.1% (compiler). Temp: precision \pm 0.025 K (authors).
Soc. <u>1951</u> , 73, 5731. 5. Thomas, A.B.; Rochow, E.G. J. Am. Chem. Soc. <u>1957</u> , 79, 1843.	

146 Neodymiul	m Fluoride
COMPONENTS: (1) Neodymium fluoride; NdF ₃ ; [13709-42-7]	ORIGINAL MEASUREMENTS: Kirmse, E.M.
(2) Alcohols	Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85–90.
VARIABLES:	PREPARED BY:
Room temperature	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	
	NdE columbility a,b
solvent	NdF ₃ solubility ^{a,b} mass % mol kg ⁻¹
methanol; CH ₄ 0; [67-56-1]	0.02 l x 10 ⁻³
ethanol; C _{2^H6} 0; [64-17-5]	1×10^{-3}
^a Molalities calculated by the compilers.	
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method. About 100 mg of NdF ₃ was added to 10-20 cm ³ of solvent, and the mix- ture mechanically agitated at room tempera- ture for 100 h. 5-10 g of saturated solution were removed by decanting or by centrifuging. The sln was heated with about 10 cm ³ of 10% KOH solution for 3-5 h to obtain solid Nd(OH) ₃ and a basic F ⁻ solution. The preci- pitate was washed, dissolved in aq HCl, and Nd determined several times by complexometric titration with potentiometric end-point de- tection (1). The fluoride content in the filtrate was determined as described in (2).	by washing with acetone followed by drying at 310°C for 120 hours. The solvents were dried and purified by "standard methods." ESTIMATED ERROR: Soly: results with relative errors exceed-
The reported solubility is a mean of	ing 50% were rejected. Temp: unknown.
"numerous parallel determinations," or "at least two parallel determinations."	REFERENCES: 1. Schilbach, U.; Kirmse, E.M. Z. Chem. <u>1974</u> , 14, 484. 2. Schilbach, U.; Hetze, I.; Kirmse, E.M. Chemia Analityczna <u>1975</u> , 20, 33.

COMPONENTE	ORIGINAL MEASUREMENTS:
COMPONENTS:	Dressler, H.
<pre>(1) Neodymium fluoride; NdF₃; [13709-42-7]</pre>	
[1][0] []	Dissertationschrift. Paed. Inst. Koethen,
(2) Ethers	GDR. <u>1980</u> .
VARIABLES:	PREPARED BY:
	T. Mioduski and M. Salomon
Room temperature	1. Moduški did M. Balomon
EXPERIMENTAL VALUES:	
	solubility
solvent	mass % mol/100 g sln
	a -5
l-methoxydecane; $C_{ll}H_{24}O;$ [7289-	-52-3] 0.01 ^a 5.0 x 10 ⁻⁵
l-(chloromethoxy)butane; C ₅ H ₁₁ Cl0; [2351	$-69-1$] 0.02^{b} 9.9 x 10^{-5}
(1-(Chioromethoxy) butane; 511010; 225)1	5, 5 X 10
^a Solid phase. Nd:F:ether:H ₂ 0 ratio found to	be 1:3.03:0.06:0.24.
^b Solid phase. Nd:F:ether:H ₂ O ratio found to	be 1:2.89:0.51:0.25
- 2	
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Method analogous to that described in (1).	It appears that the fluoride was prepared
No other information available.	as in (1). In spite of drying the fluoride
	by two methods at 573 K, the Nd:F:H ₂ O ratio
}	was 1:3.01:0.45.
	No other information available.
	ESTIMATED EPDOD
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES:
	1. Kirmse, E.M. Wiss. Hefte, Paed. Inst.
	Koethen. <u>1978</u> , 2, 85.

148	Neodymium Fluoride		
COMPON (1)	NENTS: Neodymium fluoride; NdF ₃ ;	ORIGINAL MEASUREMENTS: Kirmse, E.M.	
	[13709-42-7]	Wiss. Hefte, Paed. Inst. Koethen	
(2)	Tributyl phosphate; C ₁₂ H ₂₇ 04 ^P ; [126-73-8]	<u>1978</u> , 2, 85-90	
VARIA	BLES:	PREPARED BY:	
Room	temperature	T. Mioduski	
EXPER	IMENTAL VALUES:	· · · · · · · · · · · · · · · · · · ·	
The s	solubility of MdF_3 in $[CH_3(CH_2)_3]_3P(0)$ at	; room temperature was given as	
	0.04 mass	3 %	
The c	corresponding molality calculated by the	compiler is	
	2.0 x 10	⁻³ mol kg ⁻¹	
	solid phase was dried in a desiccator ove almost 1:3.	$r P_4 O_{10}$ and the Nd:F ratio determined	
	AUXILIARY	INFORMATION	
	D/APPARATUS/PROCEDURE: nermal method. About 100 mg of NdF3 was	SOURCE AND PURITY OF MATERIALS: Nd203 (source and purity not specified) was	
added	to 10-20 cm ³ of solvent, and the mix-	dissolved in HCl and the fluoride precipita- ted by addition of aq HF. The solid pro-	
ture	mechanically agitated at room tempera- for 100 h. 5-10 g of saturated solu-	duced was NdF3.0.5H20 and was dehydrated by	
tion fugir	were removed by decanting or by centri-	washing with acetone followed by drying at 310°C for 120 hours.	
cm ³ c	The sln was heated with about 10 of 10% KOH solution for 3-5 h to obtain	The solvent was dried and purified by	
solid	1 Nd(OH)3 and a basic F solution. The	"standard methods."	
	pitate was washed, dissolved in aq HCl, Id determined several times by complexo-		
	c titration with potentiometric end- detection (1). The fluoride content		
	e filtrate was determined as described	ESTIMATED ERROR: Soly: results with relative errors exceed- ing 50% were rejected.	
		Temp: unknown.	
The r "nume	reported solubility is a mean of erous parallel determinations," or "at	REFERENCES :	
least	two parallel determinations."	 Schilbach, U.; Kirmse, E.M. Z. Chem. <u>1974</u>, 14, 484. 	
		 Schilbach, U.; Hetze, I.; Kirmse, E.M. Chemia Analityczna <u>1975</u>, 20, 33. 	

Neodymi	um Fluoride 149
COMPONENTS: (1) Neodymium fluoride; NdF ₃ ; [13709-42-7]	ORIGINAL MEASUREMENTS: Kirmse, E.M. Wiss. Hefte, Paed. Inst. Koethen
(2) Dimethylsulfoxide; C ₂ H ₆ OS; [67-68-5]	<u>1978</u> , 2, 85–90.
VARIABLES:	PREPARED BY:
Room temperature	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of MdF_3 in $(CH_3)_2S0$ at room t	emperature was given as
0.02 mass	9/e
The corresponding molality calculated by the	compiler is
1.0 x 10	3 mol kg ⁻¹
The solid phase was dried in a desiccator ov almost 1:3.	er $P_{4}O_{10}$ and the Nd:F ratio found to be

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method. About 100 mg NdF ₃ and 10-20 cm ³ of solvent mechanically agitated at room temperature for 100 hours. Samples of saturated solution for analyses were obtained by decantation or by centrifuging. 5-10 g of saturated solution were heated with about 10 cm ³ of 10 % KOH solution for $1-2$ hours to obtain quantitative separation of solid Nd(OH) ₃ and a basic F ⁻ solution. The Nd(OH) ₃ was filtered, washed and dissolved with HC1. Nd determined several times by complexometric titration with	Nd ₂ O ₃ (source and purity not specified) was dissolved in HCl and the fluoride precipita- ted by addition of aq HF. The solid pro- duced was NdF ₃ .0.5H ₂ O and was dehydrated by washing with acetone followed by drying at 310°C for 120 hours. The solvent was dried and purified by "standard methods."
potentiometric end-point detection (1).	ESTIMATED ERROR:
The fluoride content of the basic filtrate was determined photometrically using Al-Eriochrome cyanine color lake (2).	Soly: results with relative errors exceed- ing 50% were rejected.
Al Driventome Cyanine Color Take (2).	Temp: unknown.
The reported solubility is a mean of "numerous parallel determinations," or at	REFERENCES :
least two parallel determinations.	1. Schilbach, U.; Kirmse, E.M. Z. Chem. <u>1974</u> , 14, 484.
	 Schilbach, U.; Hetze, I.; Kirmse, E.M. Chemia Analityczna <u>1975</u>, 20, 33.

neoaymiu	m Fluoride			
COMPONENTS:	ORIGINAL MEASUREMENTS:			
<pre>(1) Neodymium fluoride; NdF₃; [13709-42-7]</pre>	Kirmse, E.M.			
(2) Pyridine; C ₆ H ₅ N; [110-86-1]	Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85–90.			
VARIABLES:	PREPARED BY:			
Room temperature	T. Mioduski			
EXPERIMENTAL VALUES:				
The solubility of MdF_3 in pyridine at room te	mperature was reported to be			
0.07 mass %				
The corresponding molality calculated by the	compiler is			
3.5 x 10	³ mol kg ⁻¹			
The solid phase was dried in a desiccator ove equal almost 1:3.	r $P_4^{0}_{10}$ and the Nd:F ratio found to			
AUXILIARY	INFORMATION			
	SOURCE AND PURITY OF MATERIALS:			
METHOD/APPARATUS/PROCEDURE: Isothermal method. About 100 mg NdF ₃ and $10-20 \text{ cm}^3$ of solvent mechanically agitated at room temperature for 100 hours. Samples of saturated solution for analyses were obtained by decantation or by centrifuging. 5-10 g of saturated solution were heated with about 10 cm ³ of 10 % KOH solution for 1-2 hours to obtain quantitative separation of solid Nd(OH) ₃ and a basic F ⁻ solution. The Nd(OH) ₃ was filtered, washed and dissolved with HC1. Nd determined several times by complexometric titration with	Nd ₂ O ₃ (source and purity not specified) was dissolved in HCl and the fluoride precipi- tated by addition of aq HF. The solid pro- duced was NdF ₃ .0.5H ₂ O and was dehydrated by washing with acetone followed by drying at 310°C for 120 hours. The solvent was dried and purified by "standard methods."			
potentiometric end-point detection (1). The fluoride content of the basic filtrate was determined photometrically using Al-Eriochrome cyanine color lake (2).	ESTIMATED ERROR: Soly: results with relative errors exceed- ing 50% were rejected. Temp: unknown.			
The reported solubility is a mean of "numerous parallel determinations," or at least two parallel determinations.	 REFERENCES: 1. Schilbach, U.; Kirmse, E.M. Z. Chem. <u>1974</u>, 14, 484. 2. Schilbach, U.; Hetze, I.; Kirmse, E.M. Chemia Analityczna <u>1975</u>, 20, 33. 			

COMP((1)	ONENTS:	dum oblort	to: NdCl ·		ORIGIN	AL MEASURE	MENTS:	B.G. · Safaray
		nium chlori 4-93-8]	ie, Md01 ₃ ,		Shevtsova, Z.N.; Korshunov, B.G.; Safonov, V.V.; Kogan, L.M.; Gudkova, V.I.			
			76 N	aana Khim	1060 12	2006 0. 8.4.4		
(2) Hexachloro-1, 3-butadiene; C ₄ Cl ₆ ; [87-68-3]			Inorg	. Chem. (E	. <u>1968</u> , 15, ngl. Transl	3096-9; Russ, J. 2.) <u>1968</u> , 13,		
	[0, 0,	1			1596-	8.		<u> </u>
WADT	ABLES:				DDDDAD	ED BY:		
							N C -1	
Temperature			1. MI	oduski and	M. Salomon	1		
EXPE	RIMENTAI	VALUES:						
Com	position	a, densities	, viscosities a	and refra	ictive	indices of	saturated	solutions.
solubility ^a						nature of the		
	10 -			d/g d	-3		20	
:	t/°C	mass %	mol kg ⁻¹	d/g d	m	n/p	n _D ²⁰	solid phase
	25	0.029	0.00116	1.679)	0.0389	1.5553	NdC13.3.5H20
	50	0.037	0.00148	1.648	3	0.0311	1.5553	11
	75	0.055	0.00220	1.612	2	0.0249	1.5550	NdCl ₃ .3H ₂ 0
								5 2
							·· ··· ·······························	
			AU	XILIARY	INFORM	ATION		
METHOD/APPARATUS/PROCEDURE: Isothermal method. Equilibrium attained after 12 d at 25°C, 10 d at 50°C, and 7 d at 75°C. Initial salt, liquid phases and solid phases analysed for Nd by the oxalate method or by titration with Trilon B using Xylene Orange indicator, and for chloride by the Volhard method. Presumably water was found by dif- ference. Solid phase compositions confirmed by X-ray analysis.		NdCl ₃ in HC lizin oxide rare C and CC for mc Cl 26 Purifi the for $d_4^{20} =$ ESTIMA Soly:	.6H ₂ 0 prep l, evaporation g, and dry: contained earths and u (0.01%). etal and hi- .30%, H ₂ 0 ied solven bilowing pi- 1.6807 g TED ERROR: nothing sp	ting and co ing in a de oxide impu Fe (0.01%) The produ alide (mass 33.45\%. t (method n roperties: cm ⁻³ , and n pecified.	<pre>ving 99.8% Nd₂O₃ oling, recrystal- siccator. The rities of other , Ca((0.01-0.05%), ct was analysed %): Nd 40.25%, ot specified) had 20 D = 1.5543.</pre>			
					Temp: accuracy ± 0.1 K (authors).			
					REFERE	INCES:		
				ļ				

Neodymium Chloride

COMPONENTS: (1) Neodymium chloride; NdCl ₃ ; [10024-93-8]	EVALUATOR: Mark Salomon USA ET & DL Ft. Monmouth, NJ, U.S.A.
(2) Methanol; CH ₄ 0; [67-56-1]	and
	Tomasz Mioduski Institute of Nuclear Research Warsaw, Poland

CRITICAL EVALUATION:

The solubility of NdCl₃ in methanol has been reported in three publications (1-3). West (1) studied the solubility from 283-313 K and reported his results in volume units. The results in (2) for 273-323 K and in (3) for 298.15 K are both in mass units, but there is serious disagreement between these results. For example at 298.2 K Grigorovich (2) reports a solubility of 4.466 mol kg⁻¹ (solid phase is NdCl₃·3CH₃OH) while Merbach et al. (3) report a solubility of 2.75 mol kg⁻¹ (solid phase is NdCl₃·4CH₃OH).

While we cannot directly compare West's solubility result of ~ 2.25 mol dm⁻³ at 298.2 K with those in (2,3), it certainly is more consistent with the result of Merbach et al. This does not necessarily imply that there is some systematic error in the results of Grigorovich, but rather that a metastable phase is involved.

Merbach et al. report two values for the solubility of NdCl₃ in methanol at 298.15 K. The first value of 2.75 mol kg⁻¹ was obtained when the solution was equilibrated with the tetrasolvate. Starting with the anhydrous salt, Merbach et al. found a solubility of 2.84 mol kg⁻¹, and the difference in these two results (3 %) is much greater than the experimental precision of 0.5 % estimated by the compilers. It would thus appear that the higher solubility result of Merbach et al. represents a solution in "quasi" equilibrium with both the stable NdCl₃·4CH₃OH and metastable NdCl₃·3CH₃OH solid phases.

At this time we designate both results of Grigorovich (2) and Merbach et al. (3) as *tentative* solubility data. For 298.15 K the tentative solubility in the stable tetrasolvate system is 2.75 mol kg⁻¹ (3), and at 273.2 K, 298.2 K and 323.2 K the tentative solubilities for the metastable trisolvate system are 3.349 mol kg⁻¹, 4.466 mol kg⁻¹ and 5.133 mol kg⁻¹, respectively (2).

REFERENCES

- 1. West, D.H. Masters Thesis. University of Illinois. Urbana, IL. <u>1932</u>. Some of West's data have also been published in reference 4 below.
- 2. Grigorovich, Z.I. Zh. Neorg. Khim. 1963, 8, 986.
- 3. (a) Merbach, A.; Pitteloud, M.N.; Jaccard, P. Helv. Chim. Acta <u>1972</u>, 55, 44.

(b) Pitteloud, M.N. These. Faculte des Sciences de l'Universite de Lausanne. 1971.

4. Hopkins, B.S.; Quill, L.L. Proc. Natl. Acad. Sci. U.S.A. 1933, 19, 64.

			,			153
<pre>COMPONENTS: (1) Neodymium chloride; NdCl₃; [10024-93-8] (2) Methanol; CH₄0; [67-56-1]</pre>			ORIGINAL MEASUREMENTS: West, D.H. Masters Thesis. The University of Illinois. Urbana, IL. <u>1932</u> . ¹			
						_
VARIABLES:				PREPARED BY:		
T/K = 283	3 - 313			M. Salomon a	nd T. Mioduski	
EXPERIMENT	AL VALUES:					
t/ ^o c	g Nd ₂ 0 ₃ in 1 sample 1	lO cc of saturat		n age ^a	solubility of NdCl ₃ ^{a,b} mol ^{dm⁻³}	
10	3.5696	3 5737	3.57		2.1230	
20			3.74		_	
			3.82		2.2247	
30		-	-		2.2748	
40	3.9727	3,9955	3.98	41	2.3681	
		AUXIL	IARY	INFORMATION		
Isothermal and excess pered bott the stoppe ber stoppe tubing to bottle. T stat and m 12 h. The mitted to duplicate pipet. Wa the sln he precipitat	salt placed in le, and rubber r and neck of t r fitted into t prevent leakage he bottle was i echanically agi saturated solu settle for a mi 10 cc aliquots ter was added t ated and oxalic e the rare eart e was filtered, water, and igni	100 cc of alcoh 250 cc glass st tubing placed ov the bottle and a the open end of t of water into t tated for at leas tions were then nimum of 12 h, a removed with a o the aliquots a acid added to h oxalate. The	top- ver rub- the the ermo- ast per- and and	NdCl ₃ prepd by Nd ₂ O ₃ , and eva which crystall was dried in a increasing the stored in cork cator over P ₂ O the oxalate an the salt to be placed over Ca led: the first carded. CuSO ₄ ESTIMATED ERRO Soly: precisio (compile Temp: precisio REFERENCES: 1. Some data f ed in graph	n probably within ± 3% rs). n ± 0.2 K (author). 'rom West's Thesis was public ical form by Hopkins, B.S.; <i>Proc. Natl. Acad. Sci. U.S.</i>	rate y ic- to wed 1- -

ORIGINAL MEASUREMENTS:
ORIGINAL MEASUREMENTS:
Grigorovich, Z.I.
Zh. Neorg. Khim. <u>1963</u> , 8, 986–9.
PREPARED BY:
T. Mioduski
solubility ^a
mass % mol kg ⁻¹
45.63 3.349
52.81 4.466
56.26 5.133
25 ⁰ C the solid phase is NdCl ₃ .3CH ₃ OH.
INFORMATION
SOURCE AND PURITY OF MATERIALS:
NdCl ₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The result- ing chloride was dehydrated by treatment with thionyl chloride (1).
The alcohol was purified and dried by
- "standard methods."
- "standard methods."
ESTIMATED ERROR:
ESTIMATED ERROR: Soly: author states accuracy to be about
ESTIMATED ERROR: Soly: author states accuracy to be about 0.05 %. Temp: nothing specified. REFERENCES:
ESTIMATED ERROR: Soly: author states accuracy to be about 0.05 %. Temp: nothing specified.
ESTIMATED ERROR: Soly: author states accuracy to be about 0.05 %. Temp: nothing specified. REFERENCES: 1. Freeman, I.H. J. Inorg. Nucl. Chem.

COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Neodymium chloride; NdCl₃; [10024-93-8]</pre>	Merbach, A.; Pitteloud, M.N.; Jaccard, P. Helv. Chim. Acta <u>1972</u> , 55, 44-52.
(2) Methanol; CH ₄ 0; [67-56-1]	Pitteloud, M.N. These. Faculte des Sciences de l'Universite de Lausanne. <u>1971</u> .
VARIABLES:	PREPARED BY:
T/K = 298.2	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	
	mean solubilities/mol kg ⁻¹
t/ ^o c	a b
25	2.75 2.84
a. Initial salt is the adduct NdCl ₃ .4CH ₃ OH found to be NdCl ₃ .4CH ₃ OH.	I. Equilibrated solid phase analyzed and
b. Solutions equilibrated with anhydrous N analyzed, but assumed by the compilers	IdCl ₃ . Equilibrated solid phases not to be $NdCl_3$. LCH_3OH .
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method as in (1,2). Mixtures were equilibrated for at least 4 days. Pro- longed operations were performed in a dry box. Neodymium determined by titration with (NH4) ₃ H(EDTA) using a small amount of uro- tropine buffer and Xylenol Orange indicator. Chloride was determined by potentiometric titration with AgNO ₃ solution. Composition of the adduct NdCl ₃ .4CH ₃ OH confirmed by ¹ H NMR and X-ray diffraction. The reported solubilities are mean values of	SOURCE AND PURITY OF MATERIALS: Nd ₂ O ₃ of at least 99.9% purity dissolved in HCl to produce the hexahydrate. The salt was dehydrated as described in (3). The adduct NdCl ₃ .4CH ₃ OH prepared by dissolving the hydrate in a small excess of o-methly- formate followed by distillation and crystal- lization from methanol. Methanol was purified and dried by the Vogel method.
2-4 determinations.	ESTIMATED ERROR:
COMMENTS AND/OR ADDITIONAL DATA Reference (3) was incorrectly cited in the source paper as: J. Inorg. Nucl. Chem. <u>1958</u> , 7, 224 (this is the reference to a paper by J.H. Freeman and M.L. Smith which describes	Soly: precision ±0.5% as in (1) (compilers). Temp: precision probably at least ± 0.05 K as in (1) (compilers). REFERENCES:
the preparation of anhydrous salts by treat- ment with thionyl chloride). Reference (3) was corrected by the compilers.	 Brunisholz, F.; Quinche, J.P.; Kalo, A.M. Helv. Chim. Acta <u>1964</u>, 47, 14. Flatt, R. Chimia <u>1952</u>, 6, 62. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl Chem. <u>1962</u>, 24, 387 (see COMMENTS at left).

Neodymium Chloride

COMPONENTS: (1) Neodymium chloride; NdCl ₃ ; [10024-93-8]	EVALUATOR: Mark Salomon USA ET & DL Ft. Monmouth, NJ, U.S.A.
(2) Ethanol; C ₂ H ₆ O; [64-17-5]	and
2 0	T. Mioduski
	Institute of Nuclear Research
	Warsaw, Poland

CRITICAL EVALUATION:

The solubility of NdCl₃ in ethanol has been reported in three publications (1-3). King (1) studied the solubility from 273-323 K and reported his results in volume units. The results in (2) for 273-323 K and in (3) for for 298.15 K are both in mass units, but there is serious disagreement between these results. For example at 298.2 K Grigorovich (2) reports a solubility of 3.080 mol kg⁻¹ (solid phase is NdCl₃·2C₂H₅OH) while Merbach et al. (3) report a solubility of 1.35 mol kg⁻¹ (solid phase is NdCl₃·3C₂H₅OH).

While we cannot directly compare King's solubility result of 1.2858 mol dm⁻³ at 298 K with those in (2,3), it certainly is more consistent with the result of Merbach et al. This does not necessarily imply that there is some systematic error in the results of Grigorovich, but rather that a metastable phase is involved.

Merbach et al. report two values for the solubility of NdCl₃ in ethanol at 298.15 K. The first value of 1.35 mol kg⁻¹ was obtained when the solution was equilibrated with the trisolvate. Starting with the anhydrous salt, Merbach et al. found a solubility of 1.52 mol kg⁻¹, and the difference in these two results (ll %) is much greater than the experimental precision of 0.5 % estimated by the compilers. It would thus appear that the higher solubility result of Merbach et al. represents a solution in "quasi" equilibrium with both the stable NdCl₃·3C₂H₅OH and NdCl₃·2C₂H₅OH solid phases.

At this time we designate both results of Grigorovich (2) and Merbach et al. (3) as *tentative* solubility data. For 298.15 K the tentative solubility in the stable trisolvate system is 1.35 mol kg⁻¹, and at 273.2 K, 298.2 K and 323.2 K, the tentative solubilities for the metastable disolvate system are 2.420 mol kg⁻¹, 3.080 mol kg⁻¹ and 2.333 mol kg⁻¹, respectively. At this time we cannot explain the decrease in the solubility at 323.K in the metastable system: either an error exists or the system has reverted to the stable trisolvate system.

REFERENCES

- 1. King, F.E. Masters Thesis. University of Illinois. Urbana, IL. <u>1932</u>. Some of King's data have also been published in reference 4 below.
- 2. Grigorovich, Z.I. Zh. Neorg. Khim. 1963, 8, 986.
- 3. (a) Merbach, A.; Pitteloud, M.N.: Jaccard, P. Helv. Chim. Acta <u>1972</u>, 55, 44.
 (b) Pitteloud, M.N. These. Faculte des Sciences de l'Universite de Lausanne. <u>1971</u>.
- 4. Hopkins, B.S.; Quill, L.L. Proc. Natl. Acad. Sci. U.S.A. <u>1933</u>, 19, 64.

[1002	mium chloride; N 4-93-8] ol; C ₂ H ₆ 0; [64-	5	King, Maste		University of	Illinois.
ARIABLES: $T/K = 273$	- 323		PREPARI M. Sa	ED BY: lomon and T.	Mioduski	
PERIMENTA	g Nd ₂ 03 in 10	cc satd sln	densit;	y/g cm ⁻³	solubility	of NdCl a,1
t/ ^o C	experimental	average ^a	exptl	ava	mol dm ⁻³	mol kg
0	1.5598 1.5748	1.5673	1.0102 1.0108	1.0105	0.9316	0.9219
10 10	1.6053 1.6190	1.6122	1.0370 1.0378	1.0374	0.9582	0.9237
15 15	1.6338 1.6322	1.6330	1.0502 1.0507	1.0505	0.9706	0.9240
20 20	2.0129 2.0035	2.0082	1.0613 1.0615	1.0614	1.1937	1.1246
25 25	2.4274 2.4113	2.4194	1.1183 1.1185	1.1184	1.4380	1.2858
30 30	1.9223 1.9260	1.9242	1.0524 1.0524	1.0524	1.1437	1.0868
40 40	2.2178 2.2333	2.2256	1.0832 1.0831	1.0832	1.3228	1.2213
40 ^с 40 ^с	3.0182 3.0164	3.0173	1.207		1.7935	1.486
50 50	2.9742 2.9667	2.9705	1.1740 1.1750	1.1745	1.7656	1.5033

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE: Salt and alcohol placed in 250 cc stoppered bottle and mechanically agitated in a thermo-	SOURCE AND PURITY OF MATERIALS: NdCl ₃ prepd from spectro-pure Nd ₂ O ₃ by treat- ment with aq HCl, and evapn to the point of
stat for at least 24 h. Bottle sealed by placing rubber tubing over stopper and neck of bottle. Slns allowed to settle for at least 12 h and duplicate 10 cc aliquots re- moved with pipet previously rinsed with the sln. Analyses performed by evapn of alcohol addn of water, and pptn of the rare earth with oxalic acid. The oxalate was filtered	crystn. Crystals dried in atm of dry HCl for 24 h followed by slow heating in dry HCl until the anhydr salt was obtained. The salt was stored in a vac desiccator over P_{205} . The salt was analyzed for presence of
and ignited to const weight as the oxide. Densities measured with a pycnometer, but author states loss by evapn resulted in	tained from the stock room (i.e. source and purity unknown) dried with anhydr Na ₂ SO ₄ .
slightly low values. Soly detns using single bottle by (1) starting at 0°C and raising the temp for the next detn, and (2) by cooling	
the bottle to a lower temp for a second analysis. Salt and solvent added to the	Temp: precision ± 1 K.
bottle as needed. The results of the second duplicate analysis (i.e. by cooling) resulted in higher soly values (see table). Several samples of the solid were taken for analyses, but <i>temperature not given</i> . These samples were dried in vac over P ₂ 05, Weighed, con- verted to the oxalate and ignited to the oxide. Two analyses gave 2.59 and 1.65 molecules of crystallization.	 Some of the data from King's Thesis was published in graphical form by Hopkins,

	1			
COMPONENTS:		EASUREMENTS:		
<pre>(1) Neodymium chloride; NdCl₃; [10024-93-0]</pre>	Grigorovich, Z.I.			
(2) Ethanol; C ₂ H ₆ 0; [64-17-5]	Zh. Neorg	. Khim. <u>1963</u> , 8, 986-9.		
(2, 10, 10, 2, 6, 2, 6, 20, 2, 9,				
VARIABLES:	PREPARED B	Υ:		
Temperature	T. Mioduski			
EXPERIMENTAL VALUES:		_		
<u></u>		ility ^a		
t/ ^o C	mass %	mol kg ⁻¹		
0	37.75	2 120		
25	43.56	3.080		
50	36.89	2.333		
^a Molalities calculated by the compiler. At	25° C the sc	olid phase is		
NdCl ₃ .2C ₂ H ₅ OH.	L) 0 0.00 0.	orra phase ro		
	INFORMATION	J		
METHOD/APPARATUS/PROCEDURE:		PURITY OF MATERIALS:		
Isothermal method used. Solutions were thermostated and equilibrated for 3 days.		pared by dissolving "experimental" le in distilled HCL. The result-		
Both the saturated solutions and the solid				
phase were analyzed for NdCl ₃ (no details	1	lde was dehydrated by treatment		
	with thior	lde was dehydrated by treatment nyl chloride (1).		
were given).		nyl chloride (1).		
The alcohol adduct was studied thermo-	The alcoho			
	The alcoho	nyl chloride (1). Dl was purified and dried by		
The alcohol adduct was studied thermo-	The alcoho	nyl chloride (1). Dl was purified and dried by		
The alcohol adduct was studied thermo-	The alcoho	nyl chloride (1). Dl was purified and dried by		
The alcohol adduct was studied thermo-	The alcoho "standard	nyl chloride (1). Dl was purified and dried by methods." ERROR:		
The alcohol adduct was studied thermo-	The alcoho "standard ESTIMATED Soly: auth	nyl chloride (1). ol was purified and dried by methods." ERROR: nor states accuracy to be about		
The alcohol adduct was studied thermo-	The alcoho "standard ESTIMATED Soly: auth 0.05	nyl chloride (1). ol was purified and dried by methods." ERROR: Nor states accuracy to be about		
The alcohol adduct was studied thermo-	The alcoho "standard ESTIMATED Soly: auth 0.05	nyl chloride (1). ol was purified and dried by methods." ERROR: nor states accuracy to be about		
The alcohol adduct was studied thermo-	The alcoho "standard ESTIMATED Soly: auth 0.05 Temp: noth REFERENCES	nyl chloride (1). Dl was purified and dried by methods." ERROR: hor states accuracy to be about %. hing specified.		
The alcohol adduct was studied thermo-	The alcoho "standard ESTIMATED Soly: auth 0.05 Temp: noth REFERENCES 1. Freeman	hyl chloride (1). Dl was purified and dried by methods." ERROR: hor states accuracy to be about %. hing specified. S: h. I.H. J. Inorg. Nucl. Chem.		
The alcohol adduct was studied thermo-	The alcoho "standard ESTIMATED Soly: auth 0.05 Temp: noth REFERENCES	hyl chloride (1). bl was purified and dried by methods." ERROR: hor states accuracy to be about %. hing specified. S: h. I.H. J. Inorg. Nucl. Chem.		
The alcohol adduct was studied thermo-	The alcoho "standard ESTIMATED Soly: auth 0.05 Temp: noth REFERENCES 1. Freeman	hyl chloride (1). bl was purified and dried by methods." ERROR: hor states accuracy to be about %. hing specified. S: h. I.H. J. Inorg. Nucl. Chem.		
The alcohol adduct was studied thermo-	The alcoho "standard ESTIMATED Soly: auth 0.05 Temp: noth REFERENCES 1. Freeman	hyl chloride (1). bl was purified and dried by methods." ERROR: hor states accuracy to be about %. hing specified. S: h. I.H. J. Inorg. Nucl. Chem.		
The alcohol adduct was studied thermo-	The alcoho "standard ESTIMATED Soly: auth 0.05 Temp: noth REFERENCES 1. Freeman	<pre>hyl chloride (1). bl was purified and dried by methods." ERROR: hor states accuracy to be about %. hing specified. S: h, I.H. J. Inorg. Nucl. Chem.</pre>		

	Neodymum emonae 153							
	NENTS :	ORIGINAL MEASUREMENTS:						
(1)	Neodymium chloride; NdCl ₃ ; [10024-93-8]	Merbach, A.; Pitteloud, M.N.; Jaccard, P. Helv. Chim. Acta <u>1972</u> , 55, 44-52.						
(2)	Ethanol; C _{2^H6} 0; [64-17-5]	Pitteloud, M.N. These. Faculte des Sciences de l'Universite de Lausanne. <u>1971</u> .						
VARI	ABLES:	PREPARED BY:						
т/к	= 298.2	T. Mioduski and M. Salomon						
EXPER	RIMENTAL VALUES:							
		mean solubilities/mol kg ⁻¹						
	t/ ^o C	a b						
	25	1.35 1.52						
a.	Initial salt is the adduct $MdCl_3.3C_2H_5OH$. Equilibrated solid phase analyzed and found to be $MdCl_3.3C_2H_5OH$.							
ъ.	Solutions equilibrated with anhydrous M analyzed, but assumed by the compilers	MdCl ₃ . Equilibrated solid phases not						
	AUXILIARY	INFORMATION						
Isotl were longe box. (NH ₄ trop: Chlo: titra of th NMR a The p	DD/APPARATUS/PROCEDURE: hermal method as in (1,2). Mixtures equilibrated for at least 4 days. Pro- ed operations were performed in a dry Neodymium determined by titration with) ₃ H(EDTA) using a small amount of uro- ine buffer and Xylenol Orange indicator. ride was determined by potentiometric ation with AgNO ₃ solution. Composition he adduct NdCl ₃ .3C ₂ H ₅ O confirmed by ¹ H and X-ray diffraction. reported solubilities are mean values -4 determinations.	SOURCE AND PURITY OF MATERIALS: Nd ₂ O ₃ of at least 99.9% purity dissolved in HCl to produce the hexahydrate. The salt was dehydrated as in (3). The adduct NdCl ₃ .3C ₂ H ₆ O prepared by dissolving the hydrate in a small excess of o-ethylformate followed by distillation and crystalliza- tion from ethanol. Ethanol (Fluka) was used as received. Purity and absence of water was confirmed by NMR method.						
COMM	INTS AND/OR ADDITIONAL DATA:	ESTIMATED ERROR: Soly: precision <u>+</u> 0.5% as in (1) (compilers).						
sourd 7, 22 J.H. the p treat	rence (3) was incorrectly cited in the re paper as: J. Inorg. Nucl. Chem. <u>1958</u> , 24 (this is the reference to a paper by Freeman and M.L. Smith which describes preparation of anhydrous salts by ment with thionyl chloride). Reference was corrected by the compilers.	 Temp: precision probably at least ± 0.05K as in (1) (compilers). REFERENCES: 1. Brunisholz, F.; Quinche, J.P.; Kalo, A.M. Helv. Chim. Acta 1964, 47, 14. 2. Flatt, R. Chimia 1952, 6, 62. 3. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl Chem. 1962, 24, 387 (see COMMENTS at left). 						

COMPONEN	TS:			ORIGINAL MEASUREMENTS:			
(1) Neodymium chloride; NdCl ₃ ;				Sakharova, N.N.; Sakharova, Yu.G1; Ezhova,			
-	[10024-93-8]) Ethano1; C ₂ H ₆ O; [64-17-5]			T.A.; Izmailova, A.A.			
	(2) Ethanoi; C2n60; [04-17-5] (3) Water; H ₂ 0; [7732-18-5]				Zh. Neorg. Khim. <u>1975</u> , 20, 1479-83; Russ. J. Inorg. Chem. (Engl. Transl.) <u>1975</u> , 20, 830-2.		
VARIABLE	S:			PREPARED BY:			
Tempera	ture			T. Mioduski and M. Salomon			
EXPERIME	NTAL VALUES: solubility	of NdCl ₃ .6H ₂	0 in 96.8% (C,H_OH ^a			
t/°C	sample 1 g/100 g ^b	sample 2 g/100 g	sample 3		mean solubi g/100 g	llities mol kg ^{-lc}	
20	35.38	35.54	35.44	35.50	35.47	0.989	
30	36.75	36.80	36.87	36.70	36.80	1.026	
40	38.92	38.86	39.39	39.03	39.05	1.089	
50	42.98	43.19	48.64 ^d	42.78	42.89	1.196	
60	47.89	47.60	47.68	48.18	47.84	1.334	
					-,		
			AUXILIARY	INFORMATION			
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Equilibrium was reached after 3-4 h. Identical results ob- tained by approaching equilibrium from above and below. Two of the data points in the table were obtained after 3 h of equilibra- tion, and the remaining two data points were obtained after 4 h of equilibration. The metal content in each aliquot taken for analysis was determined by complexometric titration with Trilon B. Analyses of the solids withdrawn at 20°C, 40°C and 60°C showed the solid phase to be the hexahydrate: i.e. ethanol was not found in any of the solid phases.				<pre>SOURCE AND PURITY OF MATERIALS: NdCl₃.6H₂O prepd by dissolving c.p. grade oxide in dil (1:3) HCl followed by evapn and crystn. The crystals were dried in a desic- cator over CaCl₂, P₂O₅ and NaOH. The crystals analysed for the metal by titrn with Trilon B, and for Cl by the Volhard method. Found (%) for Nd:40.30, 40.10 (calcd 40.20). Found (%) for Cl; 29.59, 29.45 (calcd 29.69). 98.8% ethanol prepd by prolonged boiling of c.p. grade 93.5% ethanol with anhydr CuSO4 followed by distn. Ethanol concn determined refractometrically and pycnometrically.</pre>			
The hexahydrate melted at 126.9-128.1°C.			Temp: nothing specified.				
				REFERENCES :			
<pre>COMPONENTS: (1) Neodymium chloride; NdCl₃; [10024-93-8] (2) 1,2-Ethanediol (ethylene glycol); C₂H₆O₂; [107-21-1]</pre>			Racste	ORIGINAL MEASUREMENTS: Racster, L.V. Masters Thesis. University of Illinois. Urbana, IL. <u>1932</u> . ¹			
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VARIABLES:				ED BY:			
т/к ≈ 283	T/K = 283 - 333			M. Salomon and T. Mioduski			
EXPERIMENTA	L VALUES: g Nd ₂ 0 ₃ in 10 experimental	cc of satd sln average ^a	density,	/g cm ⁻³ av ^a	solubilit mol dm ⁻³	y NdCl ^{a,b} mol kg ⁻¹	
10 10	1.5788 1.6205	1.5996	1.3123		0.9508	0.7245	
15 15	2.2830 2.2818	2.2824	1.4029		1.3566	0.9670	
20 20	2.7850 2.8268	2.8059	1.4087 1.4087	1.4087	1.6678	1.1839	
25 25	2.7790 2.7895	2.7843	1.4550 1.4560	1.4555	1.6549	1.1370	
30 30	2.3184 2.3244	2.3214°	1.3490 1.3489	1.3490	1.3798	1.0229	
40 40	2.9200 2.9878	2.9539 ^d	1.4666 1.4666	1.4666	1.7554	1.1972	
50 50	3.3283 3.3750	3.3517	1.5050 1.5070	1.5060	1.9922	1.3228	
60 60	3.0925 3.0703	3.0814			1.8316		

^aCalculated by compilers.

 $^{\rm b}{\rm Calculated}$ by compilers from average mass ${\rm Nd_20_3}$ and average density of satd sln.

^CAuthor gives av value of 2.3218 g Nd₂O₃: this appears to be a typographical error.

^dAuthor gives av value of 2.9589 g Nd₂O₃: this appears to be a typographical error. The solid phase was not analyzed.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE: NdCl₃ and solvent placed in 250 cc glass stoppered bottle and mechanically agitated for 24 h. Rubber tubing placed over stopper and neck of bottle, and end of tubing sealed with a rubber stopper to prevent water from entering the bottle. Slns allowed to settle for 12-18 h, but slight turbidity persisted, particularly at the lowest and highest temps. At 60°C turbidity was significant and appeared different leading author to speculate possible reaction between solute and solvent. Results at 50° and 60°C said to be approximate. Duplicate 10 cc aliquots pipetted from the bottle for each temp. Each aliquot diluted with 25 cc H20 and the rare earth pptd as the oxalate with oxalic acid. The oxalate was filtered, ignited, and weighed as the oxide. Densities of satd slns detd pycnometrically using pycnometer calibrated at each temp. Densities at $10^{\circ}\mathrm{C}$ and 15°C may be high due to the condensation of atm water on the surface of the pycnometer.

SOURCE AND PURITY OF MATERIALS: NdCl₃ prepd by addn of HCl to spectro-pure Nd2O₃, and evapn of solvent until crystn. Crystals dehydrated by method of Kremers (2). Salt analyzed for presence of H₂O gravimetrically by conversion to oxalate and ignition to the oxide. No water of crystn was found. Ethylene glycol (source and purity not specified) was distilled and initial 5% of distillate discarded. The distilled solvant was stored in a flask sealed with paraffin.

ESTIMATED ERROR:

Soly: precision no better than <u>+</u> 3% (compilers).

Temp: not specified.

REFERENCES:

- Some data from Racster's Thesis was published in graphical form by Hopkins, B.S.; Quill, L.L. Proc. Natl. Acad. Sci. U.S.A. <u>1933</u>, 19, 64.
- Kremers, H.C. J. Am Chem Soc. <u>1925</u>, 17, 298.

COMPONENTS :	EVALUATOR: Mark Salomon		
(1) Neodymium chloride; NdCl ₃ ; [10024-93-8]			
(2) 1-Propanol; C ₃ H ₈ O; [71-23-8]	and		
38,	Tomasz Mioduski		
	Institute of Nuclear Research Warsaw, Poland		

CRITICAL EVALUATION:

The solubility of NdCl₃ in 1-propanol has been reported in three publications (1-3). West (1) reported solubility data over the temperature range of 283-313 K, and his data are in volume units. The results for 273-323 K (2) and 298 K (3) are both in mass units, but there is serious disagreement between these two publications. For example at 298.2 K Grigorovich (2) reports a solubility of 1.587 mol kg⁻¹ (solid phase is NdCl₃·2C₃H₇OH), and Kirmse (3) reports a solubility of 1.295 % (the nature of the solid phase was not specified).

Since the difference in the results of (2,3) is much greater than the experimental precision in either study, a probable explaination is that the results of Grigorovich are for metastable equilibria (see the critical evaluations for the NdCl₃ - CH_3OH and NdCl₃ - C_2H_5OH systems).

Kirmse's data probably represent the stable system at 298 K, and for which we assign a tentative solubility of 1.295 mol kg⁻¹ and a solid phase of NdCl₃·nC₃H₇OH where $n \geq 3$.

Grigorovich's data probably represent metastable equilibria involving the solid phase NdCl₃·2C₃H₇OH, and for which the *tentative* solubilities at 273.2 K, 298.2 K and 323.2 K are 1.474 mol kg⁻¹, 1.547 mol kg⁻¹ and 1.483 mol kg⁻¹, respectively. Again the low solubility at 323.2 K either represents experimental error or (partial) reversion to the stable higher solvate system.

REFERENCES

- 1. West, D.H. Thesis. University of Illinois. Urbana, IL. <u>1932</u>. Some data from West's thesis were published in graphical form in reference 4 below.
- 2. Grigorovich, Z.I. Zh. Neorg. Khim. 1963, 8, 986.
- 3. Kirmse, E.M. Tr. II Vses Konf. po Teor. Rastvorov 1971, 200.

4. Hopkins, B.S.; Quill, L.L. Proc. Natl. Acad. Sci. U.S.A. 1933, 19, 64.

		Neodymiu	ım Chloride		
COMPONENTS: (1) Neodymium chloride; NdCl ₃ ; [10024-93-8] (2) 1-Propanol; C ₃ H ₈ 0; [71-23-8]			ORIGINAL MEASUREMENTS: West, D.H. Masters Thesis. The University of Illinois. Urbana, IL. <u>1932</u> . ¹		
VARIABLES:			PREPARED BY:		
T/K = 283-313			M. Salomon and T. Mioduski		
XPERIMENTAL VA					
t/ ^o C	g Nd ₂ 0 ₃ in : sample 1	10 cc of saturat sample 2	ed sln average ^a	solubility of NdCl b mol dm ⁻³	
10	1.4392	1.4694	1.4543	0.8644	
20	1.8311	1.8353	1.8332	1.0896	
30	2.0328	2.0293	2.0311	1.2072	
40	2.5593	2.5753	2.5673	1.5260	
Calculated by	compilers using	g average mass c The solid phas	f Nd ₂ 0 ₃ . e was not analyze	d.	
Calculated by	compilers using		-	d.	
Calculated by	compilers using	The solid phas	-	d.	

REFERENCES: 1. Some data from West's Thesis was published in graphical form by Hopkins, B.S. Quill, L.L. Proc. Natl. Acad. Sci. U.S.A. <u>1933</u>, 19, 64.

, 			
COMPONENTS:	ORIGINAL MEASUREMENTS:		
<pre>(1) Neodymium chloride; NdCl₃; [10024-93-8]</pre>	Grigorovich, Z.I.		
	Zh. Neorg. Khim. <u>1963</u> , 8, 986-9.		
(2) 1-Propanol; C ₃ H ₈ O; [71-23-8]			
VARIABLES:	PREPARED BY:		
Temperature	T. Mioduski		
EXPERIMENTAL VALUES:			
	solubility ^a		
t/ ^o c	mass % mol kg ⁻¹		
5, S			
0	26.98 1.474		
25	28.46 1.587		
50	27.10 1.483		
⁸ Molalities calculated by the compiler. At NdCl ₃ .2C ₃ H ₇ OH.	25 [°] C the solid phase is		
AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:		
Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for NdCl ₃ (no details were given).	NdCl ₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1).		
The alcohol adduct was studied thermo- graphically.	The alcohol was purified and dried by "standard methods."		
	ESTIMATED ERROR: Soly: author states accuracy to be about 0.05 %.		
	Temp: nothing specified.		
	REFERENCES: 1. Freeman, I.H. J. Inorg. Nucl. Chem. <u>1958</u> , 7, 286.		

Nothing specified, but based on previous work by the authors the anhydrous salt was probably prepared by the method of Taylor		
,		

Masters Thesis. The University of	
Illinois. Urbana, IL. <u>1932</u> 1	
PREPARED BY:	
M. Salomon and T. Mioduski	
rated sln solubility of NdCl ₃ ^b	
average ^a mol dm ⁻³	
0.0151 0.00895	
0.0181 0.0108	
0.0298 0.0177	
0.0727 0.0432	
INFORMATION	
<pre>SOURCE AND PURITY OF MATERIALS: NdCl₃ prepd by addn of HCl to spectro-pure Nd₂O₃, and evaporating the sln to a paste which crystallized upon cooling. The hydr was dried in a stream of dry HCl by slowly increasing the temp. The anhyd salt was stored in cork-stoppered bottles in a desi cator over P₂O₅. Analysis by conversion t the oxalate and ignition to the oxide show the salt to be anhydr. Commercial alcohol placed over CaO for 1 week and then distil led: the first and last 15-20 cc were dis carded. CuSO₄ test for H₂O was negative. ESTIMATED ERROR: Soly: precision probably within ± 3% (compilers). Temp: precision ± 0.2 K (author). REFERENCES: 1. Some data from West's Thesis was publis ed in graphical form by Hopkins, B.S.; Quil1, L.L. Proc. Natl. Acad. Sci. U.S. 1933, 19, 64.</pre>	

COMPONENTS: (1) Neodymium chloride; NdCl ₃ ; [10024-93-8]	ORIGINAL MEASUREMENTS: Merbach, A.; Pitteloud, M.N.; Jaccard, P. Helv. Chim. Acta <u>1972</u> , 55, 44-52.
(2) 2-Propanol; C ₃ H ₈ 0; [67-63-0]	Pitteloud, M.N. These. Faculte des Sciences de l'Universite de Lausanne. <u>1971</u> .
VARIABLES:	PREPARED BY:
T/K = 298.2	T. Mioduski and M. Salomon
1/1 - 290.2	1. HOULSKI and M. DATOMON
EXPERIMENTAL VALUES:	l
t/ ^o C	mean solubilities/mol kg ⁻¹
t/ ^o c	a b
25	0.04 0.06
	0.04
a. Initial salt is the adduct $MdCl_3 \cdot 3C_3H_7$ found to be $NdCl_3 \cdot 3C_3H_7OH$.	OH. Equilibrated solid phase analyzed and
b. Solutions equilibrated with anhydrous I analyzed, but assumed by the compilers	MCL_3 . Equilibrated solid phases not to be $MdCl_3.3C_3H_7OH$.
	5 - 5
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method as in (1,2). Mixtures were equilibrated for at least ¹ / ₄ days. Pro- longed operations were performed in a dry box. Neodymium determined by titration with (NH ₄) ₃ H(EDTA) using a small amount of uro- tropine buffer and Xylenol Orange indicator. Chloride was determined by potentiometric titration with AgNO ₃ solution. Composition of the adduct NdCl ₃ .3C ₃ H ₈ O confirmed by ¹ H NMR and X-ray diffraction.	SOURCE AND PURITY OF MATERIALS: Nd ₂ O ₃ of at least 99.9% purity dissolved in HCl to produce the hexahydrate. The salt was dehydrated as in (3). The adduct NdCl ₃ .3C ₃ H ₈ O prepared by dissolving the hydrate in a small excess of o-methylformate followed by distillation and trans-solvation of the methanol complex with 2-propanol. Iso-propanol (Fluka) was used as received. Purity and absence of water was confirmed by NMR.
The reported solubilities are mean values of 2-4 determinations.	by mm.
	ESTIMATED ERROR:
COMMENTS AND/OR ADDITIONAL DATA:	

COMPONENTS: (1) Neodymium chloride; NdCl ₃ ; [10024-93-8] (2) 1,2,3-Propanetriol (glycerol); C ₃ H ₈ O ₃ ; [56-81-5]			ORIGINAL MEASUREMENTS: Dawson, L.R. Masters Thesis. University of Illinois. Urbana, IL. <u>1932</u> . ¹				
VARIABLES: T/K = 283 - 333			PREPARED BY: M. Salomon and T. Mioduski				
EXPERIMENTAL VALUES: g Nd ₂ 0 ₃ in 25 cc satd sln den:			sity/g cm ⁻³ soly NdCl ^a ,b				
t/ ^o c	experimental	average ^a	exp	tl	ave ^C	mol dm ⁻³	mol kg ⁻¹
10 10	0.4982 0.4959	0.4971		690 784	1.2737	0.1182	0.0928
20 20	2.7237 2.7290	2.7264	1.3 1.3	593 597	1.3595	0.6482	0.4768
25 25	2.1932 2.1851	2.1892	1.3 1.3	386 403	1.3395	0.5205	0.3886
30 30	1.3407 1.3429	1.3418	1.3 1.3		1.3141	0.3190	0.2428
40 40	2.2771 2.2793	2.2782	1.3 1.3		1.330	0.5417	0.407
50 50	3.0694 3.0875	3.0785	1.3 1.3	727 718	1.3723	0.7319	0.5334
60 60	2.8782 2.8865	2.8824				0.6853	
^b Based on	^a Calculated by compilers. ^b Based on average mass of Nd ₂ O ₃ . ^c Recalculated by compilers. AUXILIARY INFORMATION						
METHOD/APPARATUS/PROCEDURE: About 175 cc glycerol placed in 250 cc glass stoppered bottles and "liberal amounts" of salt added. Mixtures mechanically agitated in thermostat for 2 ^k h, then permitted to stand for 15 h after which slns were still turbid. For analyses, duplicate 25 cc ali- quots of turbid slns were taken from each bot tle and the rare earth pptd as the oxalate. The ppt was filtered, ignited, and weighed as the oxide. Author states the presence of turbidity had a small effect on the overall accuracy of the soly determinations. Densi- ties of satd slns determined by withdrawing samples from the bottles, placing them into a pycnometer, and weighing "as quickly as possible." The pycnometer was calibrated for each temp. COMMENTS AND/OR ADDITIONAL DATA: Since there is a sharp rise in soly from 10°C to 20°C followed by a sharp decrease to 30°C at which point the soly begins to rise again, it is evident that the solid phase in equil with the satd slns is changing. Unsuccess- ful attempts were made to isolate and identify the solid phases.			NdCl ₃ Nd ₂ O ₃ point carri room ll0 ^o C prepd c.p. reduc rejec ESTIM Soly: temp aroum due t Temp: REFER 1. Sou B.	prepd by , and eva of cryst ed out in temp for for ~ 6 from NaC drying t or A.R. g ed pressu ted (no o MATED ERRO based up control, d ± 3% (c o turbidi precisio run wher ENCES: me of the blished i S.; Quill	porating the s allization. I a stream of c 24 h, then at h, and 200°C f 1 + H ₂ SO ₄ and owers. Glycer rade: compiler re and the "fi ther details s on precision i overall precision ty is unknown. n \pm 0.5 K exce e precision was data from Daw	b spectro-pure solvent to the Dehydration was dry HCl first at 100°C for ~ 12 h for 3-4 h. HCl passed through rol (presumably rs) distilled at irst portion" given). In analyses and sion in soly error in accuracy ept for the 10°C as ± 1.5 K. wson's Thesis was orm by Hopkins, Matl. Acad.	

[10024-9	<pre>MPONENTS: (1) Neodymium chloride; NdCl₃; [10024-93-8] (2) 1-Butanol; C₄H₁₀0; [71-36-3]</pre>			EMENTS: 5. The University of Dana, IL. <u>1932</u> . ¹
VARIABLES: T/K = 283 - 313		PREPARED BY: M. Salomon and T. Mioduski		
EXPERIMENTAL V	ALUES:			_
	g Nd ₂ 03	in 10 cc of sat	urated sln	Solubility of $MdCl_3^b$
t/ ^o C	sample 1	sample 2	average ^a	mol dm ⁻³
10	1.9230	1.9047	1.9139	1.1376
20	2.1378	2.1323	2.1351	1.2691

^aCalculated by compilers

30

40

 $^{\rm b} {\rm Calculated}$ by compilers using average mass of ${\rm Nd}_2 {\rm 0}_3.$

2.3028

2.8954

2.2974

2.9250

The solid phase was not analyzed.

2.3001

2.9102

1.3672

1.7298

. ,

AUXILIARY INFORMATION

COMPONENTS:	ORIGINAT ME	ASUBFMENTS .	
	ORIGINAL MEASUREMENTS: Grigorovich, Z.I.		
<pre>(1) Neodymium chloride; NdCl₃; [10024-93-8]</pre>			
(2) 1-Butanol; C ₄ H ₁₀ 0; [71-36-3]	Zh. Neorg. Khim. <u>1963</u> , 8, 986–9.		
VARIABLES:	PREPARED BY	:	
Temperature	T. Miodusk	i	
EXPERIMENTAL VALUES:	l		
	solub	ility ^a	
t/ ^o c	mass %	mol kg ⁻¹	
0	16.01	0.761	
25	17.64	0.855	
50	25.00	1.330	
AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for NdCl ₃ (no details were given). The alcohol adduct was studied thermo- graphically.	grade oxid chloride w thionyl ch	PURITY OF MATERIALS: ared by dissolving "experimental" le in distilled HC1. The resulting as dehydrated by treatment with loride (1). l was purified and dried by methods."	
	0.05 Temp: noth REFERENCES	or states accuracy to be about %. ing specified. : . I.H. J. Inorg. Nucl. Chem.	

COMPONENTS :		Neodymiu			
(1) Neodymium chloride; NdCl ₂ ;			ORIGINAL MEASUREMENTS: West, D.H.		
<pre>(2) 1-Pentanol (amyl alcohol); C₅H₁₂O; [71-41-0]</pre>			Masters Thesis. The University of Illinois. Urbana, IL. <u>1932</u> . ¹		
VARIABLES: T/K = 283 - 313			PREPARED BY:		
			M. Salomon and T. Mioduski		
EXPERIMENTAL VA	ALUES:	······································			
g Nd ₂ 0 ₃ in 10 cc of satu			urated sln solubility of NdCl ₃ ^{a,b}		
t/ ^o C	sample 1	sample 2	average ^a	mol dm ⁻³	
10	2.5211	2.4910	2.5061	1.4896	
20	2.5312	2.5403	2.5358	1.5072	
30	2,5545	2.5825	2.5685	1.5267	
40	2.8731	2.8873	2.8802	1.7120	
		AUXILIARY	INFORMATION		
and excess sal pered bottle, the stopper ar ber stopper fi tubing to prev bottle. The k	thod. About 100 t placed in 250 and rubber tubin d neck of the bo tted into the op rent leakage of t ottle was immer chanically agita	cc glass stop- ng placed over ottle and a rub- pen end of the water into the	NdCl ₃ prepd by Nd ₂ O ₃ , and eve which crystal drate was drie	ITY OF MATERIALS: y addn of HCl to spectro-pure aporating the sln to a paste lized upon cooling. The hy- ed in a stream of dry HCl by sing the temp. The anhyd salt	

COMPONENTS :		OPTOTIVAL NOT	
	NdCl ₂ ;	Grigorovich	
<pre>(1) Neodymium chloride; 1 [10024-93-8]</pre>	51		
(2) 1-Pentanol; ^C 5 ^H 12 ⁰ ;	[71-41-0]	2n. Neorg. I	Khim. <u>1963</u> , 8, 986–9.
) 12			
VARIABLES:		PREPARED BY:	
Temperature		T. Mioduski	
EXPERIMENTAL VALUES:	······		
	t/ ^o c	solubi: mass %	
	t/ C	mass %	mot kg
	0	15.96	0.758
	25	15.30	0.721
	50	14.23	0.662
^a Molalities calculated by	the compiler. At	25 ⁰ C the soli	id phase is
NdC13.1.0C5H120.		•	
3 5-12			
	AUXILIARY	INFORMATION	
METHOD / APPARATUS / PROCEDURE :		SOURCE AND P	URITY OF MATERIALS:
Isothermal method used.	Solutions were	NdCl ₃ prepar	red by dissolving "experimental"
thermostated and equilibre Both the saturated solution		grade oxide	in distilled HCl. The resulting dehydrated by treatment with
phase were analyzed for No		thionyl chlo	
were given).	5	1	
The alcohol adduct was stu		The state?	
	udied thermo=	The alcohol "standard me	was purified and dried by
graphically.	udied thermo=	The alcohol "standard me	was purified and dried by
graphically.	udied thermo=	The alcohol "standard me	was purified and dried by
graphically.	udied thermo=	The alcohol "standard me	was purified and dried by
graphically.	udied thermo=	"standard me	was purified and dried by ethods."
graphically.	udied thermo=	"standard me ESTIMATED ER Soly: author	was purified and dried by ethods." RROR: r states accuracy to be about
graphically.	udied thermo=	"standard me	was purified and dried by ethods." RROR: r states accuracy to be about
graphically.	udied thermo=	"standard me ESTIMATED ER Soly: author 0.05%.	was purified and dried by ethods." RROR: r states accuracy to be about
graphically.	udied thermo=	"standard me ESTIMATED EF Soly: authon 0.05%. Temp: nothir REFERENCES:	was purified and dried by ethods." RROR: r states accuracy to be about ng specified.
graphically.	udied thermo=	"standard me ESTIMATED EF Soly: authon 0.05%. Temp: nothir REFERENCES: 1. Freeman,	was purified and dried by sthods." RROR: r states accuracy to be about ng specified. I.H. J. Inorg. Nucl. Chem.
graphically.	udied thermo=	"standard me ESTIMATED EF Soly: authon 0.05%. Temp: nothir REFERENCES:	was purified and dried by ethods." RROR: r states accuracy to be about ng specified. I.H. J. Inorg. Nucl. Chem.
graphically.	udied thermo=	"standard me ESTIMATED EF Soly: authon 0.05%. Temp: nothir REFERENCES: 1. Freeman,	was purified and dried by sthods." RROR: r states accuracy to be about ng specified. I.H. J. Inorg. Nucl. Chem.
graphically.	udied thermo=	"standard me ESTIMATED EF Soly: authon 0.05%. Temp: nothir REFERENCES: 1. Freeman,	was purified and dried by sthods." RROR: r states accuracy to be about ng specified. I.H. J. Inorg. Nucl. Chem.
graphically.	udied thermo=	"standard me ESTIMATED EF Soly: authon 0.05%. Temp: nothir REFERENCES: 1. Freeman,	was purified and dried by ethods." RROR: r states accuracy to be about ng specified. I.H. J. Inorg. Nucl. Chem.

COMPONENTS: (1) Neodymium chloride; 1 [10024-93-8] (2) 2-Methoxyethanol (methods) C ₃ H ₈ 0 ₂ ; [109-86-4]	J		
VARIABLES:		PREPARED BY:	
T/K = 273 - 323		M. Salomon	and T. Mioduski
EXPERIMENTAL VALUES:			<u> </u>
	Composition of Sat	urated Solut	ions
	Nd203ª	NdCl ^b	NaCl3
t/ ^o C	g/25 cc	g/dm ³	mol/dm ³
10	0.3470 0.5709 0.7465 0.9132 1.1691 1.2654	20.67 34.02 44.48 54.41 69.66 75.39	0.0825 0.1357 0.1775 0.2171 0.2780 0.3009
^b Recalculated by the compi	lers using 1977 IUF Equilibrated solid		
	AUXILIARY	INFORMATION	
METHOD/APPARATUS/PROCEDURE: Isothermal method. About vent + excess salt were pl agitated in a thermostat f Ice + water was used for t ments. The bottles were f glass stoppers and were se mosphere by placing gum ru the stoppers and necks of rubber stopper was fitted of the tubing. After equi solutions were allowed to l2 h, and using a calibrat two samples were removed f samples were evaporated to solved in aq HCl and pptd addn of oxalic acid. The tered, washed with dist wa constant weight as the oxi was found to be insoluble solvent. ESTIMATED ERROR: Soly: precision probably w	75-100 cc of sol- aced in bottles and or at least 12 h. he 0°C measure- itted with ground aled from the at- bber tubing over the bottles, and a into the open end libration, the settle for at least ed 25 cc pipet, or analysis. The dryness and dis- as the oxalate by samples were fil- ter and ignited to de. The oxide in the organic	Commercial : over CaO for led. A midd fied) was re flask: b.p. double anmoo scopic purit (no details by two method in aq HCl and crystallized for several earth benzoo or nitrate we benzoate del at least 24 was carried resulting ch a stream of The salt was P205. Dry F	URITY OF MATERIALS: solvent was permitted to stand r at least 1 wk and then distil- dle portion (fraction not speci- etained and stored in a stoppered 123°C. Nd salts prepd in 1925 as nium nitrates were of "spectro- ty" and converted to the oxide) and the anhydr chloride prepd ods. 1. The oxide was dissolved nd the excess HCl evapd. The d salt was dehydrated by heating ence of dry HCl first at 100°C h, then at 200°C. 2. The rare ate was pptd from the aq chloride with sodium benzoate, and the hydrated by heating to 110°C for h. Extraction of the chloride out with HCl satd ether, and the hloride heated at 60°C first in dry HCl and then in dry air. s stored in a desiccator over HCl was prepd from NaCl + y passing the resulting HCl

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COMPONENTS: (1) Neodymium [10024-93-	chloride; 8]	Naci ₃ ;	ORIGINAL MEA	N.
(2) 2-Ethoxyet ^C 4 ^H 10 ⁰ 2;	hanol (eth [110-80-5	<pre>yl cellosolve);]</pre>		cience Thesis. The University . Urbana, IL, USA. <u>1933</u> .
VARIABLES:			PREPARED BY	:
т/к = 273 - 323	}		M. Salomon	and T. Mioduski
EXPERIMENTAL VA	LUES:		L	
		Composition of Sa	turated Solu	tions
		Nd203ª	NaCl ^b	NaC13 2
	t/ ^o C	g/25 cc	NdCl b g/dm ³	mol/dm ³
	0	0.2656	15.82 27.66 37.95 45.44 56.07	0.0631
	10	0.4642 0.6396	27.66	0.1104 0.1514
	20 30	0.7627	ン1・ソフ 45、42	0.1873
	40	0.9410	56.07	0.1813 0.2237
	50	1.1581	69.00	0.2753
		Equilibrated solid	d phase not a	analyzed.
		Equilibrated solid	d phase not a	analyzed.
			d phase not a	analyzed.
METHOD /APPARATU		AUXILIARY E:	INFORMATION SOURCE AND	PURITY OF MATERIALS:
Isothermal meth vent + excess s agitated in a t Ice + water was The bottles wer stoppers and we by placing gum pers and necks stopper was fit tubing. After were allowed to using a calibra were removed fo evaporated to d HCl and pptd as acid. The samp dist water and the oxide. The soluble in the	od. About alt were p hermostat used for e fitted w re sealed rubber tub of the bot ted into ti equilibrat settle for ted 25 cc p r analysis ryness and the oxale les were f ignited to oxide was organic so	AUXILIARY E: 75-100 cc of sol- laced in bottles and for at least 12 h. the 0°C measurements. ith ground glass from the atmosphere ing over the stop- tles, and a rubber he open end of the ion, the solutions r at least 12 h, and pipet, two samples . The samples were dissolved in aq te by addn of oxalic iltered, washed with constant weight as found to be in-	INFORMATION SOURCE AND Commercial over CaO fo led. A mid fied) was i flask: b.p double ammod scopic puri (no details by two meth in aq HCl a crystallize in the pres for several earth benzo or nitrate benzoate do at least 2 ¹ was carried resulting c	PURITY OF MATERIALS: solvent was permitted to stand or at least 1 week and then disti ddle portion (fraction not speci- retained and stored in a stoppere . 134°C. Nd salts prepd in 1925 a onium nitrates were of "spectro- ity" and converted to the oxide s) and the anhydr chloride prepd hods. 1. The oxide was dissolved and the excess HCl evapd. The ed salt was dehydrated by heating sence of dry HCl first at 100°C 1 h, then at 200°C. 2. The rare oate was pptd from the aq chlorid with sodium benzoate, and the ehydrated by heating to 110°C for 4 h. Extraction of the chloride d out with HCl satd ether, and the chloride heated at 60°C first in dry HCl and then in dry air. The
Isothermal meth vent + excess s agitated in a t Ice + water was The bottles wer stoppers and we by placing gum pers and necks stopper was fit tubing. After were allowed to using a calibra were removed fo evaporated to d HCl and pptd as acid. The samp dist water and the oxide. The	od. About alt were p hermostat used for e fitted w re sealed rubber tub of the bot ted into ti equilibrat settle for ted 25 cc p r analysis ryness and the oxale les were f ignited to oxide was organic so	AUXILIARY E: 75-100 cc of sol- laced in bottles and for at least 12 h. the 0°C measurements. ith ground glass from the atmosphere ing over the stop- tles, and a rubber he open end of the ion, the solutions r at least 12 h, and pipet, two samples . The samples were dissolved in aq te by addn of oxalic iltered, washed with constant weight as found to be in-	INFORMATION SOURCE AND Commercial over CaO for led. A mic fied) was a flask: b.p double amma scopic purs (no details by two meth in aq HCL a crystallized in the press for several earth benzo or nitrate benzoate de at least 22 was carried resulting of salt was st	PURITY OF MATERIALS: solvent was permitted to stand or at least 1 week and then disti ddle portion (fraction not speci- retained and stored in a stoppere . 134°C. Nd salts prepd in 1925 a onium nitrates were of "spectro- ity" and converted to the oxide s) and the anhydr chloride prepd hods. 1. The oxide was dissolved and the excess HCl evapd. The ed salt was dehydrated by heating sence of dry HCl first at 100°C 1 h, then at 200°C. 2. The rare oate was pptd from the aq chlorid with sodium benzoate, and the ehydrated by heating to 110°C for 4 h. Extraction of the chloride d out with HCl satd ether, and the chloride heated at 60°C first in dry HCl and then in dry air. The tored in a desiccator over P205.
Isothermal meth vent + excess s agitated in a t Ice + water was The bottles wer stoppers and we by placing gum pers and necks stopper was fit tubing. After were allowed to using a calibra were removed fo evaporated to d HCl and pptd as acid. The samp dist water and the oxide. The soluble in the	od. About alt were pi hermostat used for resealed rubber tub of the bot ted into ti equilibrat settle for ted 25 cc p r analysis r analysis ryness and the oxala les were f ignited to oxide was organic so R: n probably rs).	AUXILIARY E: 75-100 cc of sol- laced in bottles and for at least 12 h. the 0°C measurements. ith ground glass from the atmosphere ing over the stop- tles, and a rubber he open end of the ion, the solutions r at least 12 h, and pipet, two samples . The samples were dissolved in aq te by addn of oxalic iltered, washed with constant weight as found to be in- lvent.	INFORMATION SOURCE AND Commercial over CaO fr led. A mid fied) was a flask: b.p double amma scopic pur: (no details by two meth in aq HC1 a crystallize in the pres for several earth benzo or nitrate benzoate do at least 22 was carried resulting of stream of of salt was st Dry HC1 was	PURITY OF MATERIALS: solvent was permitted to stand or at least 1 week and then disti ddle portion (fraction not speci- retained and stored in a stoppere . 134°C. Nd salts prepd in 1925 a onium nitrates were of "spectro- ity" and converted to the oxide s) and the anhydr chloride prepd hods. 1. The oxide was dissolved and the excess HCl evapd. The ed salt was dehydrated by heating sence of dry HCl first at 100°C 1 h, then at 200°C. 2. The rare oate was pptd from the aq chlorid with sodium benzoate, and the ehydrated by heating to 110°C for 4 h. Extraction of the chloride d out with HCl satd ether, and the chloride heated at 60°C first in dry HCl and then in dry air. The tored in a desiccator over P205. s prepd from NaCl + H2S0 _h and by e resulting HCl through H2S0 _h

COMPONENTS:	ORIGINAL MEASUREMENTS:
	Dzhuraev, Kh. Sh.; Mirsaidov, U.;
(1) Neodymium chloride; NdCl ₃ ; [10024-93-8]	Kurbanbekov, A.; Rakhimova, A.
(2) Diethyl ether (ethyl ether); C ₄ H ₁₀ 0; [60-29-7]	Dokl. Akad. Nauk Tadzh. SSR <u>1976</u> , 19, 32-4.
VARIABLES:	PREPARED BY:
T/K ≈ 293	T. Mioduski
1/1 - 293	11 Middubki
EXPERIMENTAL VALUES:	
The solubility of $MdCl_3$ in diethyl ether at	20°C was reported to be
5.8 x	10 ⁻³ mass %
The corresponding molality calculated by the	e compiler is
2.31 x 1	L0 ⁻⁴ mol kg ⁻¹
	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. Equilibrium was	SOURCE AND PURITY OF MATERIALS: Anhydrous NdCl ₃ prepared by the ethanol
attained within 24 h and it was verified by	solvate method (no details given).
constancy in the Nd concentration. Both the saturated solution and the equilibrated	Ethyl ether was dried with Na and
solid phase were analyzed. Nd determined	distilled from LiAlH ₄ .
by complexometric titration in the presence of urotropine buffer and methyl-thymol blue	
indicator. Chloride determined by titra-	
tion with AgNO ₃ . The solid phase corres- ponded to NdCl ₃ .0.3Et ₂ 0 (the etherate was	
dried under vacuum at 40°C prior to analysis).	
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES:

				_		
COMPONENTS: (1) Neodymium chloride; NdC [10024-93-8]	L ₃ ;	J.; Oelsner	.; Zwietasch , L.; Nieder	, K.J.; Tirschmann, geases, U.		
(2) Ethers		Kirmse, E.M	Z. Chem. <u>1968</u> , 8, 472-3. Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov. 1971, 200-6.			
		1445-64674.	<u>1911</u> , 200-0.			
VARIABLES:		PREPARED BY:				
Room temperature: T/K around	1 298	T. Mioduski	and M. Salo	mon		
EXPERIMENTAL VALUES:	<u> </u>	- I	<u></u>			
			solu	bility ^{a,b}		
solvent			mass %	mol kg ⁻¹		
1-ethoxy-2-methoxyethane;	°5 ^H 12 ⁰ 2;	[5137-45-1]	0.04	1.6 x 10 ⁻³		
1-methoxypentane;	°6 ^H 14 ⁰ ;	[628-80-8]	0.07	2.8×10^{-3}		
1,3-dioxolane;	^C 3 ^H 6 ⁰ 2;	[646-06-0]	0.8	3.2×10^{-2}		
1,4-dioxane;	с ₄ н ₈ 0 ₂ ;	[123-91-1]	0.1	4.0 x 10 ⁻²		
^a Molalities calculated by the	aompilanc					
^b Nature of the solid phases r	not specified.					
	AUXILIAR	Y INFORMATION				
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures w	ere isother-	SOURCE AND P		ERIALS: prepared by the		
mally agitated at 25°C or at	room tempera-		aylor and Ca			
ture. Authors state that the found for the solubility was mental error limits.		No other in:	formation gi	ven.		
Nd was determined by complexe	ometric titra-					
No other details given.						
		ESTIMATED ER	ROR:			
		Nothing spec	ified.			
		REFERENCES: 1. Taylor, N J. Inorg.	1.D.; Carter Nucl. Chem	, C.P. . <u>1962</u> , 24, 387.		
		1				

		_	
COMPONENTS: (1) Neodymium chloride; NdCl ₃ ; [10024-93-8] (2) Alkyl ethers	Kirmse	L MEASUREMENT: , E.M.; Dress m. <u>1975</u> , 15,	ler, H.
VARIABLES: Room Temperature (293-298 K)	PREPARE T. Mio	D BY: duski and M.	Salomon
EXPERIMENTAL VALUES:			
solvent		sol mass %	ubility ^a mol kg ⁻¹
1-methoxyheptane; C ₈ H ₁₈ 0; [629-3	32-3]	0.4 ^b	0.016
¹ -methoxynonane; C ₁₀ H ₂₂ 0; [7289-		0.02 ^c	8×10^{-4}
^a Molalities calculated by the compilers.			
^b Solid phase NdCl ₃ : $C_8H_{18}O$ found to be 1: > 2	2.		
^C Solid phase not specified.			
AUXILIARY METHOD /APPARATUS / PROCEDURE :			
The solute-solvent mixtures were isother- mally agitated (at room temperature) until equilibrium was attained. The anhydrous reagents were handled in a dry box contain- ing P_40_{10} . Nd was determined by complexo- metric titration using Xylenol Orange indi- cator. The reported solubilities are mean values based on four determinations.	1	AND FURITY OF	MATERIALS;
		ED ERROR:	
	Notning	; specified.	
	REFEREN	CES:	·

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Neodymium chloride; NdCl ₃ ;	Rossmanith, K.; Auer-Welsbach, C.
[10024-93-8]	Monatsh. Chem. <u>1965</u> , 96, 602-5.
(2) Tetrahydrofuran; C ₄ H ₈ 0; [109-99-9]	Monatsh. Chem. <u>1985</u> , 78, 602-5.
4 0	
VARIABLES:	PREPARED BY:
Room temperature: T/K about 293	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of NdCl ₃ in tetrahydrofuran at reported as	room temperature (about 20 ⁰ C) was
1.16 g/100 ml solution (0.04	6 mol dm ⁻³ , compiler).
1,10 B, 200 ml 00101100 (000	, mor am , compress,
	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution	SOURCE AND PURITY OF MATERIALS: Sources and purities not specified.
was equilibrated in an extractor for 60-80	NdCl ₃ prepared by reaction of the oxide at
hours at room temperature. Neodymium was de-	high temperatures with an excess of NH4C1 followed by heating the product in a cur-
termined by the oxalate method and by titration with EDTA using Xylenol Orange	rent of dry nitrogen, and then in vacuum
indicator. For the solid phase analysis,	to remove unreacted NH ₄ C1.
the solvent was determined by difference.	Tetrahydrofuran was distilled from LiAlH ₄ .
Anhydrous substances were handled in a dry	4
box through which was passed a current of dry and CO_2 -free nitrogen.	
Analysis of the solid phase yielded a NdCl ₃ :C ₄ H ₈ O ratio of 1:1.99.	ESTIMATED ERROR:
a Mac13.041180 12010 01 1.1.99.	Nothing specified.
	REFERENCES:
1	
1	1
	1

COMPONENT			ORIGINAL MEASUREMENTS:	
COMPONENTS (1) Neod	; lymium chloride;	NdCl.	Korovin, S.S.; Galaktionova	a 0.V ·
	24-93-8]	Naci3;	Lebedeva, E.N.; Voronskaya	, G.N.
	utylphosphate; C -73-8]	12 ^H 27 ⁰ 4 ^P ;	Zh. Neorg. Khím. <u>1975</u> , 20, Inorg. Chem. (Engl. Transl. 508-11.	908-14; Russ. J. .) <u>1975</u> , 20,
VARIABLES	:	<u></u>	PREPARED BY:	
One tempe	rature		T. Mioduski and M. Salomon	
EXPERIMENT	TAL VALUES:			
		Composition of sat	urated solution	
mass %	mol/kg sln	g dm ⁻³ mold	m ⁻³ mol kg ⁻¹ (compiler)	density/g cm ⁻³
31.8	1.27	408.0 1.	63 1.86	1.28
		The solid ph	ase is NdCl ₃ .	
		AUXILIARY	INFORMATION	
	PARATUS / PROCEDURE		SOURCE AND PURITY OF MATERIA	
Satd slns	prepared isother	rmally with magnetic	Anhydrous NdCl ₃ prepd by c Nd ₂ O ₃ with CCl ₄ vapor (1,2	hlorination of
The sln wa	as centrifuged ar	nd an aliquot for	purity of materials not gi	ven. Nd was
	taken and added t H3. The pptd Pro	to methanol and pptd (OH) ₃ was washed	analyzed gravimetrically, Volhard's method. Tributy	
repeatedly	y and heated to t		was purified "by the stand additional details given.	ard method." No
analysed	(no details giver	n) for phosphorous	additional details given.	
	anhydr PrCl3 was e performed in a	found. All opera- dry box through		
<i>(</i>	tream of argon wa			
		s work was to es-	ESTIMATED ERROR:	
TBP and Pi	ne nature of comp rCl3 in solution.	Additional	No estimates possible.	
	ith unsaturated s viscosity, molar	solutions (IR conductivities) are		
	in the source pa		REFERENCES :	
			 Korshunov, B.G.; Drobot yarov, V.V.; Shevtsova, 	
			Khim. <u>1964</u> , 9, 1427.	
			 Novikov, G.I., Tolmache Khim. <u>1965</u>, 38, 1160. 	va, V.D. Zh. Prikl

80	r N	leodymiu	m Chlo	ride	
COMPONENTS: (1) Neodymium chlor:	Lde; NdCl ₂ ;			AL MEASUREMENTS e. E.M.	5:
[10024-93-8]	c				00 Teor. Rastvorov
(2) Alkyl amines			<u>1971</u> ,	200-6.	
VARIABLES:				ED BY:	
T/K ≕ 298			T. Mi	oduski and M. S	Salomon
EXPERIMENTAL VALUES:					······································
				solubi	
solvent				mass %	mol kg ⁻¹
1-propanamine;	с ₃ н ₉ N;	[107-10)-8]	25.7	1.380
2-propanamine;	1so-C ₃ H ₉ N;	[75-31-	-0]	0.1	0.004
2-propen-1-amine ^b ;	^c 3 ^H 7 ^N ;	[107-11	L-9]	0.05	0.002
^a Molalities calculate	d by the compi	lers.			
^b The original paper a	imply specifie	s the solv	rent as	C.H.NH., and I	non request the
author kindly ident:	Ified the solver	nt as ally	/lamine	•	
		AUXILIARY	INFORM	ATION	
METHOD/APPARATUS/PROC				AND PURITY OF	
Experimental details probably similar to p	not given, but previous works (of the	work	by the author t	out based on previous the anhydrous salt was
author which are comp volume.				bly prepared by arter (1).	the method of Taylor
Nature of solid phase	es not specifie	d.			
			}		
			ESTIM	ATED ERROR:	
			Nothi		
			Į –	ng specified.	
			1	ENCES :	ton C P
			1. Ta	ENCES: ylor, M.D.; Car	ter, C.P. hem. <u>1962</u> , 24, 387.
			1. Ta	ENCES: ylor, M.D.; Car	
			1. Ta	ENCES: ylor, M.D.; Car	

Νεοάγπια	m chionde 16
COMPONENTS: (1) Neodymium chloride; NdCl ₃ ; [10024-93-8] (2) Hexamethylphosphorotriamide;	ORIGINAL MEASUREMENTS: Mikheev, N.B.; Kamenskaya, A.N.; Konovalova, N.A.; Zhilina, T.A. Zh. Neorg. Khím. <u>1977</u> , 22, 1761-6;
C ₆ H ₁₈ N ₃ OP; [680-31-9]	Russ, J. Inorg. Chem. (Engl. Transl.) <u>1977</u> , 22, 955-8.
VARIABLES:	PREPARED BY:
Room temperature: $T/K = 298 \pm 3$	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of the anhydrous salt at 25 \pm	3°C was given as
0.119 ± 0	0.005 mol dm ⁻³
Starting with the solvate NdCl ₃ .3((CH ₃) ₂ N) ₃ PO	_
0.125 ±	0.001 mol dm ⁻³
^a Table 3 in the English translation of the source $23 \pm 3^{\circ}$ C. This is probably a typographical of the source	error as the text clearly states that all
measurements were carried out at room temper:	$(25 \pm 3^{\circ}C)$.
AUXILIARY	INFORMATION
METHOD /APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
Isothermal method used. Salt and solvent	Anhyd NdCl ₃ prepd similarly to that in (1)
were placed in a test-tube in a dry box, and the tube agitated at room temperature (25 \pm	by subliming NH ₄ Cl from a mixt of NdCl ₃ and 6 moles of NN ₄ Cl in a stream of inert gas at
3°C) until equilibrium was reached. Aliquots were withdrawn periodically and analysed for	200-400°C (NdOC1 content less than 3%). The solvent was purified as in (2).
the metal content. Rare earth concentration was determined by complexometric titration, and by the radiometric method using the	NdCl ₃ . $3C_{6}H_{18}N_{3}OP$ prepd by dissolving the hydrate in $C_{3}H_{18}N_{3}OP$ and heating to 140-145°
isotope Tm-170 ($t_1 = 169$ d). Authors state	
that results for both methods agreed. Al- though not clearly stated, it appears that equilibrium was reached in several weeks to	and drying over P_2O_5 in a stream of dry nitrogen. Yield was about 90 %.
several months.	ESTIMATED ERROR:
Solid phase samples washed three times with benzene or ether and dried on a steam bath in an argon atmosphere. The solid phase was	Soly: precision ± 0.001 mol dm ⁻³ at a 95 % level of confidence (authors).
analysed and found to be NdCl ₃ .3C ₆ H ₁₈ N ₃ OP.	Temp: precision ± 3 K.
The solvate was analysed for metal content by complexometric titrn, for chloride by the Volhard method, and the solvent was obtained by difference. IR spectra confirmed the absence of water. Structural studies of	 REFERENCES: 1. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u>, 24, 387. 2. Fomicheva, M.G.; Kessler, Yu.M.;
the solvate also carried out by X-ray analysis.	Zabusova, S.E.; Alpatova, N.M. Elektrokhimiya <u>1975</u> , 11, 163.

82		Neodymiu	m Chloride		
COMPO (1)	NENTS: Neodymium chlor [10024 93-8]	ide; NdCl3;	ORIGINAL MEASUREMENTS Batyaev, I.M.; Solo		
(2)	Gallium chloride; GaCl ₃ ; [13450-90-3]		Zh. Neorg. Khim. <u>1976</u> , 21, 2556-7; Russ. J. Inorg. Chem. (Engl. Transl.) <u>1976</u> , 21, 1406.		
(3)	Phosphorus oxyc [10025-87-3]	hloride; POCl ₃ ;	Zh. Fiz. Khim. 1979	, 53, 1588-90; Russ. J. Transl.) <u>1979</u> , 53, 897-9	
VARIA	BLES:		PREPARED BY:		
Conc	entration of GaC	1 ₃ at 298 K	T. Mioduski and M.	Salomon	
EXPER	IMENTAL VALUES:	. <u></u>	I	<u> </u>	
	GaCl ₃ /NdCl ₃ molar ratio	$GaCl_3$ concentration mmol dm ⁻³	NdCl ₃ solubility mmol dm ⁻³	equiv conductivity S cm ² equiv ⁻¹	
	pure POC13		0.01		
	1:22.4	1.0	23	4.6	
	1:17.8	2.3	39	3.9	
	1:11.9	3.0	36	5.6	
	1:10.0	4.1	41	5.2	
	1:7.6	5.5	42	5.1	
	1:7.5	6.1	46	4.8	
	1:5.9	7.1	42	5.4	
	1:6.3	8.1	51	4.6	
	1:5.6	9.1	51	5.7	
	1:5.3	10.1	54	5.8	
	<u></u>	AUXILIARY	INFORMATION		
Anhyo POC1 speci first	3 in an argon fi ified amounts of	EDURE: NdCl ₃ were added to Lled dry box. The GaCl3 were dissolved Ibilities were deter -	described in (1).	$GaCl_3$ were prepared as I with P_2O_5 and distil-	
	ther information		Solutions were prepa dry box.	ared in an argon filled	
The a solu	bility of NdCl ₃ (FIONAL DATA: at the increase in the upon increasing GaCl ₃ to complex formation.	ESTIMATED ERROR:		

Nothing specified.

REFERENCES:

REFERENCES: 1. Puzankova, N.L.; Slastenova, N.M.; Solov'ev, M.A.; Batyaev, I.M. Sintez i Issledovanie Nizkotemperaturnykh Khloridnykh Matrits. XXVI Herzen Lecture. Scientific Papers. 1973.

COMPONENTS: (1) Neodymium chloride; NdCl ₃ ;	ORIGINAL MEASUREMENTS:
(1) Neodymium chloride; NdCl ₃ ;	
[10024-93-8]	Batyaev, I.M.; Solov'ev, M.A.
(2) Gallium chloride; GaCl ₃ ; [13450-89-0]	Zh. Fiz. Khim. <u>1979</u> , 53, 1588-90; Russ. J. Phys. Chem. (Engl. Transl.) <u>1979</u> , 53, 897-9. Zh. Neorg. Khim. <u>1976</u> , 21,
(3) Phosphorus oxychloride; POCl ₃ ; [10025-87-3]	2556-7; Russ. J. Inorg. Chem. (Engl. Transl <u>1976</u> , 21, 1406.
VARIABLES:	PREPARED BY:
Concentration of GaCl ₃	T. Mioduski and M. Salomon
Temp not specified, but probably 298 K	
EXPERIMENTAL VALUES:	
GaCl ₃ concentration	NdCl ₃ solubility
mol dm ⁻³	mol dm ⁻³
0	0.01
1.0	22
2.3	39
3.0	36
4.1	41
5.5	42
6.1	46
7.1	42
9.1	51
9.1	51
10.1	54
for these complexes are given below.	
METHOD / APPARATUS / PROCEDURE :	INFORMATION SOURCE AND PURITY OF MATERIALS:
METHOD/APPARATUS/PROCEDURE: The NdCl ₃ -POCl ₃ -GaCl ₃ systems were synthe- sized in sealed tubes by the solvolthermal	y
METHOD/APPARATUS/PROCEDURE: The NdCl ₃ -POCl ₃ -GaCl ₃ systems were synthe- sized in sealed tubes by the solvolthermal method at 120°C as described in (1). No	SOURCE AND PURITY OF MATERIALS: Anhydrous metal chlorides were prepared as described in (3).
METHOD/APPARATUS/PROCEDURE: The NdCl ₃ -POCl ₃ -GaCl ₃ systems were synthe- sized in sealed tubes by the solvolthermal method at 120°C as described in (1). No other details given. The compilers assume that after treating the solutions at 120°C	SOURCE AND PURITY OF MATERIALS: Anhydrous metal chlorides were prepared as
METHOD/APPARATUS/PROCEDURE: The NdCl ₃ -POCl ₃ -GaCl ₃ systems were synthe- sized in sealed tubes by the solvolthermal method at 120°C as described in (1). No other details given. The compilers assume that after treating the solutions at 120°C for about 2 h, they were then isothermally	SOURCE AND PURITY OF MATERIALS: Anhydrous metal chlorides were prepared as described in (3).
METHOD/APPARATUS/PROCEDURE: The NdCl ₃ -POCl ₃ -GaCl ₃ systems were synthe- sized in sealed tubes by the solvolthermal method at 120°C as described in (1). No other details given. The compilers assume that after treating the solutions at 120°C	SOURCE AND PURITY OF MATERIALS: Anhydrous metal chlorides were prepared as described in (3).
METHOD/APPARATUS/PROCEDURE: The NdCl ₃ -POCl ₃ -GaCl ₃ systems were synthe- sized in sealed tubes by the solvolthermal method at 120°C as described in (1). No other details given. The compilers assume that after treating the solutions at 120°C for about 2 h, they were then isothermally equilibrated at 25°C (see the compilations	SOURCE AND PURITY OF MATERIALS: Anhydrous metal chlorides were prepared as described in (3).
METHOD/APPARATUS/PROCEDURE: The NdCl ₃ -POCl ₃ -GaCl ₃ systems were synthe- sized in sealed tubes by the solvolthermal method at 120°C as described in (1). No other details given. The compilers assume that after treating the solutions at 120°C for about 2 h, they were then isothermally equilibrated at 25°C (see the compilations of references 1 and 2 in this volume.)	SOURCE AND PURITY OF MATERIALS: Anhydrous metal chlorides were prepared as described in (3).
METHOD/APPARATUS/PROCEDURE: The NdCl ₃ -POCl ₃ -GaCl ₃ systems were synthe- sized in sealed tubes by the solvolthermal method at 120°C as described in (1). No other details given. The compilers assume that after treating the solutions at 120°C for about 2 h, they were then isothermally equilibrated at 25°C (see the compilations of references 1 and 2 in this volume.) COMMENTS AND/OR ADDITIONAL DATA:	SOURCE AND PURITY OF MATERIALS: Anhydrous metal chlorides were prepared as described in (3). POCl ₃ was purified by the usual method.
METHOD/APPARATUS/PROCEDURE: The NdCl ₃ -POCl ₃ -GaCl ₃ systems were synthe- sized in sealed tubes by the solvolthermal method at 120°C as described in (1). No other details given. The compilers assume that after treating the solutions at 120°C for about 2 h, they were then isothermally equilibrated at 25°C (see the compilations of references 1 and 2 in this volume.) COMMENTS AND/OR ADDITIONAL DATA: For the equilibria	SOURCE AND PURITY OF MATERIALS: Anhydrous metal chlorides were prepared as described in (3).
<pre>METHOD/APPARATUS/PROCEDURE: The NdCl₃-POCl₃-GaCl₃ systems were synthe- sized in sealed tubes by the solvolthermal method at 120°C as described in (1). No other details given. The compilers assume that after treating the solutions at 120°C for about 2 h, they were then isothermally equilibrated at 25°C (see the compilations of references 1 and 2 in this volume.) COMMENTS AND/OR ADDITIONAL DATA: For the equilibria NdCl₃ + yGaCl₃ = NdCl₃.yGaCl₃ the following stepwise formation constants constants, βy, were given:</pre>	SOURCE AND PURITY OF MATERIALS: Anhydrous metal chlorides were prepared as described in (3). POCl ₃ was purified by the usual method.
METHOD/APPARATUS/PROCEDURE: The NdCl ₃ -POCl ₃ -GaCl ₃ systems were synthe- sized in sealed tubes by the solvolthermal method at 120°C as described in (1). No other details given. The compilers assume that after treating the solutions at 120°C for about 2 h, they were then isothermally equilibrated at 25°C (see the compilations of references 1 and 2 in this volume.) COMMENTS AND/OR ADDITIONAL DATA: For the equilibria NdCl ₃ + yGaCl ₃ = NdCl ₃ .yGaCl ₃ the following stepwise formation constants constants, β_y , were given: $\beta_1 = (2.7 \pm 0.1) \times 10^6$	SOURCE AND PURITY OF MATERIALS: Anhydrous metal chlorides were prepared as described in (3). POCl ₃ was purified by the usual method. ESTIMATED ERROR: Nothing specified.
METHOD/APPARATUS/PROCEDURE: The NdCl ₃ -POCl ₃ -GaCl ₃ systems were synthe- sized in sealed tubes by the solvolthermal method at 120°C as described in (1). No other details given. The compilers assume that after treating the solutions at 120°C for about 2 h, they were then isothermally equilibrated at 25°C (see the compilations of references 1 and 2 in this volume.) COMMENTS AND/OR ADDITIONAL DATA: For the equilibria NdCl ₃ + yGaCl ₃ = NdCl ₃ .yGaCl ₃ the following stepwise formation constants constants, β_y , were given: $\beta_1 = (2.7 \pm 0.1) \times 10^6$ $\beta_2 = (3.6 \pm 0.2) \times 10^9$	SOURCE AND PURITY OF MATERIALS: Anhydrous metal chlorides were prepared as described in (3). POC1 ₃ was purified by the usual method. ESTIMATED ERROR: Nothing specified. REFERENCES;
METHOD/APPARATUS/PROCEDURE: The NdCl ₃ -POCl ₃ -GaCl ₃ systems were synthe- sized in sealed tubes by the solvolthermal method at 120°C as described in (1). No other details given. The compilers assume that after treating the solutions at 120°C for about 2 h, they were then isothermally equilibrated at 25°C (see the compilations of references 1 and 2 in this volume.) COMMENTS AND/OR ADDITIONAL DATA: For the equilibria NdCl ₃ + yGaCl ₃ = NdCl ₃ .yGaCl ₃ the following stepwise formation constants constants, β_y , were given: $\beta_1 = (2.7 \pm 0.1) \times 10^6$	<pre>SOURCE AND PURITY OF MATERIALS: Anhydrous metal chlorides were prepared as described in (3). POCl₃ was purified by the usual method. ESTIMATED ERROR: Nothing specified. REFERENCES: 1. Lyubimov, E.I.; Batyaev, I.M. Zh. Prikl. Khim. <u>1972</u>, 45, 1176.</pre>
METHOD/APPARATUS/PROCEDURE: The NdCl ₃ -POCl ₃ -GaCl ₃ systems were synthe- sized in sealed tubes by the solvolthermal method at 120°C as described in (1). No other details given. The compilers assume that after treating the solutions at 120°C for about 2 h, they were then isothermally equilibrated at 25°C (see the compilations of references 1 and 2 in this volume.) COMMENTS AND/OR ADDITIONAL DATA: For the equilibria NdCl ₃ + yGaCl ₃ = NdCl ₃ .yGaCl ₃ the following stepwise formation constants constants, β_y , were given: $\beta_1 = (2.7 \pm 0.1) \times 10^6$ $\beta_2 = (3.6 \pm 0.2) \times 10^8$	<pre>SOURCE AND PURITY OF MATERIALS: Anhydrous metal chlorides were prepared as described in (3). POCl₃ was purified by the usual method. ESTIMATED ERROR: Nothing specified. REFERENCES: 1. Lyubimov, E.I.; Batyaev, I.M. Zh. Prikl.</pre>

Neodymium Chloride

COMPORENTS: (1) Neodynum chloride; NdCl ₃ ; [10024-93-8] ORIGINAL HEASUREMENTS: Lyubimov, E.I.; Batyaev, I.M. (2) Tetrachlorostannate; SnCl ₄ ; [7646-78-8] The Phosphorus oxychloride; FOCl ₃ ; [10025-87-3] Zh. Paikl. Khim. <u>1972</u> , 45, 1176-8. (3) Phosphorus oxychloride; FOCl ₃ ; [10025-87-3] PREPARED BY: T. Mioduski Thioduski T/K = 293 and 333 T. Mioduski EXPERIMENTAL VALUES: SnCl ₄ concentration T. Mioduski SnCl ₄ : FOCl ₃ ratio SnCl ₄ concentration concentration T/K = 293 and 333 Difference 60°C ⁴ EXPERIMENTAL VALUES: SnCl ₄ concentration T. Mioduski SnCl ₄ : FOCl ₃ ratio SnCl ₄ concentration 0.007				
$\begin{bmatrix} 10024-93-8 \\ [10025-87-3] \\ \hline \begin{tabular}{lllllllllllllllllllllllllllllllllll$	COMPONENTS:	ORIGINAL MEAS	UREMENTS:	
(1) Fighthered at 120°C for 2 hours.(10) Fighthered at 120°C for 2 hours.(10) Phosphorus oxychloride; POCl3;(10025-87-3]VARIABLES:SnCl4 concentrationT/K = 293 and 333EXPERIMENTAL VALUES:SnCl4; FOCl3 ratioSnCl4; FOCl3 ratio(by volume)mol dm ⁻³ 20°C ^b 20°C ^c 00001:2500.0350.110.0350.270.230.201:100.170.300.330.260.150.160.110.100.221:151.40.110.100.110.100.110.100.110.110.100.110.100.110.110.100.110.100.1111.14.60.1111.14.611.14.60.100.100.100.100.1011.111.112.213.314.315.514.415.515.516.616.717.7 <td>(1) Neodymium chloride; NdCl₃; [10024-93-8]</td> <td>Lyubimov, E.</td> <td>I.; Batyaev, I.M.</td> <td></td>	(1) Neodymium chloride; NdCl ₃ ; [10024-93-8]	Lyubimov, E.	I.; Batyaev, I.M.	
(3) Phosphorus oxychloride; $POCl_3$; [10025-87-3] VARIABLES: SnCl4 concentration T/K = 293 and 333 EXPERIMENTAL VALUES: SnCl4; FOCl3 ratio SnCl4 (concent sation (by volume) mol dm ⁻³ 20°C ^b 20°C ^c 20°C	(2) Tetrachlorostannate; SnCl ₄ ;	Zh. Prikl. K	him. <u>1972</u> , 45, 11	.76-8.
SnCl ₄ concentration T/K = 293 and 333 EXPERIMENTAL VALUES: SnCl ₄ :POCl ₃ ratio SnCl ₄ concn solubility of Nd ₂ O ₃ /mol dm ⁻³⁴ (by volume) mol dm ⁻³ 20°C 60°C d 0 0 0 0.007 0.003 1:250 0.035 0.11 0.093 0.092 1:100 0.085 0.27 0.23 0.20 1:50 0.17 0.30 0.30 0.26 1:25 0.33 0.26 0.20 0.31 1:15 1.4 0.19 1:1 4.6 0.19 1:1 4.6 0.19 1:1 4.6 0.19 1:1 4.6 0.19 1:1 4.6 0.001 1:1 5 1.4 0.19 1:1 4.6 0.001 1:1 6.8 0.010 0.010 pure SnCl ₄ 8.5 2 $x \log^{-4}$ 0.010 0.010 pure SnCl ₄ 8.5 4.0.010 0.010 pure SnCl ₄ 8.5 4.0.010 0.010 pure SnCl ₄ 0.99 4:1 6.8 4.0.010 0.010 pure SnCl ₄ 8.5 4.0.010 0.010 Nd ₂ O ₃ + 6POCl ₃ = 2NdCl ₃ + 3P ₂ O ₃ Cl ₄ Assuming P ₂ O ₃ Cl ₄ to be soluble, the equilibrated solutions would then constitute a four component mixture. ^b Preheated at 120°C for 2 hours. ^b Preheated at 60°C (time not specified). ETHOD/APPARATUS/PROCEDURE: Isothermal method used. POCl ₃ + SnCl ₄ solutions were prepared by volume in a dry box. The SnCl ₄ cortent was verified by chemical analysis for Sn. This solution and Nd ₂ O ₃ were placed in sealed ampoules, heated Nd ₂ O ₃ ore Thours. Without preheating equilibrium was established after 200 hours. Preheating to 120°C hours. Without preheating equilibrium was established after 200 hours. Preheating to 120°C to 2 hours.	(3) Phosphorus oxychloride; POCl ₃ ;			
SnCl ₄ concentration T/K = 293 and 333 EXPERIMENTAL VALUES: SnCl ₄ :POCl ₃ ratio SnCl ₄ concn solubility of Nd ₂ O ₃ /mol dm ⁻³⁴ (by volume) mol dm ⁻³ 20°C ^b 20°C ^c 60°C ^d 0 0 0 0.007 0.003 1:250 0.035 0.11 0.093 0.092 1:100 0.085 0.27 0.23 0.20 1:50 0.17 0.30 0.30 0.26 1:25 0.33 0.26 0.20 0.31 1:15 1.4 0.19 1:15 1.4 0.19 1:1 4.6 0.19 1:1 4.6 0.19 1:1 4.6 0.19 1:1 4.6 0.001 0.010 pure SnCl ₄ 8.5 2.2 x 10 ⁻⁴ 0.090 4:1 6.8 0.010 0.010 pure SnCl ₄ 8.5 0.010 0.010 pure SnCl ₄ 8.5 0.010 0.010 Pure SnCl ₄ 8.5 0.010 0.010 Md ₂ O ₃ + 6POCl ₃ = 2NdCl ₃ + 3P ₂ O ₃ Cl ₄ Assuming P ₂ O ₃ Cl ₄ to be solubile, the equilibrated solutions would then constitute a four component mixture. ^b Preheated at 120°C for 2 hours. ^c Preheated at 60°C (time not specified). ETHOD/APPARATUS/PROCEDURE: Isotherma method used. POCl ₃ + SnCl ₄ solutions were prepared by volume in a dry box. The SnCl ₄ content was verified by chemical analysis for Sn. This solution and Nd ₂ O ₃ were placed in sealed ampoules, heated Nd ₂ O ₃ or "the first sort" was ignited at 950°C for 2 hours. ^{Nu} th P ₂ O ₅ and distilled under vacuum. ^{Nu} th P ₂ O ₅ and distilled under vacuum.	WARTARI EC.			
T/K = 293 and 333 T. Mioduski EXPERIMENTAL VALUES: SnCl ₄ :POCl ₃ ratio SnCl ₄ concn solubility of Nd ₂ O ₃ /mol dm ^{-3a} (by volume) mol dm ⁻³ 20°c ^b 20°c ^c $60°c^d$ 0 0 0.007 0.003 1:250 0.035 0.11 0.093 0.092 1:100 0.085 0.27 0.23 0.20 1:50 0.17 0.30 0.30 0.26 1:15 0.59 0.15 0.13 0.22 1:10 0.78 0.11 0.100 0.22 1:15 1.4 0.100 0.22 1:15 3.0 0.001 900 1:1 4.6 0.000 aThis is also the solubility of NdCl ₃ since the oxide is quantitatively converted to the chloride according to Nd ₂ O ₃ + 6POCl ₃ = 2NdCl ₃ + 3P ₂ O ₃ Cl ₄ Assuming P ₂ O ₃ Cl ₄ to be soluble, the equilibrated solutions would then constitute a four component mixture. ^b Preheated at 120°C for 2 hours. d _{No} pretreatment. Nd ₂ O ₃ of the first sort" was ignited at 950°C for 2 hours.		PREPARED BY:		
EXPERIMENTAL VALUES: SnCl ₄ :POCl ₃ ratio SnCl ₄ concn solubility of Nd ₂ 0 ₃ /mol dm ^{-3a} (by volume) mol dm ⁻³ $20^{\circ}c^{\circ}$ $20^{\circ}c^{\circ}$ $60^{\circ}c^{\circ}$ 0 0 0.007 0.003 1:250 0.035 0.11 0.093 0.092 1:100 0.085 0.27 0.23 0.20 1:25 0.33 0.26 0.20 0.31 1:15 0.59 0.15 0.13 0.22 1:15 1.4 0.20 1.1 1:1.5 3.0 0.20 1.1 1:1.5 3.0 0.20 1.1 1:1.5 3.0 0.20 1.1 1:1.5 3.0 0.20 1.1 1:1.5 3.0 0.10 0.010 1:1.5 3.0 0.010 0.010 1:1.5 3.0 0.010 0.010 pure SnCl ₄ 8.5 2 x 10 ⁻⁴	7	T. Mioduski		
(by volume) mol dm ⁻³ $20^{\circ}c^{\circ}$ $20^{\circ}c^{\circ}$ $60^{\circ}c^{\circ}d^{\circ}$ 0 0 0.035 0.11 0.093 0.092 1:250 0.035 0.27 0.23 0.20 1:50 0.17 0.30 0.30 0.26 1:25 0.33 0.26 0.20 0.31 1:15 0.78 0.11 0.10 0.22 1:10 0.78 0.11 0.10 0.22 1:1.5 1.4 0.19 0.11 1.0.03 1:1.5 1.4 0.10 0.21 1.1 1:1.5 3.0 0.10 0.20 1.1 1:1.5 3.0 0.000 0.010 0.010 1:1.5 3.0 0.010 0.010 0.010 1:1.5 3.0 0.010 0.010 0.010 1:1.5 1.4 0.010 0.010 1:1.5 1.4 0.010 0.010 0.010				
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(by volume) mol am 20 C 20 C 0 0 0.007 0.003 1:250 0.035 0.11 0.092 0.123 0.20 1:50 0.17 0.30 0.23 0.20 0.31 1:25 0.33 0.26 0.20 0.31 0.15 0.13 0.22 1:15 0.59 0.15 0.13 0.22 0.31 0.11 0.10 0.22 1:15 1.4 0.20 1.1 0.10 0.22 1:1 0.10 0.22 1:1 4.6 0.090 4:1 6.8 0.090 4:1 6.8 0.010 0.010 0.010 pure SnCl4 8.5 2 x 10 ⁻⁴ ⁴ This is also the solubility of NdCl3 since the oxide is quantitatively converted to the chloride according to Nd203 + 6POCl3 = 2NdCl3 + 3P203Cl4 Assuming P203Cl4 Assuming P203Cl4 Assuming P203Cl4 No pretreatment. C ^C Preheated at 120°C for 2 hours. dNo pretreatment. C <t< td=""><td></td><td></td><td></td><td>60°C^d</td></t<>				60°C ^d
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1:100 0.085 0.27 0.23 0.20 1:50 0.17 0.30 0.30 0.26 1:25 0.33 0.26 0.20 0.31 1:15 0.59 0.11 0.10 0.22 1:10 0.78 0.11 0.10 0.22 1:5 1.4 0.20 0.19 1:1 4.6 0.090 0.010 0.010 pure SnCl4 8.5 2 x 10 ⁻⁴ 0.090 4:1 6.8 0.010 0.010 pure SnCl4 8.5 2 x 10 ⁻⁴ ^a This is also the solubility of NdCl3 since the oxide is quantitatively converted to the chloride according to Nd203 + 6POCl3 = 2NdCl3 + 3P203Cl4 Assuming P203Cl4 to be soluble, the equilibrated solutions would then constitute a four component mixture. Mo pretreatment. ^b Preheated at 120°C for 2 hours. d _{No} pretreatment. Nd203 of "the first sort" was ignited at 950°C for 2 hours. ^b bex. The SnCl4 content was verified by chemical analysis for Sn. This solution and Nd203 were placed in sealed ampoules, heated to 120°C for 2 hours. This solution, and then rotated in an air thermoestat at 20°C to 2 hours				
1:500.170.300.300.261:250.330.260.200.311:150.590.150.130.221:100.780.110.100.221:51.40.201:1.53.00.191:14.60.9904:16.80.010pure SnCl48.5 $2 \ge 10^{-4}$ a This is also the solubility of NdCl3 since the oxide is quantitatively converted to the chloride according toNd203 + 6POCl3 = 2NdCl3 + 3P203Cl4Assuming P203Cl4 to be soluble, the equilibrated solutions would then constitute a four component mixture.b Preheated at 120°C for 2 hours.MUXILIARY INFORMATIONMUXILIARY INFORMATIONMUXILIARY INFORMATIONPure grade SnCl4 and POCl3 were dehydraNo grade SnCl4 and POCl3 were dehydrasolution, and then rotated in an air thermo-stat at 20°C for 2 hours.Preheating to 120°C lowered the equilibra-tion time at 20°C to 2 hours.				0.092
1:250.330.260.200.311:150.590.150.130.221:100.780.110.100.221:51.40.201:1.53.00.191:14.60.0904:16.80.010pure SnCl48.5 2×10^{-4} aThis is also the solubility of NdCl3 since the oxide is quantitatively converted to the chloride according toNd203 + 6POCl3 = 2NdCl3 + 3P203Cl4Assuming P203Cl4 to be soluble, the equilibrated solutions would then constitute a four component mixture.Mo pretreatment.bPreheated at 120°C for 2 hours.dNo pretreatment.CPreheated at 60°C (time not specified).MUXILIARY INFORMATIONMETHOD/APPARATUS/PROCEDURE:Isothermal method used. POCl3 + SnCl4 solutions were prepared by volume in a dry box. The SnCl4 content was verified by chemical analysis for Sn. This solution and Nd203 were placed in sealed ampoules, heated to 120°C for 2 hours. Without preheating equilibrium was established after 200 hours."Pure" grade SnCl4 and POCl3 were dehydra with P205 and distilled under vacuum.Preheating to 120°C lowered the equilibra- tion time at 20°C to 2 hours.			0.23	0.20
1:250.330.260.200.311:150.590.150.130.221:100.780.110.100.221:51.40.201:1.53.00.191:14.60.0904:16.80.010pure SnCl48.5 2×10^{-4} aThis is also the solubility of NdCl3 since the oxide is quantitatively converted to the chloride according toNd203 + 6POCl3 = 2NdCl3 + 3P203Cl4Assuming P203Cl4 to be soluble, the equilibrated solutions would then constitute a four component mixture.Mo pretreatment.bCfor 2 hours.dCPreheated at 120°C for 2 hours.dNo pretreatment.CCfor 2 hours.No pretreatment.CSOURCE AND PURITY OF MATERIALS:Nd203 of "the first sort" was ignited at 950°C for 2 hours.box. The SnCl4 content was verified by chemical analysis for Sn. This solution and Nd203 were placed in sealed ampoules, heated to 120°C for 2 hours. Without preheating equilibrium was established after 200 hours.Valo20 tor 2 hours. Without preheating equilibrium was established after 200 hours."Pure" grade SnCl4 and POCl3 were dehydra with P205 and distilled under vacuum.Freheating to 120°C lowered the equilibra-tion time at 20°C to 2 hours."Pure" stat 20°C to 2 hours.	1:50 0.1	7 0.30	0.30	0.26
1:15 0.59 0.15 0.13 0.22 1:10 0.78 0.11 0.10 0.22 1:5 1.4 $$ $$ 0.20 1:1.5 3.0 $$ 0.19 1:1 4.6 $$ 0.010 pure SnCl4 8.5 2×10^{-4} $$ aThis is also the solubility of NdCl3 since the oxide is quantitatively converted to the chloride according to $Nd_20_3 + 6POCl_3 = 2NdCl_3 + 3P_20_3Cl_4$ Assuming P203Cl4 to be soluble, the equilibrated solutions would then constitute a four component mixture. M_{N0} pretreatment.bPreheated at 120°C for 2 hours. d_{N0} pretreatment.CPreheated at 60°C (time not specified).SOURCE AND PURITY OF MATERIALS: Nd20 3 of "the first sort" was ignited at 950°C for 2 hours.METHOD/APPARATUS/PROCEDURE: Isothermal method used. POCl_1 + SnCl4 solutions were prepared by volume in a dry box. The SnCl4 content was verified by chemical analysis for Sn. This solution and Nd203 were placed in sealed ampoules, heated to 120°C for 2 hours. Without preheating equilibrium was established after 200 hours."Pure" grade SnCl4 and POCl3 were dehydra with P205 and distilled under vacuum.Preheating to 120°C lowered the equilibra- tion time at 20°C to 2 hours.	1:25 0.3	3 0.26	0.20	0.31
1:100.780.110.100.221:51.40.201:1.51.40.211:1.53.00.191:14.60.0904:16.80.0100.010pure SnCl48.5 2×10^{-4} aThis is also the solubility of NdCl3 since the oxide is quantitatively converted to the chloride according toNd203 + 6POCl3 = 2NdCl3 + 3P203Cl4Assuming P203Cl4 to be soluble, the equilibrated solutions would then constitute a four component mixture.Mo pretreatment.bPreheated at 120°C for 2 hours.dNo pretreatment.CPreheated at 60°C (time not specified).SOURCE AND PURITY OF MATERIALS:Nother first sort was ignited at 950°C for 2 hours.'Nalog3 of "the first sort" was ignited at 950°C for 2 hours.by met placed in sealed ampoules, heated to 120°C for 2 hours. Without preheating to 120°C hours. Without preheating equilibrium was established after 200 hours."Preheating to 120°C lowered the equilibration time at 20°C to 2 hours."Pure" grade SnCl4 and POCl3 were dehydra				
1:51.40.201:1.53.00.191:14.60.0904:16.80.010pure SnCl48.5 $2 \ge 10^{-4}$ aThis is also the solubility of NdCl3 since the oxide is quantitatively converted to the chloride according toNd203 + 6POCl3 = 2NdCl3 + 3P203Cl4Assuming P203Cl4 to be soluble, the equilibrated solutions would then constitute a four component mixture.No pretreatment.bPreheated at 120°C for 2 hours.dNo pretreatment.CPreheated at 60°C (time not specified).SOURCE AND PURITY OF MATERIALS:No pretreatment.CPreheated at 60°C (time not specified).SOURCE AND PURITY OF MATERIALS:No pretreatment.CPreheated at 20°C for 2 hours.SOURCE AND PURITY OF MATERIALS:No pretreatment.CPreheated at 20°C for 2 hours.Pitheating to 120°C for 2 hours."Pure" grade SnCl4 and POCl3 were dehydrawith P205 and distilled under vacuum.Vacuum.Preheating to 120°C lowered the equilibra- tion time at 20°C to 2 hours.			· ·	
 1:1.5 3.0 1:1 4.6 1:1 6.8 2 x 10⁻⁴ 0.010 0.010				
 1:1 4.6 6.8 9.000 4:1 6.8 2 x 10⁻⁴ 0.010 0.010				
4:1 6.8 0.010 0.010 pure SnCl ₄ 8.5 2 x 10 ⁻⁴ 0.010 0.010 ^a This is also the solubility of NdCl ₃ since the oxide is quantitatively converted to the chloride according to Nd ₂ 0 ₃ + 6POCl ₃ = 2NdCl ₃ + 3P ₂ 0 ₃ Cl ₄ Assuming P ₂ 0 ₃ Cl ₄ to be soluble, the equilibrated solutions would then constitute a four component mixture. ^b Preheated at 120 ^o C for 2 hours. ^c Preheated at 60 ^o C (time not specified). METHOD/APPARATUS/PROCEDURE: Isothermal method used. POCl ₃ + SnCl ₄ solutions were prepared by volume in a dry box. The SnCl ₄ content was verified by chemical analysis for Sn. This solution and Nd ₂ 0 ₃ of "the first sort" was ignited at 950°C for 2 hours. "Pure" grade SnCl ₄ and POCl ₃ were dehydra with P ₂ 0 ₅ and distilled under vacuum. "Pure" grade SnCl ₄ and POCl ₃ were dehydra with P ₂ 0 ₅ and distilled under vacuum.				
pure SnCl ₄ 8.5 2 x 10 ⁻⁴ ^a This is also the solubility of NdCl ₃ since the oxide is quantitatively converted to the chloride according to Nd ₂ 0 ₃ + 6POCl ₃ = 2NdCl ₃ + 3P ₂ 0 ₃ Cl ₄ Assuming P ₂ 0 ₃ Cl ₄ to be soluble, the equilibrated solutions would then constitute a four component mixture. Mo pretreatment. ^b Preheated at 120°C for 2 hours. d _{No} pretreatment. ^c Preheated at 60°C (time not specified). SOURCE AND PURITY OF MATERIALS: No pretreatment. Nd ₂ 0 ₃ of "the first sort" was ignited at 950°C for 2 hours. Nd20 ₃ of "the first sort" was ignited at 950°C for 2 hours. Nd ₂ 0 ₃ of "the first sort" was ignited at 950°C for 2 hours. Nd20 ³ of 7 2 hours to increase the rate of solution, and then rotated in an air thermostat at 20°C for 2 hours. Without preheating equilibrium was established after 200 hours. "Pure" grade SnCl ₄ and POCl ₃ were dehydra with P ₂ 0 ₅ and distilled under vacuum. Preheating to 120°C to 2 hours. Withou preheating to 120°C to 2 hours. "Pure" stat at 20°C to 2 hours.				
 ⁴ ^aThis is also the solubility of NdCl₃ since the oxide is quantitatively converted to the chloride according to Nd₂0₃ + 6POCl₃ = 2NdCl₃ + 3P₂0₃Cl₄ Assuming P₂0₃Cl₄ to be soluble, the equilibrated solutions would then constitute a four component mixture. ^bPreheated at 120°C for 2 hours. ^bPreheated at 60°C (time not specified). METHOD/APPARATUS/PROCEDURE: Isothermal method used. POCl₃ + SnCl₄ solutions were prepared by volume in a dry box. The SnCl₄ content was verified by chemical analysis for Sn. This solution and M203 were placed in sealed ampoules, heated to 120°C for 2 hours to increase the rate of solution, and then rotated in an air thermostat at 20°C for 2 hours. Without preheating equilibrium was established after 200 hours. Preheating to 120°C lowered the equilibration time at 20°C to 2 hours. 			4 0.010	0.010
chloride according to $Nd_2O_3 + 6POCl_3 = 2NdCl_3 + 3P_2O_3Cl_4$ Assuming P_2O_3Cl_4 to be soluble, the equilibrated solutions would then constitute a four component mixture. ^b Preheated at 120°C for 2 hours. ^c Preheated at 60°C (time not specified). <u>AUXILIARY INFORMATION</u> <u>METHOD/APPARATUS/PROCEDURE:</u> Isothermal method used. POCl_3 + SnCl_4 solutions were prepared by volume in a dry box. The SnCl_4 content was verified by chemical analysis for Sn. This solution and Nd2O_3 were placed in sealed ampoules, heated to 120°C for 2 hours. This solution and Nd2O_3 were placed in sealed ampoules, heated to 120°C for 2 hours. Without preheating equilibrium was established after 200 hours. Preheating to 120°C lowered the equilibra- tion time at 20°C to 2 hours.	pure SnCl ₄ 8.5	2 x 10		
^C Preheated at 60 [°] C (time not specified). METHOD/APPARATUS/PROCEDURE: Isothermal method used. POCl ₃ + SnCl ₄ solutions were prepared by volume in a dry box. The SnCl ₄ content was verified by chemical analysis for Sn. This solution and Nd ₂ O ₃ were placed in sealed ampoules, heated to 120 [°] C for 2 hours to increase the rate of solution, and then rotated in an air thermo- stat at 20 [°] C for 2 hours. Without preheating equilibrium was established after 200 hours. Preheating to 120 [°] C to 2 hours.	Assuming P ₂ O ₃ Cl ₄ to be soluble, the four component mixture.	equilibrated solutions	s would then cons	titute a
METHOD/APPARATUS/PROCEDURE:SOURCE AND PURITY OF MATERIALS:Isothermal method used. $POCl_3 + SnCl_4$ Nd_2O_3 of "the first sort" was ignited atsolutions were prepared by volume in a drybox. The SnCl_4 content was verified bychemical analysis for Sn. This solution and"Pure" grade SnCl_4 and POCl_3 were dehydra Nd_2O_3 were placed in sealed ampoules, heated"Pure" grade SnCl_4 and POCl_3 were dehydrato 120°C for 2 hours to increase the rate ofsolution, and then rotated in an air thermostat at 20°C for 2 hours. Without preheatingequilibrium was established after 200 hours.Preheating to 120°C lowered the equilibration time at 20°C to 2 hours.		•	ment.	
Isothermal method used. $POCl_3 + SnCl_4$ solutions were prepared by volume in a dry box. The SnCl_4 content was verified by chemical analysis for Sn. This solution and Nd ₂ O ₃ were placed in sealed ampoules, heated to 120°C for 2 hours to increase the rate of solution, and then rotated in an air thermo- stat at 20°C for 2 hours. Without preheating equilibrium was established after 200 hours. Preheating to 120°C to 2 hours.	AU	XILIARY INFORMATION		
Isothermal method used. $POCl_3 + SnCl_4$ solutions were prepared by volume in a dry box. The SnCl_4 content was verified by chemical analysis for Sn. This solution and Nd ₂ O ₃ were placed in sealed ampoules, heated to 120°C for 2 hours to increase the rate of solution, and then rotated in an air thermo- stat at 20°C for 2 hours. Without preheating equilibrium was established after 200 hours. Preheating to 120°C to 2 hours.				
Nd was determined by colorimetric analysis,	Isothermal method used. $POCl_3 + SnCl_3$ solutions were prepared by volume in box. The $SnCl_4$ content was verified chemical analysis for Sn. This solut Nd ₂ O ₃ were placed in sealed ampoules, to 120°C for 2 hours to increase the solution, and then rotated in an air stat at 20°C for 2 hours. Without pr equilibrium was established after 200 Preheating to 120°C lowered the equil tion time at 20°C to 2 hours.	A Nd203 of "the solution and "Pure" grade heated rate of chermo- eheating hours.	e first sort" was hours. SnCl4 and POCl3	ignited at were dehydrated
and in some cases by the oxalate method.ESTIMATED ERROR:The reported solubilities are mean values based on 3-5 parallel determinations.Soly: authors state the "coefficient of variance" to be less than 7%	and in some cases by the oxalate meth The reported solubilities are mean va	bd. ESTIMATED ERR Lues Soly: authors	s state the "coef	
The solubility of NdCl ₃ in pure POCl ₃ is small, but in the presence of SnCl ₄ the solubility increases due to complexation: $\frac{\text{ReFERENCES:}}{\text{References:}}$	small, but in the presence of SnCl4 E	ne propositione	ion presumably ±	0.2K (compiler).
$2NdCl_3 + 3SnCl_4 = Nd_2(SnCl_6)_3$	$2NdCl_3 + 3SnCl_4 = Nd_2(SnCl_6)_3$			

COMPONENTS:		ORIG	INAL MEASUREMENTS	:
(1) Neodymium chloride; NdCl₃; [10024-93-8]		1	yaev, I.M.; Solov	. (
(2) Tetrachlorostannate; SnCl ₄ [7646-78-8]	;		. Akad. Nauk SSSR <u>7</u> , 13, 104–8.	, Neorg. Mater.
(3) Phosphorous oxychloride; Pf [10025-87-3]	0C1 ₃ ;			
VARIABLES:		PREP	ARED BY:	
		- 1001		(
$SnCl_4$ concentration T/K = 293		T. 1	Mioduski and M. S	alomon
EXPERIMENTAL VALUES:		L		
SnCl ₄ /POCl ₃	SnCl ₄ concu	ı	SnCl ₄ /NdCl ₃	solubility of NdCl ₃
volume ratio	10 ² c ₂ /mol d	1m-3	mol ratio	$10^{3}c_{1}/mo1 dm^{-3}$
VOLUME LIGELO	10 02/201			
0.25:29.7	5.0		10:1	5.0
0.50:29.5	10.0		19.2:1	5.2
1.0:29.0	15.0		27.7:1	5.4
1.25:28.7	20.0		35.7:1	5.6
1.50:28.5	25.0		43.9:1	5.7
1.75:28.2	30.0		50.91:1	5.9
2.0:28.0	35.0		57.4:1	6.1
2.25:27.7	40.0		63.5:1	6.3
2.50:27.5	45.0		69.2:1	6.5
2.75:27.2	50.0		74.6:1	6.7
3.0:27.0 The solubility of NdCl ₃ in pure = 2.7 x 10^{-19} mol ⁴ dm ⁻¹²). The	55.0		79.7:1	6.9
the SnCl ₄ concentration from 0.0 tion of SnCl ₄ by POCl ₃ . Stabili No Were calculated for i = 1-4.	15-0.55 mol dm lty constants, 1Cl ₃ + nPOCl ₃	β _i	, for the reactio	uter sphere coordina- ns
	AUXILIARY	INFOR	MATION	
METHOD/APPARATUS/PROCEDURE:		SOILP	CE AND PURITY OF	MATERIALS ·
Isothermal method used. Solvent tures were sealed in glass ampou- rotated in an air thermostat at h. The ampoules were then rotat mostat at 20°C for 24 h. After was reached, aliquots were withd argon atmosphere and evaporated The dry residues were hydrolyzed lyzed products filtered, and Nd spectrophotometrically. The sol analyzed at pH 3 (phormic buffer 0.05% arsenazo III solution. A curve was used for these analyse COMMENTS AND/OR ADDITIONAL DATA: Conflicting data exist between t paper and earlier work (1). In paper the solubility of NdCl ₃ in is given as 10^{-5} mol dm ⁻³ compar 7 x 10^{-3} mol dm ⁻³ reported in (1 the enhancement of the solubilit attributed to the formation of N and in the present work the enhan	Ales and 120°C for 24 ied in a ther- equilibrium Irawn in a dry in vacuum. I, the hydro- determined autions were b) using calibration is. The source the source the source the source a pure POC13 red to). In (1), y of NdC13 is Id2(SnC16)3,	ESTI Noth REFE 1. L Z	MATED ERROR: MATED ERROR: Mateb	
attributed to coordination of Sn				

186 ινεοαγπιυ	m Chioride
COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Neodymium chloride; NdCl₃; [10024-93-8]</pre>	Batyaev, I.M.; Solov'ev, M.A.
<pre>(2) Tetrachlorostannate; SnCl₄; [7646-78-8]</pre>	Zh. Fiz. Khim. <u>1979</u> , 53, 1588-90; Russ. J. Phys. Chem. (Engl. Transl.) <u>1979</u> , 53, 897-9.
(3) Phosphorus oxychloride; POCl ₃ ; [10025-87-3]	
VARIABLES:	PREPARED BY:
Concentration of SnCl ₄	T. Mioduski and M. Salomon
Temp not specified, but probably 298 K EXPERIMENTAL VALUES:	L
$SnCl_4$ concentration	NdCl ₃ solubility
mol dm ⁻³	mol dm^{-3}
<u>^</u>	
0 50	0.01 5.0
100	5.2
150	5.4
200	5.6
250	5.7
300	5.9
350	6.1
400	6.3
450	6.5
500	6.7
for these complexes are given below.	1 ₄) _y complexes. Stepwise formation constants
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: The NdCl ₃ -POCl ₃ -SnCl ₄ systems were synthe- sized in sealed tubes by the solvolthermal method at 120°C as described in (1). No other details given. The compilers assume that after treating the solutions at 120°C for about 2 h, they were then isothermally equilibrated at 25°C as in (2): see the compilations of references 1 and 2 in this volume COMMENTS AND/OR ADDITIONAL DATA:	SOURCE AND PURITY OF MATERIALS: Anhydrous metal chlorides were prepared as described in (3). POCl ₃ and SnCl ₄ were purified by the usual methods.
For the equilibria	
NdCl ₃ + ySnCl ₄ = NdCl ₃ .ySnCl ₄	ESTIMATED ERROR:
the following stepwise formation constants constants, βy , were given:	Nothing specified.
$\beta_1 = (1.5 \pm 0.1) \times 10^4$	
$\beta_2 = (3.8 \pm 0.2) \times 10^6$	REFERENCES: 1. Lyubimov, E.I.; Batyaev, I.M. Zh. Prikl.
$\beta_3 = (3.6 \pm 0.2) \times 10^5$	Khim. <u>1972</u> , 45, 1176.
$\beta_4 = (1.2 \pm 0.1) \times 10^8$	 Batyaev, I.M.; Solov'ev, M.A. Zh. Neorg. Khim. <u>1976</u>, 21, 2556.
	 Slastenova, N.M.; Batyaev, I.M.; Bel'kova N.L.; Kuz'menko, A.S.; Ryabov, E.N. Zh. Prikl. Khim. 1975, 48, 1953.

Neodymium Chloride			
COMPONENTS :	ORIGINAL MEASUREMENTS:		
(1) Neodymium chloride; NdCl3; [10024-93-8]	Batyaev, I.M.; Solov'ev, M.A.		
<pre>(2) Zinc chloride; ZnCl₂; [7846-85-7]</pre>	Zh. Fiz. Khim. <u>1979</u> , 53, 1588-90; Russ. J. Phys. Chem. (Engl. Transl.) <u>1979</u> , 53, 897-9.		
(3) Phosphorus oxychloride; POCl ₃ ; [10025-87-3]			
VARIABLES:	PREPARED BY:		
Concentration of ZnCl2	T. Mioduski and M. Salomon		
Temp not specified, but probably 298 K			
EXPERIMENTAL VALUES:			
ZnCl ₂ concentration	NdCl ₃ solubility		
mol dm ⁻³	mol dm ⁻³		
0	0.01		
17	2.0		
16	1.9		
14 13	1.8 1.7		
13	1.7		
12	1.5		
11	1.4		
10	1.3		
9	1.2		
9	1.1		
for these complexes are given below.			
AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:		
The NdCl ₃ -POCl ₃ -ZnCl ₂ systems were synthe- sized in sealed tubes by the solvothermal	Anhydrous metal chlorides were prepared as described in (3).		
method at 120°C as described in (1). No other details given. The compilers assume that after treating the solutions at 120°C	POC13 was purified by the usual method.		
for about 2 h, they were then isothermally			
equilibrated at 25°C as in (2): see the compilations of references 1 and 2 in this			
volume.	}		
COMMENTS and/OR ADDITIONAL DATA:	1		
For the equilibria			
$NdCl_3 + yZnCl_2 = NdCl_3 \cdot yZnCl_2$	ESTIMATED ERROR:		
the following stepwise formation constants constants, β_y , were given:	Nothing specified.		
$\beta_1 = (6.7 \pm 0.3) \times 10^4$			
$\beta_2^{-} = (2.5 \pm 0.1) \times 10^5$	REFERENCES: 1. Lyubimov, E.I.; Batyaev, I.M. Zh. Prikl.		
$\beta_3^2 = (7.4 \pm 0.3) \times 10^7$	Khim. <u>1972</u> , 45, 1176.		
$\beta_4 = (5.4 \pm 0.2) \times 10^9$	 Batyaev, I.M.; Solov'ev, M.A. Zh. Neorg. Khim. <u>1976</u>, 21, 2556. 		
	 Slastenova, N.M.; Batyaev, I.M.; Bel'kova N.L.; Kuz'menko, A.S.; Ryabov, E.N. Zh. Prikl. Khim. 1975, 48, 1953. 		

COMPONENTS :	ORIGINAL MEASUREMENTS:
 Neodymium bromide; NdBr₃; 	Kirmse, E.M.
[13536-80-6]	Tr. II Vses. Konf. po Teor. Rastvorov
	1971, 200-6.
(2) 1,2-Diethoxyethane; C ₆ H ₁₄ 0 ₂ ; [629-14-1]	· ····································
[023 14 1]	
VARIABLES:	PREPARED BY:
T/K = 298	
1/K = 290	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	
The solubility of NdBr3 in 1,2-diethoxyetha	ane at 25 [°] C was reported as
5	
0.5 mass %	
m	compiler in
The corresponding molality calculated by the	complier is
	-1
0.013 mol k	دg
The nature of the solid phase was not specifi	Led.
ATTATA	INFORMATION
METHOD / APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
Experimental details not given, but were	Nothing specified, but based on previous
probably similar to previous works of the	work by the author the anhydrous salt was
author which are compiled throughout this volume.	probably prepared by the method of Taylor and Carter (1).
vorume.	and curter (1).
	ESTIMATED ERROR:
	Nothing specified.
	Section of the sectio
	REFERENCES:
	1. Taylor, M.D.; Carter, C.P.
	J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.
	1
	Į
	1

	11004	,		-		10.	
COMPONENTS:			ORIGINAL M	EASUREMENTS:			
<pre>(1) Neodymium bromide; NdBr₃; [13536-80-6]</pre>			Kirmse, E	.M.; Dressler	, H.		
(2) Alkyl ethers			Z. Chem.	<u>1975</u> , 15, 239	-40.		
VARIABLES:			PREPARED E				
Room Temperature: (293	-298 K)		T. Miodus	ki and M. Salo	omon		
			L	-,,,,,			
EXPERIMENTAL VALUES:				solubi	llitv ^a		
solvent				mass %	mol kg ⁻¹		
	C H 0.	162	28-28-4]	1.6	0.042		
1-methoxybutane;	C ₅ H ₁₂ 0;						
1-methoxypentane;	c _{6^H14} 0;				0.169		
1-methoxyheptane;	C ₈ H ₁₈ 0;			7.1 ^b	0.199		
1-methoxyoctane;	с ₉ н ₂₀ 0;	[92	9-56-6]	6.9 ^c	0.193		
1-methoxynonane;	^C 10 ^H 22 ⁰ ;	[72	289-51-2]	2.1	0.056		
l-methoxydecane;	^C 11 ^H 24 ⁰ ;	[72	89-52-3]	3.6	0.097		
^a Molalities calculated specified.	by the compilers.	Con	position o	f most solid p	hases were not		
^b Solid phase is NdBr ₃ .20							
^c Solid phase is NdBr ₃ .20							
borrd phase is Mubr3.20	⁹ ¹ 20 ⁰						
	AUXILIARY INFORMATION						
METHOD/APPARATUS/PROCEDU		PURITY OF MAT	CERIALS :	·			
The solute-solvent mixtures were isothermal- ly agitated (at room temperature) until			(specified.			
equilibrium was attained. The anhydrous reagents were handled in a dry box contain-			l				
ing P4010. Nd was deter	rmined by complexo)—					
metric titration using X cator.	(ylenol Orange ind	1-					
The reported solubilitie	es are mean values	;					
based on four determinat	ions.						
			ESTIMATED Nothing sp			ļ	
			DEPERTUS				
			REFERENCES): 			

Neodymia	
COMPONENTS: (1) Neodymium bromide; NdBr ₃ ; [13536-80-6] (2) Tetrahydrofuran; C ₄ H ₈ 0; [109-99-9]	ORIGINAL MEASUREMENTS: Rossmanith, K. Monatsh. Chem. <u>1966</u> , 97, 1357-64.
VARIABLES: Room Temperature: T/K = 294-296	PREPARED BY: T. Mioduski
EXPERIMENTAL VALUES:	1
The solubility of NdBr ₃ in tetrahydrofuran a	t 21-23 ⁰ C was reported to be
0.71 g per 100 ml of solutio	n (0.018 mol dm ⁻³ , compiler).
AUXILIARY	INFORMATION
METHOD / APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
HEIHOD/AFFARATOS/FROCEDORE: Isothermal method employed. The solution was equilibrated in an extractor with agita- tion for 60-80 hours at room temperature. Neodymium was determined by the oxalate method and by titration with EDTA using Xylenol Orange indicator. The solvent was determined by difference. Anhydrous materials were handled in a dry box through which was passed a stream of nitrogen free of carbon dioxide.	Sources and purifies of initial materials not specified. NdBr ₃ was prepared by conversion of the oxide by high temperature reaction with an excess of NH ₄ Br followed by heating the product in a stream of dry nitrogen, and then in vacuum to remove un- reacted NH ₄ Br. Tetrahydrofuran was distilled from LiAlH ₄ .
The solid phase is NdBr ₃ .3.5C ₄ H ₈ O.	ESTIMATED ERROR: Nothing specified.
	REFERENCES :

	ADTOINUT AD ACUDAL THE T
COMPONENTS:	ORIGINAL MEASUREMENTS: Kirmse, E.M.; Zwietasch, K.J.; Tirschmann,
<pre>(1) Neodymium bromide; NdBr₃; [13536-80-6]</pre>	J.; Oelsner, L.; Niedergeases, U. Z. Chem. <u>1968</u> , 8, 472-3.
(2) 1,4-Dioxane; C ₄ H ₈ O ₂ ; [123-91-1]	Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov. <u>1971</u> , 200-6.
VARIABLES:	PREPARED BY:
Room temperature: T/K around 298	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of NdBr ₃ in p-dioxane at about	t 25 [°] C was given as
0.9 ₅ mass 5	8
The corresponding molality calculated by the	compiler is
0.025 mol 1	دg ⁻¹
	-
The nature of the solid phase was not specif:	Led.
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The solute-solvent mixtures were isother-	The anhydrous salt was prepared by the
mally agitated at 25 ⁰ C or at room tempera- ture. Authors state that the difference	method of Taylor and Carter (1).
found for the solubility was within experi-	No other information given.
mental error limits.	
Nd was determined by complexometric titra-	
No other details given.	
-	
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES :
	 Taylor, M.D.; Carter, C.P. J. Inong. Nucl. Chem. <u>1962</u>, 24, 387.

COMPONENTS :	ORIGINAL MEASUREMENTS:			
(1) Neodymium bromide; NdBr ₃ ; [13536-80-6]	Moeller, T.; Zimmerman, P.A.			
	J. Am. Chem. Soc. <u>1953</u> , 75, 3940-5.			
(2) 1,2-Ethanediamine; C ₂ H ₈ N ₂ ; [107-15-3]				
VARIABLES:	PREPARED BY:			
T/K = 303.15	T. Mioduski			
EXPERIMENTAL VALUES:				
The solubility of NdBr ₃ in $H_2NCH_2CH_2NH_2$ at 30 °C was given as				
0.936 g/100g solvent				
The corresponding molality calculated by the compiler is				
$0.0244 \text{ mol kg}^{-1}$				

Solid phase composition not determined.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The isothermal method was used. Reaction	Nd ₂ O ₃ was converted to the bromide by high
mixtures were sealed in 25 x 200 mm test	temperature reaction with NH4Br. Unreacted
tubes and thermostated for one week at $30 \pm 0.05^{\circ}$ C with frequent agitation. The density of the supernatant liquid was determined pycnometrically (but not reported in the source paper), and the neodymium content determined by precipitating the hydrous hydroxide from an aliquot by adding excess water, igniting to the oxide and	NH_4Br was removed by heating in N_2 and then in vacuo. The oxide labeled $Nd-28$ from University stocks contained traces of other rare earth metals. Ethylenediamine (Carbide and Carbon Chemicals) purified as in (1). The product had an electrolytic resistivity of 2.65 x 10 ⁵ ohm cm ⁻¹ . The solvent was stored under nitrogen in glass stoppered
weighing.	flasks sealed with wax.
All anhydrous substances were handled in a dry box through which a current of nitrogen was passed. The nitrogen was freed of CO_2 and moisture by passage through concentrated sulfuric acid, soda lime, and Drierite. All solutions were prepared in the dry box, and	ESTIMATED ERROR: Soly: precision probably 1% at best (compiler). Temp: precision ± 0.05K (authors).
were sealed before being removed.	REFERENCES: 1. Putnam, G.L.; Kobe, K.A. Trans. Electrochem. Soc. <u>1938</u> , 74, 609.

	Neody	miu	m Bromide			19
COMPONENTS :			ORIGINAL ME	ASUREMENTS:		
(1) Neodymium bromide	e; NdBr ₃ ;		Kirmse, E.	м.		
[13536-80-6]	5		Tr. II Vse	s. Konf. po	Teor. Rastvorov	
(2) Alkyl amines			<u>1971</u> , 200-			
VARIABLES:			PREPARED BY	·		
T/K = 298				i and M. Sal	Omon	
1/K = 290			1. Miodusk	. und m. bai	.0.1011	
EXPERIMENTAL VALUES:						
				solu	bility ^a	
solvent				mass %	mol kg ⁻¹	
2-propanamine;	iso-C ₃ H ₉ N;	[75	-31-0]	15.9	0.492	
1-butanamine;	$n-C_{4}H_{11}N;$	[10	9-73-9]	10.8	0.315	
2-butanamine;	sec-C4H11N;	[13	952-84-6]	18.1	0.576	
di-2-butylamine;					5×10^{-4}	
^a Molalities calculated	l by the compilers.					
AUXILIARY INFORMATION METHOD/APPARATUS/PROCEDURE: SOURCE AND PURITY OF MATERIALS:						
Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume.		work by th	e author the repared by t	based on previous anhydrous salt was he method of Taylor		
Nature of solid phases not specified.						

ESTIMATED ERROR:

Nothing specified.

REFERENCES:

 Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u>, 24, 387.

194	4 Neodymium Bromide ~			
COMPON	ENTS:	ORIGINAL MEASUREMENTS:		
	Neodymium bromide; NdBr ₃ ;	Moeller, T.; Zimmerman, P.A.		
	[13536-80-6]	J. Am. Chem. Soc. 1953, 75, 3940-5.		
(2)	Ethanolamine; C ₂ H7NO; [75-39-8]			
VARIAB	BLES:	PREPARED BY:		
T/K =	303.15	T. Mioduski		
EXPERI	IMENTAL VALUES:			
The s	olubility of NdBr3 in H2NCH2CH2OH at 30 ⁰	C was given as		
	3.20 g/100g s	olvent		
The f	orresponding molality calculated by the	compiler is		
	• •			
	0.0833 mol kg			
Solid	phase composition not determined.			
	······································			
	AUXILIARY	INFORMATION		
	D/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:		
	sothermal method was used. Reaction res were sealed in 25 x 200 mm test	Nd ₂ O ₃ was converted to the bromide by high temperature reaction with NH ₄ Br. Unreacted		
tubes	and thermostated for one week at	NH_4Br was removed by heating in N_2 and then in vacuo. The oxide labeled Nd-28 from		
	0.05 ^o C with frequent agitation. The ty of the supernatant liquid was de-	University stocks contained traces of other		
termi	ned pycnometrically (but not reported e source paper), and the neodymium	rare earth metals. Ethanolamine (Carbide and Carbon Chemicals) purified as in (1).		
conte	nt determined by precipitating the	The product boiled at 168°C (uncor), had a		
	us hydroxide from an aliquot by adding s water, igniting to the oxide and	density of 1.0108 g/ml at 26.5° C and had an electrolytic conductivity of 1.93 x 10^{-5} S		
weigh		cm^{-1} at 20°C. It was stored under N ₂ in flasks sealed with wax.		
	nhydrous substances were handled in a	ESTIMATED ERROR:		
dry box through which a current of nitrogen was passed. The nitrogen was freed of CO_2 and moisture by passage through concentrated		Soly: precision probably 1% at best		
		(compiler). Temp: precision \pm 0.05 K (authors).		
solut	ric acid, soda lime, and Drierite. All ions were prepared in the dry box, and			
	sealed before being removed.	REFERENCES: 1. Dirkse, T.P.; Briscoe, H.T. Metal Ind.		
		<u>1938</u> , <i>36</i> , 284.		
L				

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Neodymium bromide; NdBr ₃ ; [13536-80-6]	Moeller, T.; Zimmerman, P.A.
(2) Morpholine; C ₄ H ₉ NO; [110-91-8]	J. Am. Chem. Soc. <u>1953</u> , 75, 3940-5.
VARIABLES:	PREPARED BY:
T/K = 303.15	T. Mioduski

EXPERIMENTAL VALUES:

The solubility of NdBr, in morpholine at 30° C was given as

0.099 g/100g solvent

The corresponding molality calculated by the compiler is

 $2.58 \times 10^{-3} \text{ mol kg}^{-1}$

Solid phase composition not determined.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE: The isothermal method was used. Reaction mixtures were sealed in 25 x 200 mm test tubes and thermostated for one week at $30 \pm 0.05^{\circ}$ C with frequent agitation. The density of the supernatant liquid was determined pycnometrically (but not reported in the source paper), and the neodymium content determined by precipitating the hydrous hydroxide from an aliquot by adding excess water, igniting to the oxide and weighing.

All anhydrous substances were handled in a dry box through which a current of nitrogen was passed. The nitrogen was freed of CO_2 and moisture by passage through concentrated sulfuric acid, soda lime, and Drierite. All solutions were prepared in the dry box, and were sealed before being removed.

SOURCE AND PURITY OF MATERIALS: Nd₂O₃ was converted to the bromide by high temperature reaction with NH₄Br. Unreacted NH₄Br was removed by heating in N₂ and then in vacuo. The oxide labeled Nd-28 from University stocks contained traces of other rare earth metals. Morpholine was purified as in (1), and had a density of 0.9863 g/ml at 27° C, and an electrolytic conductivity of 3.368 x 10^{-8} S cm⁻¹. The solvent was stored under nitrogen in glass stoppered flasks sealed with wax.

ESTIMATED ERROR: Soly: precision probably 1% at best (compiler).

Temp: precision ± 0.05 K (authors).

REFERENCES:

 Dermer, V.H.; Dermer, O.C. J. Am. Chem. Soc. <u>1937</u>, 59, 1148.

COMPONENTS:	ORIGINAL MEASUREMENTS:	
(1) Neodymium iodide; NdI ₃ ; [13813-24-6]	Yastrebova, L.F.; Grigor, T.I.; Kuznetsova	.,
(2) 1-Butanol; C ₄ H ₁₀ 0; [71-36-3]	G.P.; Stepin, B.D.	
(3) Water; H ₂ ⁰ ; [7732-18-5]	Zh. Neorg. Khim. <u>1981</u> , 26, 2238–9; Russ, J Inorg. Chem. (Engl. Transl.), <u>1981</u> , 26, 1203–4.	•
VARIABLES:	PREPARED BY:	
Composition at 273 K	T. Mioduski and M. Salomon	
EXPERIMENTAL VALUES:		-
solubili	ty at 0°C	
NdI3.9H20 Nd	a 3	
solvent ^b mass % mass %	mol kg ⁻¹ solid phase	
п-С ₄ Н ₉ ОН 57.97 44.29	1.514 NdI ₃ .9H ₂ 0	
H ₂ 0 87.21 66.63	3.804 "	
a		
^a Results for the anhydrous salt calculated by	7 the compilers.	
^b Authors' original results reported in terms the pure alcohol. Accounting for the waters that at equilibrium the solvent contains 75. The solubility isotherm for the ternary system is reproduced at the right. Numerical data for the various composi- tions represented in this diagram were not given.	s of hydration, the compilers calculate	
AUXILIARY	INFORMATION	
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:	
Isothermalmethod used. No information was given on how equilibrium was ascertained. Aliquots of saturated solution were withdrawn	The nonohydrate, NdI ₃ .9H ₂ 0, was synthesize according to (1,2).	1
and analyzed for the metal complexometrical- ly, for iodide by a potentiometric volumetric argentometric method, and for water by the Karl Fischer method. The alcohol and water contents in the mixtures were found by	The alcohol was dried and purified by "recommended" methods.	
quantitative gas chromatography. Solid phase compositions were determined by Schreine- makers' method of resudues. Ndl, mass %	e The source and purity of water was not specified.	
100	ESTIMATED ERROR:	
80 NdI-SH,0	Nothing specified.	
60		
	REFERENCES:	
40	1. Yakimova, Z.P.; Kuznetsova, G.P.; Yastrebova, L.F.; Stepin, B.D. Zh. Neory	.
20 -	Khim. <u>1977</u> , 22, 251. 2. Belousova, A.P.; Kuznetsova, G.P.; Rukk	,
H ₂ 0	N.S.; Stepin, B.D. Zh. Neorg. Khim. <u>1979</u> , 24, 1410.	
	ADICINAL MEACUDEAGNESS	
---	---	
COMPONENTS:	ORIGINAL MEASUREMENTS: Kirmse, E.M.; Zwietasch, K.J.; Tirschmann,	
<pre>(1) Neodymium iodide; NdI₃; [13813-24-6]</pre>	J.; Oelsner, L.; Niedergeases, U.	
[13013-24-0]	Z. Chem. 1968, 8, 472-3.	
(2) 1,4-Dioxane; C ₄ H ₈ O ₂ ; [123-91-1]		
482	Kirmse, E.M. Tr. II Vses. Konf. po Teor.	
	Rastvorov. <u>1971</u> , 200–6.	
VARIABLES:	PREPARED BY:	
	TREARD DI.	
Room temperature: T/K around 298	T. Mioduski	
EXPERIMENTAL VALUES:		
The solubility of NdI ₃ in p-dioxane at about	25°C was given as	
5		
1.6 mass %		
	constitut to	
The corresponding molality calculated by the	compiler is	
	-1	
0.031 mol 1	кg	
The nature of the solid phase was not specif:	led.	
AUXILIARY	INFORMATION	
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:	
The solute-solvent mixtures were isother-	The anhydrous salt was prepared by the	
mally agitated at 25°C or at room tempera-	method of Taylor and Carter (1).	
ture. Authors state that the difference found for the solubility was within experi-	No other information given.	
mental error limits.	No other information grout	
mental error rimits.		
Nd was determined by complexometric titra-	J	
tion.		
No other details given.	1	
	ESTIMATED ERROR:	
	Nothing specified.	
	REFERENCES :	
	 Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u>, 24, 387. 	
	5. moray. nucc. chem. <u>1302</u> , 24, 507.	

COMPONENTS :	ORIGINAL MEASUREMENTS:
(1) Neodymium iodide; NdI ₃ ; [13813-24-6]	Moeller, T.; Zimmerman, P.A. J. Am. Chem. Soc. 1953, 75, 3940-3.
(2) 1,2-Ethanediamine; C ₂ H ₈ N ₂ ; [107-15-3]	
VARIABLES: T/K = 303.15	PREPARED BY: T. Mioduski
EXPERIMENTAL VALUES: The solubility of NdI ₃ in H ₂ NCH ₂ CH ₂ NH ₂ at	: 30 [°] C was given as

2.53 g/100 solvent

The corresponding molality calculated by the compiler is

 $0.0482 \text{ mol kg}^{-1}$

Solid phase composition not determined.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE: The isothermal method was used. Reaction mixtures were sealed in 25 x 200 mm test tubes and thermostated for one week at $30 \pm 0.05^{\circ}$ C with frequent agitation. The density of the supernatant liquid was determined pycnometrically (but not reported in the source paper), and the neodymium content determined by precipitating the hydrous hydroxide from a measured aliquot by adding excess water, igniting to the oxide and weighing.

All anhydrous substances were handled in a dry box through which a current of nitrogen was passed. The nitrogen was freed of CO_2 and moisture by passage through concentrated sulfuric acid, soda lime, and Drierite. All solutions were prepared in the dry box, and were sealed before being removed.

SOURCE AND PURITY OF MATERIALS: Nd₂O₃ was converted to the iodide by high temperature reaction with NH₄I. Unreacted NH₄I was removed by heating in N₂ followed in vacuo. The oxide labeled Nd-28 from University stocks contained traces of other rare earth metals. Ethylenediamine (Carbide and Carbon Chemicals) purified as in (1). The product had an electrolytic resistivity of 2.65 x 10⁵ ohm cm⁻¹. The solvent was stored under nitrogen in glass stoppered flasks sealed with wax.

ESTIMATED ERROR: Soly: precision probably 1% at best (compiler).

Temp: precision + 0.05 K (authors).

REFERENCES:

1. Putnam, G.L.; Kobe, K.A. Trans. Electrochem. Soc. <u>1938</u>, 74, 609.

COMPONENTS :			ORIGINAT	MEASUREMENTS:	
COMPONENTS: (1) Neodymium iodide; NdI ₃ ;		Kirmse, H			
[13813-24-6]]	ses. Konf. po	Teor. Rastvorov
(2) Alkyl amines			<u>1971</u> , 200	<i>)-</i> 0.	
VARIABLES:			PREPARED	BY:	<u></u>
T/K = 298			T. Miodus	ski and M. Sal	omon
EXPERIMENTAL VALUES:					<u> </u>
	•			solu	bility ^a
solvent				mass %	mol kg ⁻¹
l-propanamine;	n-C ₃ H ₉ N;	[10	7 - 10-8]	16.6	0.379
2-propanamine;	iso-C ₃ H ₉ N;	[75	-31-0]	6.2	0.126
1-butanamine;	n-C4 ^H 11 ^N ;	[10	9-73-9]	8.3	0.172
	AUXILI		INFORMATIO		
METHOD/APPARATUS/PROCEDURE: Experimental details not giv probably similar to previous author which are compiled th volume. Nature of solid phases not s	s works of the hroughout this		Nothing s work by t	he author the prepared by th	TERIALS: based on previous anhydrous salt was a method of Taylor
			ESTIMATED	ERROR:	
			Nothing s	pecified.	
			REFERENCE	:s:	
				, M.D.; Carter rg. Nucl. Chem	, C.P. . <u>1962</u> , 24, 387.

200 Neodymium Iodide		
COMPONENTS:	ORIGINAL MEASUREMENTS:	
(1) Neodymium iodide; NdI ₃ ;	Moeller, T.; Zimmerman, P.A.	
[13813-24-6]	J. Am. Chem. Soc. <u>1953</u> , 75, 3940-3.	
(2) Ethanolamine; C ₂ H ₇ NO; [75-39-	8]	
VARIABLES:	PREPARED BY:	
T/K = 303.15	T. Mioduski	
EXPERIMENTAL VALUES: The solubility of NdI ₃ in H ₂ NCH ₂ CH ₂ 1.9 The corresponding molality calculat	03 g/100 solvent	
0.0	9368 mol kg ⁻¹	
Solid phase composition not determi	Ined.	
	AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE:	temperature reaction with NH4I. Unreacted	
The isothermal method was used. Remixtures were sealed in 25 x 200 mm	t at NH_4I removed by heating in N_2 and in vacuo.	
tubes and thermostated for one week	The oxide labeled Nd-28 from University	
$30 \pm 0.05^{\circ}$ C with frequent agitation	stocks contained traces of other rare earth	
density of the supernatant liquid w	metals. Ethanolamine (Carbide and Carbon	
termined pycnometrically (but not r	mium Chemicals) purified as in (1). The product	
in the source paper), and the neody	boiled at 168°C (uncor), had a density of	
content determined by precipitating	liquot by 1.0108 g/ml at 26.5°C, and had an electro-	
hydrous hydroxide from a measured a	lytic conductivity of 1.93 x 10 ⁻⁵ S cm ⁻¹ at	
adding excess water, igniting to th	20°C. It was stored under N_2 in flasks	
and weighing.	sealed with wax.	
All anhydrous substances were handl	Led in a	
dry box through which a current of	nitrogen	
was passed. The nitrogen was freed	l of CO ₂	
and moisture by passage through com	(compilere)	

Temp: precision \pm 0.05 K (authors).

REFERENCES:

sulfuric acid, soda lime, and Drierite. All solutions were prepared in the dry box,

and were sealed before being removed.

1. Dirkse, T.P.; Briscoe, H.T. Metal Ind. 1938, 36, 284.

COMPONENTS :	ORIGINAL MEASUREMENTS:	
 Neodymium iodide; NdI₃; [13813-24-6] Morpholine; C₄H₉N0; [110-91-8] 	Moeller, T.; Zimmerman, P.A. J. Am. Chem. Soc. <u>1953</u> , 75, 3940-3.	
VARIABLES: T/K = 303.15	PREPARED BY: T. Mioduski	
EXPERIMENTAL VALUES:		
The solubility of NdI ₃ in morpholine at 30° C was given as		
0.500 g/100 solvent		

The corresponding molality calculated by the compiler is

 $9.52 \times 10^{-3} \text{ mol kg}^{-1}$

Solid phase composition not determined.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE: The isothermal method was used. Reaction	SOURCE AND PURITY OF MATERIALS:
mixtures were sealed in 25 x 200 mm test	Nd_2O_3 was converted to the iodide by high temperature reaction with NH_4I . Unreacted
tubes and thermostated for one week at	NH_4I was removed by heating in N ₂ and then
$30 \pm 0.05^{\circ}$ C with frequent agitation. The	in vacuo. The oxide labeled Nd-28 from
density of the supernatant liquid was determined pycnometrically (but not reported	University stocks contained traces of other rare earth metals. Morpholine was purified
in the source paper), and the neodymium	as in (1), and had a density of 0.9863 g/ml
content determined by precipitating the	at 27°C, and an electrolytic conductivity of
hydrous hydroxide from a measured aliquot	3.368 x 10^{-8} S cm ⁻¹ . The solvent was
by adding excess water, igniting to the oxide and weighing.	stored under nitrogen in glass stoppered flasks sealed with wax.
oxide and weighting.	Tiasks Beated with wax.
All anhydrous substances were handled in a	ESTIMATED ERROR:
dry box through which a current of nitrogen	
was passed. The nitrogen was freed of CO2	Soly: precision probably 1% at best (compilers).
was passed. The nitrogen was freed of CO_2 and moisture by passage through concentrated sulfuric acid, soda lime, and Drierite. All	
was passed. The nitrogen was freed of $\rm CO_2$ and moisture by passage through concentrated	(compilers).
was passed. The nitrogen was freed of CO_2 and moisture by passage through concentrated sulfuric acid, soda lime, and Drierite. All solutions were prepared in the dry box and	(compilers). Temp: precision <u>+</u> 0.05 K (authors).
was passed. The nitrogen was freed of CO_2 and moisture by passage through concentrated sulfuric acid, soda lime, and Drierite. All solutions were prepared in the dry box and	(compilers). Temp: precision <u>+</u> 0.05 K (authors). REFERENCES: 1. Dermer, V.H.; Dermer, O.C. J. Am. Chem.
was passed. The nitrogen was freed of CO_2 and moisture by passage through concentrated sulfuric acid, soda lime, and Drierite. All solutions were prepared in the dry box and	(compilers). Temp: precision <u>+</u> 0.05 K (authors). REFERENCES: 1. Dermer, V.H.; Dermer, O.C. J. Am. Chem.
was passed. The nitrogen was freed of CO_2 and moisture by passage through concentrated sulfuric acid, soda lime, and Drierite. All solutions were prepared in the dry box and	(compilers). Temp: precision <u>+</u> 0.05 K (authors). REFERENCES: 1. Dermer, V.H.; Dermer, O.C. J. Am. Chem.
was passed. The nitrogen was freed of CO_2 and moisture by passage through concentrated sulfuric acid, soda lime, and Drierite. All solutions were prepared in the dry box and	(compilers). Temp: precision <u>+</u> 0.05 K (authors). REFERENCES: 1. Dermer, V.H.; Dermer, O.C. J. Am. Chem.

<pre>COMPONENTS: (1) Neodymium iodide; NdI₃; [13813-24-6] (2) N,N-Dimethylformamide; C₃H₇N0; [68-12-2]</pre>	ORIGINAL MEASUREMENTS: Moeller, T.; Galasyn, V. J. Inorg. Nucl. Chem. <u>1960</u> , 12, 259-65.		
VARIABLES: T/K = 298.15	PREPARED BY: M. Salomon		
EXPERIMENTAL VALUES: The solubility of NdI ₃ in HCON(CH ₃) ₂ at 25 ⁰ C	-		
657.1 g dr and as 0.5921 mo			
	ΙΝΕΩΡΜΑΤΙΩΝ		
 AUXILIARY METHOD/APPARATUS/PROCEDURE: Authors state that solubilities were determined by analysis of aliquots after equilibration at 25 ± 0.025°C, and that techniques were generally similar to those described in (1). The rare earth content was determined by complexometric titration with EDTA at 60°C. Iodide was determined by the Volhard method, and carbon, hydrogen, and nitrogen by usual microanalytical techniques. REFERENCES: Moeller, T.; Cullen, G.W. J. Inorg. Nucl. Chem. <u>1959</u>, 10, 148. Watt, G.W.; Gentile, P.S.; Helvenston, E.P. J. Am. Chem. Soc. <u>1955</u>, 77, 2752. Biltz, H.; Biltz, W. Laboratory Methods of Inorganic Chemistry (2nd Edition). John Wiley. N.Y. <u>1928</u>. Leader, G.R.; Gormley, J.F. J. Am. Chem. Soc. <u>1951</u>, 73, 5731. Thomas, A.B.; Rochow, E.G. J. Am. Chem. Soc. <u>1957</u>, 79, 1843. 	<pre>INFORMATION SOURCE AND PURITY OF MATERIALS: The initial material was the rare earth oxide of 99.9+% purity. Iodides were prepd by two methods. 1. Acetyl iodide method (2) where the hydrated acetate is treated with acetyl iodide in benzene. Acetyl iodide prepd as in (3). 2. The iodide was prepd by metathesis by reaction of the hydrated NdCl₃ with KI in DMF followed by addition of benzene and distillation of the benzene-water azeotrope. For both preparations the solvate NdI₃.8DMF was recrystallized from DMF by addition of ether. The solvent, DMF, was prepared as in (4,5), and its electrolytic conductance was</pre>		

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COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Samarium fluoride; SmF₃; [13765-24-7]</pre>	Dressler, H.
(2) Alkyl ethers	Dissertationschrift. Paed. Inst. Koethen. GDR. <u>1980</u> .
VARIABLES:	PREPARED BY:
Room temperature	T. Mioduski and M. Salomon
PUPPDIACUTAL NATURE.	
EXPERIMENTAL VALUES:	
	SmF ₃ solubility solid phase Sm:F:solvent
solvent	mass % mol/100g ratio sln
1-methoxydecane; $C_{11}^{H}_{24}^{O};$ [72	[289-52-3] 0.02 9.7 x 10 ⁻⁵ 1:3.02:0.06
1-(chloromethoxy) butane; C ₅ H ₁₁ ClO; [23	351-69-1] 0.02 9.7 x 10 ⁻⁵ 1:3.00:0.16
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Method analogous to that described in (1). No other information available.	It appears that the fluoride was prepared as in (1). In spite of drying the fluoride by two methods at 573 K, the Sm:F:H ₂ O ratio was 1:3.04:0.46.
	No other information available.
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES: 1. Kirmse, E.M. Wiss. Hefte, Paed. Inst. Koethen. <u>1978</u> , 2, 85.

COMPONE	NTS:	ORIGINAL MEASUREMENTS:
(1)	Samarium fluoride; SmF ₃ ; [13765-24-7]	Kirmse, E.M. Wiss. Hefte, Paed. Inst. Koethen
(2)	Dimethylsulfoxide; C ₂ H ₆ OS; [67-68-5]	<u>1978</u> , 2, 85-90.
VARIABI	ES:	PREPARED BY:
Room t	emperature	T. Mioduski

EXPERIMENTAL VALUES:

The solubility of SmF_3 in $(CH_3)_2SO$ at room temperature was given as

0.04 mass %

The corresponding molality calculated by the compiler is

 $1.9 \times 10^{-3} \text{ mol kg}^{-1}$

The solid phase was dried in a desiccator over P_4O_{10} and the Sm:F ratio found to be almost 1:3.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE: Isothermal method. About 100 mg of SmF3 was added to 10-20 cm ³ of solvent, and the mix- ture mechanically agitated at room tempera- ture for 100 h. 5-10 g of saturated solu- tion were removed by decanting or by centri-	SOURCE AND PURITY OF MATERIALS: Sm ₂ O ₃ (source and purity not specified) was dissolved in HCl and the fluoride precipita- ted by addition of aq HF. The solid pro- duced was SmF ₃ .0.5H ₂ O and was dehydrated by washing with acetone followed by drying
fuging, and the solution evaporated to dry- ness. The residue was heated with about 10 cm^3 of 10% KOH solution for 1-2 h to obtain solid Sm(OH) ₃ and a basic F ⁻ solution. The precipitate was washed, dissolved in aq HC1, and Sm determined several times by complexo- metric titration with potentiometric end-	at 310°C for 120 hours. The solvent was dried and purified by "standard methods."
point detection (1). The fluoride content in the filtrate was determined photometrically using Al-Eriochrome cyanine color lake indicator (2). The reported solubility is a mean of	ESTIMATED ERROR: Soly: results with relative errors exceed- ing 50% were rejected. Temp: unknown.
"numerous parallel determinations," or "at least two parallel determinations."	 REFERENCES: 1. Schilbach, U.; Kirmse, E.M. Z. Chem. <u>1974</u>, 14, 484. 2. Schilbach, U.; Hetze, I.; Kirmse, E.M. Chemia Analityczna <u>1975</u>, 20, 33.

206	Samarium Fluoride		
COMP	ONENTS :	ORIGINAL MEASUREMENTS:	
(1)	Samarium fluoride; SmF ₃ ;	Kirmse, E.M.	
(2)	[13765-24-7] Pyridine; C ₆ H ₅ N; [110-86-1]	Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85-90.	
VARI	ABLES:	PREPARED BY:	
Root	m Temperature	T. Mioduski	
EXPE	RIMENTAL VALUES:		
The	solubility of SmF_3 in pyridine at room	temperature was reported to be	
	0.	10 mass %	
The	corresponding molality calculated by the	e compiler is	
	4.8	$x 10^{-3} mol kg^{-1}$	
	solid phase was dried in a desiccator c ost 1:3.	over P ₄ 0 ₁₁ and the Sm:F ratio found to equal	
	AUXILIAR	Y INFORMATION	
Iso add tur tio fug ness cm ³ sol pre and met poi in cal ind The ous	HOD/APPARATUS/PROCEDURE: thermal method. About 100 mg of SmF3 we ed to 10-20 cm ³ of solvent, and the mix- e mechanically agitated at room tempera- e for 100 h. 5-10 g of saturated solu- n were removed by decanting or by centri- ing, and the solution evaporated to dry- s. The residue was heated with about 10 of 10% KOH solution for 1-2 h to obtain id Sm(OH) ₃ and a basic F ⁻ solution. The cipitate was washed, dissolved in aq HCI Sm determined several times by complexed ric titration with potentiometric end- nt detection (1). The fluoride content the filtrate was determined photometri- ly using Al-Eriochrome cyanine color lak icator (2). reported solubility is a mean of "numer parallel determinations," or "at least	<pre>dissolved in HCl and the fluoride precipi- tated by addition of aq HF. The solid pro- duced was SmF₃.0.5H₂O and was dehydrated by washing with acetone followed by drying at 310°C for 120 hours. The solvent was dried and purified by "standard methods." ESTIMATED ERROR: Soly: results with relative errors exceed- ing 50% were rejected. Temp: unknown. REFERENCES:</pre>	
two	parallel determinations."	 Schilbach, U.; Kirmse, E.M. Z. Chem. <u>1974</u>, 14, 484. Schilbach, U.; Hetze, I.; Chemia Analityczna <u>1975</u>, 20, 33. 	

COMI	PONENTS:	ORIGINAL MEASUREMENTS:
(1)	Samarium fluoride; SmF ₃ ; [13765-24-7]	Galkin, N.P.; Shishkov, Yu.D. Khomyakov, V.I.
(2)	Acidic nitrosyl fluoride; NOF.3HF; [14947-17-2]	Radiokhimiya <u>1978</u> , 20, 136-41; Soviet Radiochem. (Engl. Transl.). <u>1978</u> , 20, 109-13.
VAR	IABLES:	PREPARED BY:
Roor	n temperature	T. Mioduski

EXPERIMENTAL VALUES:

The solubility of SmF_3 in acidic nitrosyl fluoride at room temperature was reported to be

0.05 mass %

The molality calculated by the compiler is

 $2.4 \times 10^{-3} \text{ mol kg}^{-1}$

AUXIDIANI INFORMATION	AUXILIARY	INFORMATION
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METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method employed. The solute-	
solvent mixture was placed in a Teflon	SmF ₃ was at least 99% pure.
vessel and mechanically agitated at room	
temperature for 10 h. The reaction mixture	NOF.3HF prepared by saturation of liquid
was allowed to settle for 24 h and the super-	
natant saturated solution was analyzed for	95°C before use. The melting point of
the Sm content. An aliquot was evaporated	acidic nitrosyl fluoride was 3.8°C.
to dryness under vacuum at 100-150°C, and	
the dry residue dissolved and analyzed (the	
method of analysis not specified).	
Proceeding the cold phase is the approximations	
Presumably the solid phase is the anhydrous salt (compiler).	
sait (compiler).	ESTIMATED ERROR:
	Nothing specified.
	DEPENDING
	REFERENCES:
	1

208	Samarium Chloride						
	ONENTS: Samarium chloride; SmCl ₃ ; [10361-82-7]			ORIGINAL MEASUREMENTS: Shevtsova, Z.N.; Korshunov, B.G.; Safonov, V.V.; Kogan, L.M.; Gudkova, V.I.			
	Hexachloro-1,3-butadiene; C ₄ Cl ₆ ; [87-68-3]				Zh. Neorg. Khim. <u>1968</u> , 13, 3096-9: Russ. J. Inorg. Chem. (Engl. Transl.) <u>1968</u> , 13, 1596-8.		
VARIABLES:	·	······································		PREPARED BY:			
Temperature				T. Mioduski	and M. Sal	omon	
EXPERIMENTAL	VALUES:				<u> </u>		
Composition	, densitie	s, viscositi	es and refra	active indice:	s of satura	ted solutions.	
	solub	ility ^a					
t/°C	mass %	mol kg ⁻¹	d/g cm ⁻³	η/Ρ	n ²⁰ D	nature of the solid phase	
25	0.024	0.0093 ₅	1.6875	0.0386	1,5552	SmC1 ₃ .3.5H ₂ 0	
50	0.035	0.00136	1.649	0.0311	1.5557	SmC1 ₃ .3.5H ₂ 0	
75	0.054	0.00210	1.613	0.0249	1.5548	SmC13.3.5H20	
			<u></u>				
			AUXILIARY	INFORMATION			
equil was en 10 d at 50° d Chloride was samarium dei ting as the oxide. Sama with Trilon The compositi established firmed by X- Samples of a studied the excess solve ethyl ether the compositi	method uses stablished C, and 7 d s detd by td gravime oxalate and arium was a B with Xy tion of the by chemica -ray analys the solid p rmographica ent by was which is a tion of hydrogeneous the solid p rmographica artial hydrogeneous	d. Depending after 12 d a at 75°C. the Volhard m trically by p nd igniting m also detd by lene Orange m e solid phase al analysis, sis. phases were a ally after re- hing with abs claimed not m drate.	at 25°C, method, and precipita- to the titration indicator. e was and con- also emoval of solute to change	evaporating ized and dr: pure, conta: rare earth to 0.05%), and hexahydrate units): Sm of Purified so:	prepd by dis and cooling ied in a des ined oxide : metals, Fe Cu (0.01%) gave the fo 41.51; Cl 23 lvent (methon propertion .5543. ROR: ng specified	ssolving Sm ₂ O ₃ in HCl, g, and then recrystal- siccator. Sm ₂ O ₃ , 99.6% impurities of other (0.01%), Ca (0.01- . Analysis of the ollowing (in mass % 8.90; H ₂ O 29.59. od not specified) had es: $d_4^{2O} = 1.6807$ g/ml,	

COMPO	NENTS:	ORIGINAL MEASUREMENTS:		
(1)	Samarium chloride; SmCl ₃ ; [10361-82-7]	Merbach, A.; Pitteloud, M.N.; Jaccard, P. Helv. Chím. Acta <u>1972</u> , 55, 44-52.		
(2)	Methanol; CH ₄ 0; [67-56-1]	Pitteloud, M.N. These. Faculte des Sciences de l'Universite de Lausanne. <u>1971</u> .		
VARIA	BLES:	PREPARED BY:		
T/K	= 298.2	T. Mioduski and M. Salomon		
EXPER	IMENTAL VALUES:			
		mean solubilities/mol kg ⁻¹		
	t/ ^o C	a b		
	25	3.33 3.37		
a.	Initial salt is the adduct $SmCl_3.4CH_3OH$ found to be $SmCl_3.4CH_3OH$.	. Equilibrated solid phase analyzed and		
Ъ.	Solutions equilibrated with anhydrous S analyzed, but assumed by the compilers	mCl ₃ . Equilibrated solid phases not to be SmCl ₃ .4CH ₃ OH.		
	AUXILIARY	INFORMATION		
Isoth were longe box. (NH4) tropy Chlon titra of th NMR a	D/APPARATUS/PROCEDURE: hermal method as in (1,2). Mixtures equilibrated for at least 4 days. Pro- ed operations were performed in a dry Samarium determined by titration with)3H(EDTA) using a small amount of uro- ine buffer and Xylenol Orange indicator. ride was determined by potentiometric ation with AgNO ₃ solution. Composition he adduct SmCl ₃ .4CH ₃ OH confirmed by ¹ H and X-ray diffraction.	SOURCE AND PURITY OF MATERIALS: Sm203 of at least 99.9% purity dissolved in HCI to produce the hexahydrate. The salt was dehydrated as described in (3). The adduct SmCl3.4CH3OH prepared by dissolving the hydrate in a small excess of o-methyl- formate followed by distillation and crys- tallization from methanol. Methanol was purified and dried by the Vogel method.		
	anawhad anlubilities and	, I		
	reported solubilities are mean values -4 determinations.	ESTIMATED ERROR:		
COMME		ESTIMATED ERROR: Soly: precision \pm 0.5% as in (1) (compilers).		

COMPONENTS :	ORIGINAL MEASUREMENTS:		
<pre>(1) Samarium chloride; SmCl₃; [10361-82-7]</pre>	Merbach, A.; Pitteloud, M.N.; Jaccard, P. Helv. Chim. Acta <u>1972</u> , 55, 44-52.		
(2) Ethanol; C ₂ H ₆ 0; [64-17-5]	Pitteloud, M.N. <i>These</i> . Faculte des Sciences de l'Universite de Lausanne. <u>1971</u> .		
VARIABLES:	PREPARED BY:		
T/K = 298.2	T. Mioduski and M. Salomon		
EXPERIMENTAL VALUES:			
	mean solubilities/mol kg ⁻¹		
t/ ^o C	a b		
25	1.97 2.03		
a. Initial salt is the adduct SmCl ₃ .3C ₂ H ₅ OF found to be SmCl ₃ .3C ₂ H ₅ OF.	H. Equilibrated solid phase analyzed and		
b. Solutions equilibrated with anhydrous Solutions equilibrated by the compilers to analyzed, but assumed by the compilers to analyzed.			
AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE: Isothermal method as in (1,2). Mixtures were equilibrated for at least 4 days. Pro- longed operations were performed in a dry box. Samarium determined by titration with (NH4) ₃ H(EDTA) using a small amount of uro- tropine buffer and Xylenol Orange indicator. Chloride was determined by potentiometric titration with AgNO ₃ solution. Composition of the adduct SmCl ₃ .3C ₂ H ₅ O confirmed by ¹ H NMR and X-ray diffraction. The reported solubilities are mean values	SOURCE AND PURITY OF MATERIALS: Sm203 of at least 99.9% purity dissolved in HCl to produce the hexahydrate. The salt was dehydrated as in (3). The adduct SmC13.3C2H60 prepared by dissolving the hydrate in a small excess of o-ethylformate followed by distillation and crystalliza- tion from ethanol. Ethanol (Fluka) was used as received. Purity and absence of water was confirmed by NMR method.		
of 2-4 determinations.	ESTIMATED ERROR: Soly: precision \pm 0.5% as in (1) (compilers).		
COMMENTS AND/OR ADDITIONAL DATA: Reference (3) was incorrectly cited in the source paper as: J. Inong. Nucl. Chem. 1958,	Temp: precision probably at least \pm 0.05K as in (1) (compilers).		
 solice paper as: 5. Horg. Nucl. Chem. 1230, 7, 224 (this is the reference to a paper by J. H. Freeman and M. L. Smith which describes the preparation of anhydrous salts by treatment with thionyl chloride). Reference (3) was corrected by the compilers. 	 REFERENCES: 1. Brunisholz, F.; Quinche, J.P.; Kalo, A.M. Helv. Chim. Acta <u>1964</u>, 47, 14. 2. Flatt, R. Chimia <u>1952</u>, 6, 62. 3. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl Chem. <u>1962</u>, 24, 387 (see COMMENTS at left). 		

COMPONENTS :			ORIGINAL MEASUREMENTS:				
(1) Samari	um chloride; S L-82-7]	mCl ₃ ;		Sakharova, N.N.; Sakharova, Yu.G.; Ezhova, T.A.; Izmailova, A.A.			
1					Zh. Neorg. Khim. <u>1975</u> , 20, 1479–83; Russ. J. Inorg. Chem. (Engl. Transl.) <u>1975</u> , 20, 830–2.		
(3) Water; H ₂ 0; [7732-18-5]				030-2.			
VARIABLES:		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		PREPARED BY:			
Temperature	2			T. Miod	luski and M.	Salomon	
EXPERIMENTAL	VALUES:			£	.a		
{		SmCl ₃ .6H ₂ 0 in					
{	sample 1	sample 2	samp		sample 4	mean solub	
t/°C	g/100 g ^b	g/100 g	g/10	Οg	g/100 g	g/100 g	mol kg ^{-lc}
20	28.97	28.89	29.2	9	28.87	29.00	1.195
30	29.49	29.66	29.5	9	29.63	29.59	1.152
40	30.42	30.47	30.6	1	30.75	30.56	1.206
50	31.93	31.96	31.8	3	31.88	31.90	1.284
60	34.82	34.58	34.7	9	34.65	34.73	1.458
^a It is not	clearly stated	whether the m	ixtur	e is 96.8	mass % or 9	6.8 volume %	ethanol.
	es reported as	grams of hexa	hydra	te in 100) g of solven	t.	
Molalities	s calculated by	the compilers	•				
Į							
<u> </u>			LIARY	INFORMAT			
	ATUS/PROCEDURE		-		ND PURITY OF	MATERIALS; dissolving c	n arada
reached aft	er 3-4 h. Ide	Equilibrium wa ntical results		oxide i	n dil (1:3)	HCl followed	by evapn and
tained by a	pproaching equ	ilibrium from	a in			ls were dried 2 ⁰ 5, and NaOH	
the table w	vere obtained a	the data point fter 3 h of eq	uili-			he metal by t	
		ig two data poi of equilibratic		Found (%) for Sm: 4	1 by the Volh 1.38, 41.25 (calcd 41.21)
The metal of	content in each	ı aliquot taken	for	96.8% e	thanol prepd	9.10, 29.15 (by prolonged	boiling of
analysis wa		y complexometr		followe	ed by distn.	hanol with an Ethanol conc and pycnometr	n determined
40°C and 60	°C showed the	thdrawn at 20° solid phase to	be	refractometrically and pycnometrically. ESTIMATED ERROR: Soly: results apparently precise to within			
the hexahyd in any of t	lrate: i.e. eth he solid phase	anol was not f s.	ound	± ±	0.8% (compi	lers).	
The hexabyd	irate melted at	145.5 - 146°C		REFERENC	othing speci		
					/AG		
		ويجود والمربوع والمراقع المراجع والمراجع		the second s			

COMPONENTS: (1) Samarium chloride; SmCl ₃ ; [10361-82-7]	ORIGINAL MEASUREMENTS: Merbach, A.; Pitteloud, M.N.; Jaccard, P. Helv. Chim. Acta <u>1972</u> , 55, 44-52.
(2) 2-Propanol; C ₃ H ₈ 0; [67-63-0]	Pitteloud, M.N. <i>These</i> . Faculte des Sciences de l'Universite de Lausanne. <u>1971</u> ,
VARIABLES :	PREPARED BY:
T/K = 298.2	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	
t/ ^o C	mean solubilities/mol kg ⁻¹
t/ ^o C	a b
25	0.23 0.23
a. Initial salt is the adduct SmCl ₃ .3C ₃ H ₇ O found to be SmCl ₃ .3C ₃ H ₇ OH.	H. Equilibrated solid phase analyzed and
b. Solutions equilibrated with anhydrous S analyzed, but assumed by the compilers	
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method as in (1,2). Mixtures were equilibrated for at least 4 days. Pro- longed operations were performed in a dry box. Samarium determined by titration with (NH ₄) ₃ (EDTA) using a small amount of uro- tropine buffer and Xylenol Orange indicator. Chloride was determined by potentiometric titration with AgNO ₃ solution. Composition of the adduct SmCl ₃ .3C ₃ H ₈ O confirmed by $l_{\rm H}$ NMR and X-ray diffraction.	SOURCE AND PURITY OF MATERIALS: Sm203 of at least 99.9% purity dissolved in HCl to produce the hexahydrate. The salt was dehydrated as in (3). The adduct SmC13.3C3H80 prepared by dissolving the hydrate in a small excess of o-methylformate followed by distillation and trans-solvation of the methanol complex with 2-propanol. Iso-propanol (Fluka) was used as received. Purity and absence of water was confirmed by NRR.
The reported solubilities are mean values of 2-4 determinations.	ESTIMATED ERROR: Soly: precision \pm 0.5% as in (1) (compilers).
COMMENTS AND/OR ADDITIONAL DATA:	Temp: precision probably at least \pm 0.05K as
Reference (3) was incorrectly cited in the source paper as: J. Inorg. Nucl. Chem. <u>1958</u> , 7, 224 (this is the reference to a paper by J.H. Freeman and M.L. Smith which describes the preparation of anhydrous salts by treatment with thionyl chloride). Reference (3) was corrected by the compilers.	<pre>in (1) (compilers). REFERENCES: 1. Brunisholz, F.; Quinche, J.P.; Kalo, A.M. Helv. Chim. Acta 1964, 47, 14. 2. Flatt, R. Chimia 1952, 6, 62. 3. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. 1962, 24, 387 (see COMMENTS at left).</pre>

COMPONENTS: (1) Samarium chloride; SmCl ₃ ; [10361-82-7] (2) Alcohols				ORIGINAL MEASUREMENTS: Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov <u>1971</u> , 200-6.		
VARIABLES: T/K = 298				ED BY: ioduski and M.	. Salomon	
EXPERIMENTAL VALUES	:					
solvent			5	lubility ^a mol kg ⁻¹	nature of the solid phase	
1,2-ethanediol;	^{C2^H6⁰2;}	[107-21-1]	32.9	1.91	^{SmC1} 3. ^{3C} 2 ^H 6 ⁰ 2	
1-propanol;	с _з н ₈ 0;	[71 - 23-8]	30.5	1.71	smcl ₃ .c ₃ H ₈ 0	
2-propen-1-o1 ^b ;	с _{3^н6} 0;	[107-18-6]	38.0	2.39	SmCl ₃ .C ₃ H ₆ 0	
		AUXILIA	RY INFORM			
METHOD/APPARATUS/PR Only the nature of reported. Experim but were probably of the author whic this volume.	the solid ental deta similar to	ils not given previous wor	, Nothi , work ks proba	by the author	F MATERIALS: but based on previous the anhydrous salt was by the method of Taylor	
			Nothi REFERE 1. Ta	ylor, M.D.; C		

[10361-	-	3	ORIGINAL MEASUREMENTS: McCarty, C.N. Master of Science Thesis. The University of Illinois. Urbana, IL, USA. <u>1933</u> : this work was also cited by Hopkins, B.S.; Audrieth, L.F. Trans. Electrochem. Soc. <u>1934</u> , 66, 134-42.		
	oxyethanol (; [109-86-4	methyl cellosolve);]			
VARIABLES:			PREPARED BY	:	
Temperature:	: T/K = 273	- 323	M. Salomon	and T. Mioduski	
EXPERIMENTAL	VALUES:		L		
		Composition of Sat	urated Solut	cions	
		Sm203	SmC13 ^b	smC13 ^b	
	t/ ^o C	g/25 cc	g/dm ³	mol/dm ³	
	0	0 2873	16 02	0.0650	
	10	0.2873 0.5210	16.92 30.68	0.0659 0.1195	
	20		42.62	0.1660	
	30		60.28	0.2348	
	40	1.2827	75.54	0.2942	
	50	1.4415	84.89	0.3306	
from prepar	ations 1 and	icate whether there we d 2. mpilers using 1977 IUP Equilibrated solid	AC recommend		
from prepar	did not ind ations 1 and	d 2. mpilers using 1977 IUP	AC recommend	ed atomic weights.	
from prepar	did not ind ations 1 and	d 2. mpilers using 1977 IUP Equilibrated solid	AC recommend	ed atomic weights.	
from prepar ^b Recalculate METHOD/APPAR	did not ind ations 1 and ad by the con	d 2. mpilers using 1977 IUP Equilibrated solid AUXILIARY	AC recommend phase not a INFORMATION	ed atomic weights.	

COMPONENTS: (1) Samarium chloride;			
(1) Samarium chloride;		ORIGINAL MEASUR	EMENTS :
	SmCl ₃ ;	McCarty, C.N.	
[10361-82-7]	5	Master of Scier	ice Thesis. The University
		of Illinois. I	Jrbana, IL, USA. 1933: this
(2) 2-Ethoxyethanol (et	hyl cellosolve);	work is also ci	ted by
$C_4H_{10}O_2; [110-80-5]$	1	Hopkins, B.S.;	Audrieth, L.F.
		Trans. Electroc	chem. Soc. <u>1934</u> , 66, 135-42.
VARIABLES:		PREPARED BY:	
	202		
Temperature: T/K = 273 -	• 323	M. Salomon and	T. Mioduski
		(
EXPERIMENTAL VALUES:			
DALENINE VALUES.	Composition of Sat	urated Solutions	1
	sm 0 a	SmC13 ^b	Smc1 b
	Sm203 ^a	-	SmCl ₃ ^b
t/ ^o C	g/25 cc	g/dm ³	mo1/dm ³
2, 6	6,25 00	87	
2	0 1557	0 16	0.0257
0	0.1556	9.16 19.47	0.0357
10 20	0.3307 0.5666	33.37	0.0758 0.1300
	0.7720	45.46	0.1771
40	0.9873	58.14	0.2264
50	1.3540	79.74	0.3106
<u></u>	AUXILIARY	INFORMATION	
METHOD /APPARATUS /PROCEDURE			TY OF MATERIALS.
	:	SOURCE AND PURIT	ent was permitted to stand
Isothermal method. About	: 75-100 cc of sol-	SOURCE AND PURIT Commercial solve over CaO for at	ent was permitted to stand least 1 week and then distil-
Isothermal method. About vent + excess salt were pl agitated in a thermostat f	: 75-100 cc of sol- aced in bottles and or at least 12 h.	SOURCE AND PURIT Commercial solve over CaO for at led. A middle p	ent was permitted to stand least 1 week and then distil- portion (fraction not speci-
Isothermal method. About vent + excess salt were pl agitated in a thermostat f Ice + water was used for t	: 75-100 cc of sol- aced in bottles and or at least 12 h. he O ^O C measurements.	SOURCE AND FURIT Commercial solve over CaO for at led. A middle p fied) was retain	ent was permitted to stand least 1 week and then distil- portion (fraction not speci- ned and stored in a stoppered
Isothermal method. About vent + excess salt were pl agitated in a thermostat f Ice + water was used for t The bottles were fitted wi	: 75-100 cc of sol- aced in bottles and or at least 12 h. he O ^O C measurements. th ground glass	SOURCE AND PURIT Commercial solve over CaO for at led. A middle p fied) was retain flask: b.p. 134	ent was permitted to stand least 1 week and then distil- portion (fraction not speci- ned and stored in a stoppered C. Sm salts prepd in 1925 as
Isothermal method. About vent + excess salt were pl agitated in a thermostat f Ice + water was used for t The bottles were fitted wi stoppers and were sealed f	: 75-100 cc of sol- aced in bottles and or at least 12 h. he 0°C measurements th ground glass rom the atmosphere	SOURCE AND PURIT Commercial solve over CaO for at led. A middle n fied) was retain flask: b.p. 134 double ammonium	ent was permitted to stand least 1 week and then distil- portion (fraction not speci- ned and stored in a stoppered C. Sm salts prepd in 1925 a: nitrates were of "spectro-
Isothermal method. About vent + excess salt were pl agitated in a thermostat f Lee + water was used for t The bottles were fitted wi stoppers and were sealed f py placing gum rubber tubi	: 75-100 cc of sol- aced in bottles and or at least 12 h. he 0°C measurements. th ground glass rom the atmosphere ng over the stop-	SOURCE AND PURIT Commercial solve over CaO for at led. A middle n fied) was retain flask: b.p. 134 double ammonium scopic purity" a	ent was permitted to stand least 1 week and then distil- portion (fraction not speci- ned and stored in a stoppered C. Sm salts prepd in 1925 a nitrates were of "spectro- and converted to the oxide (mu
Isothermal method. About yent + excess salt were pl agitated in a thermostat f lee + water was used for t The bottles were fitted wi stoppers and were sealed f by placing gum rubber tubi pers and necks of the bott	: 75-100 cc of sol- aced in bottles and or at least 12 h. he 0°C measurements. th ground glass rom the atmosphere ng over the stop- les, and a rubber	SOURCE AND PURIT Commercial solve over CaO for at led. A middle n fied) was retain flask: b.p. 134 double ammonium scopic purity" a details) and the	ent was permitted to stand least 1 week and then distil- portion (fraction not speci- ned and stored in a stoppered C. Sm salts prepd in 1925 a nitrates were of "spectro- and converted to the oxide (no e anhydr chloride prepd by two
Isothermal method. About vent + excess salt were pl agitated in a thermostat f Ice + water was used for t The bottles were fitted wi stoppers and were sealed f by placing gum rubber tubi pers and necks of the bott bung was fitted into the u	: 75-100 cc of sol- aced in bottles and or at least 12 h. he 0° C measurements th ground glass rom the atmosphere ng over the stop- les, and a rubber pper end of the	SOURCE AND PURIT Commercial solve over CaO for at led. A middle <u>p</u> fied) was retain flask: b.p. 134 ⁴ double ammonium scopic purity" a details) and the methods. 1. Th	ent was permitted to stand least 1 week and then distil- portion (fraction not speci- ned and stored in a stoppered C. Sm salts prepd in 1925 a nitrates were of "spectro- and converted to the oxide (no anhydr chloride prepd by two be oxide was dissolved in ac
Isothermal method. About went + excess salt were pl agitated in a thermostat f lce + water was used for t The bottles were fitted wi stoppers and were sealed f by placing gum rubber tubi pers and necks of the bott bung was fitted into the u cubing. After equilibrati	: 75-100 cc of sol- aced in bottles and or at least 12 h. he 0°C measurements th ground glass rom the atmosphere ng over the stop- les, and a rubber pper end of the on, the solutions	SOURCE AND PURIT Commercial solve over CaO for at led. A middle <u>m</u> fied) was retain flask: b.p. 134 ⁴ double ammonium scopic purity" a details) and the methods. 1. TH HC1 and the exce	ent was permitted to stand least 1 week and then distil- portion (fraction not speci- ned and stored in a stoppered C. Sm salts prepd in 1925 an nitrates were of "spectro- and converted to the oxide (not anydr chloride prepd by two he oxide was dissolved in aq ess HCl evapd. The crystal-
Isothermal method. About vent + excess salt were pl agitated in a thermostat f lee + water was used for t The bottles were fitted wi stoppers and were sealed f py placing gum rubber tubi pers and necks of the bott bung was fitted into the u cubing. After equilibrati were allowed to settle for	: 75-100 cc of sol- aced in bottles and or at least 12 h. he 0° C measurements th ground glass rom the atmosphere ng over the stop- les, and a rubber pper end of the on, the solutions at least 12 h, and	SOURCE AND PURIT Commercial solvo over CaO for at led. A middle p fied) was retain flask: b.p. 134 ⁴ double ammonium scopic purity" a details) and the methods. 1. Th HCl and the exce lized salt was o	ent was permitted to stand least 1 week and then distil- portion (fraction not speci- ned and stored in a stoppered C. Sm salts prepd in 1925 an nitrates were of "spectro- and converted to the oxide (no e anhydr chloride prepd by two he oxide was dissolved in aq ess HCl evapd. The crystal- hehydrated by heating in the
Isothermal method. About went + excess salt were pl agitated in a thermostat f lce + water was used for t The bottles were fitted wi stoppers and were sealed f by placing gum rubber tubi pers and necks of the bott bung was fitted into the u cubing. After equilibrati were allowed to settle for using a calibrated 25 cc p	: 75-100 cc of sol- aced in bottles and or at least 12 h. he 0°C measurements th ground glass rom the atmosphere ng over the stop- les, and a rubber pper end of the on, the solutions at least 12 h, and ipet, two samples	SOURCE AND PURIT Commercial solve over CaO for at led. A middle p fied) was retain flask: b.p. 134 double ammonium scopic purity" a details) and the methods. 1. Th HCl and the exce lized salt was of presence of dry eral h, then at	ent was permitted to stand least 1 week and then distil- portion (fraction not speci- ad and stored in a stoppered C. Sm salts prepd in 1925 an intrates were of "spectro- and converted to the oxide (not e anhydr chloride prepd by two he oxide was dissolved in aq ess HCl evapd. The crystal- dehydrated by heating in the HCl first at 100°C for sev- 200°C. 2. The rare earth
Isothermal method. About vent + excess salt were pl agitated in a thermostat f lce + water was used for t The bottles were fitted wi stoppers and were sealed f by placing gum rubber tubi pers and necks of the bott bung was fitted into the u tubing. After equilibrativer were allowed to settle for using a calibrated 25 cc p were removed for analysis. evaporated to dryness and	: 75-100 cc of sol- aced in bottles and or at least 12 h. he 0°C measurements th ground glass rom the atmosphere ng over the stop- les, and a rubber pper end of the on, the solutions at least 12 h, and ipet, two samples The samples were dissolved in aq	SOURCE AND PURIT Commercial solve over CaO for at led. A middle p fied) was retain flask: b.p. 134 double ammonium scopic purity" a details) and the methods. 1. Th HCl and the exce lized salt was of presence of dry eral h, then at benzoate was ppt	ent was permitted to stand least 1 week and then distil- portion (fraction not speci- ned and stored in a stoppered C. Sm salts prepd in 1925 as nitrates were of "spectro- and converted to the oxide (not e anhydr chloride prepd by two he oxide was dissolved in aq ass HCl evapd. The crystal- dehydrated by heating in the HCl first at 100°C for sev- 200°C. 2. The rare earth and from the aq chloride or
Isothermal method. About vent + excess salt were pl agitated in a thermostat f lce + water was used for t The bottles were fitted wi stoppers and were sealed f by placing gum rubber tubi pers and necks of the bott bung was fitted into the u tubing. After equilibrativer were allowed to settle for using a calibrated 25 cc p were removed for analysis. evaporated to dryness and	: 75-100 cc of sol- aced in bottles and or at least 12 h. he 0°C measurements th ground glass rom the atmosphere ng over the stop- les, and a rubber pper end of the on, the solutions at least 12 h, and ipet, two samples The samples were dissolved in aq	SOURCE AND PURIT Commercial solve over CaO for at led. A middle p fied) was retain flask: b.p. 134 double ammonium scopic purity" a details) and the methods. 1. TH HC1 and the exce lized salt was of presence of dry eral h, then at benzoate was ppt nitrate with soc	ent was permitted to stand least 1 week and then distil- portion (fraction not speci- ned and stored in a stoppered C. Sm salts prepd in 1925 as nitrates were of "spectro- and converted to the oxide (not e anhydr chloride prepd by two he oxide was dissolved in aq ass HCl evapd. The crystal- dehydrated by heating in the HCl first at 100°C for sev- 200°C. 2. The rare earth to from the aq chloride or dium benzoate, and the ben-
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Isothermal method. About vent + excess salt were pl agitated in a thermostat f Ice + water was used for t The bottles were fitted wi stoppers and were sealed f by placing gum rubber tubi pers and necks of the bott oung was fitted into the u tubing. After equilibrati were allowed to settle for using a calibrated 25 cc p were removed for analysis. evaporated to dryness and HCl and pptd as the oxalat acid. The samples were fi dist water and ignited to	: 75-100 cc of sol- aced in bottles and or at least 12 h. he 0°C measurements. th ground glass rom the atmosphere ng over the stop- les, and a rubber pper end of the on, the solutions at least 12 h, and ipet, two samples The samples were dissolved in aq e by addn of oxalic ltered, washed with constant weight as	SOURCE AND PURIT Commercial solve over CaO for at led. A middle <u>m</u> fied) was retain flask: b.p. 134 double ammonium scopic purity" a details) and the methods. 1. TH HCl and the exce lized salt was <u>c</u> presence of dry eral h, then at benzoate was ppt nitrate with so zoate dehydrated least 24 h. Ext	ent was permitted to stand least 1 week and then distil- portion (fraction not speci- ned and stored in a stoppered C. Sm salts prepd in 1925 as nitrates were of "spectro- and converted to the oxide (no e anhydr chloride prepd by two he oxide was dissolved in aq ess HCl evapd. The crystal- dehydrated by heating in the HCl first at 100°C for sev- 200°C. 2. The rare earth d from the aq chloride or ilum benzoate, and the ben- i by heating to 110°C for at cracting the chloride was car-
Isothermal method. About vent + excess salt were pl agitated in a thermostat f Ice + water was used for t The bottles were fitted wi stoppers and were sealed f by placing gum rubber tubi pers and necks of the bott bung was fitted into the u tubing. After equilibrati were allowed to settle for using a calibrated 25 cc p were removed for analysis. evaporated to dryness and HCl and pptd as the oxalat acid. The samples were fi dist water and ignited to the oxide. The oxide was	: 75-100 cc of sol- aced in bottles and or at least 12 h. he 0°C measurements. th ground glass rom the atmosphere ng over the stop- les, and a rubber pper end of the on, the solutions at least 12 h, and ipet, two samples The samples were dissolved in aq e by addn of oxalic ltered, washed with constant weight as found to be in-	SOURCE AND PURIT Commercial solvo over CaO for at led. A middle p fied) was retain flask: b.p. 134 double ammonium scopic purity" a details) and the methods. 1. Th HCl and the exce lized salt was of presence of dry eral h, then at benzoate was put nitrate with soo zoate dehydrated least 24 h. Ext ried out with HC	ent was permitted to stand least 1 week and then distil- portion (fraction not speci- ned and stored in a stoppered C. Sm salts prepd in 1925 as nitrates were of "spectro- and converted to the oxide (mo e anhydr chloride prepd by two he oxide was dissolved in aq ess HCl evapd. The crystal- lehydrated by heating in the HCl first at 100°C for sev- 200°C. 2. The rare earth ad from the aq chloride or lium benzoate, and the ben- i by heating to 110°C for at tracting the chloride was car- Cl satd ether, and the result-
Isothermal method. About vent + excess salt were pl agitated in a thermostat f Ice + water was used for t The bottles were fitted wi stoppers and were sealed f by placing gum rubber tubi pers and necks of the bott bung was fitted into the u tubing. After equilibrati were allowed to settle for using a calibrated 25 cc p were removed for analysis. evaporated to dryness and HCl and pptd as the oxalat acid. The samples were fi dist water and ignited to the oxide. The oxide was	: 75-100 cc of sol- aced in bottles and or at least 12 h. he 0°C measurements. th ground glass rom the atmosphere ng over the stop- les, and a rubber pper end of the on, the solutions at least 12 h, and ipet, two samples The samples were dissolved in aq e by addn of oxalic ltered, washed with constant weight as found to be in-	SOURCE AND PURIT Commercial solvo over CaO for at led. A middle p fied) was retain flask: b.p. 134 double ammonium scopic purity" a details) and the methods. 1. TH HCl and the exce lized salt was of presence of dry eral h, then at benzoate was ppt nitrate with soo least 24 h. Ext ried out with HC	ent was permitted to stand least 1 week and then distil- portion (fraction not speci- ned and stored in a stoppered C. Sm salts prepd in 1925 as nitrates were of "spectro- and converted to the oxide (no e anhydr chloride prepd by two he oxide was dissolved in aq ass HCl evapd. The crystal- lehydrated by heating in the HCl first at 100°C for sev- 200°C. 2. The rare earth ad from the aq chloride or lium benzoate, and the ben- i by heating to 110°C for at tracting the chloride was car- Cl satd ether, and the result- ated at 60°C first in a stream
Isothermal method. About vent + excess salt were pl agitated in a thermostat f Ice + water was used for t The bottles were fitted wi stoppers and were sealed f by placing gum rubber tubi pers and necks of the bott bung was fitted into the u tubing. After equilibrati were allowed to settle for using a calibrated 25 cc p were removed for analysis. evaporated to dryness and HCl and pptd as the oxalat acid. The samples were fi list water and ignited to the oxide. The oxide was	: 75-100 cc of sol- aced in bottles and or at least 12 h. he 0°C measurements. th ground glass rom the atmosphere ng over the stop- les, and a rubber pper end of the on, the solutions at least 12 h, and ipet, two samples The samples were dissolved in aq e by addn of oxalic ltered, washed with constant weight as found to be in-	SOURCE AND PURIT Commercial solve over CaO for at led. A middle p fied) was retain flask: b.p. 134 double ammonium scopic purity" a details) and the methods. 1. Th HCl and the exce lized salt was of presence of dry eral h, then at benzoate was ppt nitrate with soc zoate dehydrated least 24 h. Ext ried out with HC ing chloride hea of dry HCl and th	ent was permitted to stand least 1 week and then distil- portion (fraction not speci- ned and stored in a stoppered C. Sm salts prepd in 1925 as nitrates were of "spectro- and converted to the oxide (no e anhydr chloride prepd by two he oxide was dissolved in aq ess HCl evapd. The crystal- lehydrated by heating in the HCl first at 100°C for sev- 200°C. 2. The rare earth id from the aq chloride or lium benzoate, and the ben- i by heating to 110°C for at cracting the chloride was car- Cl satd ether, and the result- thed at 60°C first in a stream then in dry air. The salt was
Isothermal method. About vent + excess salt were pl agitated in a thermostat f Ice + water was used for t The bottles were fitted wi stoppers and were sealed f by placing gum rubber tubi pers and necks of the bott bung was fitted into the u tubing. After equilibrati were allowed to settle for using a calibrated 25 cc p were removed for analysis. evaporated to dryness and HCl and pptd as the oxalat acid. The samples were fi dist water and ignited to the oxide. The oxide was soluble in the organic solu	: 75-100 cc of sol- aced in bottles and or at least 12 h. he 0°C measurements th ground glass rom the atmosphere ng over the stop- les, and a rubber pper end of the on, the solutions at least 12 h, and ipet, two samples The samples were dissolved in aq e by addn of oxalic ltered, washed with constant weight as found to be in- vent.	SOURCE AND PURIT Commercial solve over CaO for at led. A middle p fied) was retain flask: b.p. 134 double ammonium scopic purity" a details) and the methods. 1. TH HCl and the exce lized salt was of presence of dry eral h, then at benzoate was ppt nitrate with soc zoate dehydrated least 24 h. Ext ried out with HC ing chloride heas of dry HCl and t	ent was permitted to stand least 1 week and then distil- portion (fraction not speci- ned and stored in a stoppered C. Sm salts prepd in 1925 as nitrates were of "spectro- and converted to the oxide (not e anhydr chloride prepd by two he oxide was dissolved in aq ess HCl evapd. The crystal- lehydrated by heating in the HCl first at 100°C for sev- 200°C. 2. The rare earth at from the aq chloride or lium benzoate, and the ben- i by heating to 110°C for at cracting the chloride was car- Cl satd ether, and the result- ted at 60°C first in a stream then in dry air. The salt was accator over P_2O_5 . Dry HCl
Isothermal method. About vent + excess salt were pl agitated in a thermostat f Ice + water was used for t The bottles were fitted wi stoppers and were sealed f by placing gum rubber tubi pers and necks of the bott bung was fitted into the u tubing. After equilibrati were allowed to settle for using a calibrated 25 cc p were removed for analysis. evaporated to dryness and dCl and pptd as the oxalat acid. The samples were fi dist water and ignited to the oxide. The oxide was soluble in the organic solu- CSTIMATED ERROR: Soly: precision probably	: 75-100 cc of sol- aced in bottles and or at least 12 h. he 0°C measurements th ground glass rom the atmosphere ng over the stop- les, and a rubber pper end of the on, the solutions at least 12 h, and ipet, two samples The samples were dissolved in aq e by addn of oxalic ltered, washed with constant weight as found to be in- vent.	SOURCE AND PURIT Commercial solve over CaO for at led. A middle p fied) was retain flask: b.p. 134 double ammonium scopic purity" a details) and the methods. 1. TH HCl and the exce lized salt was of presence of dry eral h, then at benzoate was ppt nitrate with so zoate dehydrated least 24 h. Ext ried out with HC ing chloride hea of dry HCl and t stored in a desi was prepd from N	ent was permitted to stand least 1 week and then distil- portion (fraction not speci- ned and stored in a stoppered C. Sm salts prepd in 1925 as nitrates were of "spectro- and converted to the oxide (not e anhydr chloride prepd by two he oxide was dissolved in aq ass HCl evapd. The crystal- dehydrated by heating in the HCl first at 100°C for sev- 200°C. 2. The rare earth td from the aq chloride or dium benzoate, and the ben- i by heating to 110°C for at cracting the chloride was car- cl satd ether, and the result- ted at 60°C first in a stream then in dry air. The salt was ccator over P ₂ O ₅ . Dry HCl laCl + H ₂ SO ₄ and by passing
using a calibrated 25 cc p were removed for analysis. evaporated to dryness and HCl and pptd as the oxalat acid. The samples were fid dist water and ignited to the oxide. The oxide was soluble in the organic solu- ESTIMATED ERROR:	: 75-100 cc of sol- aced in bottles and or at least 12 h. he 0°C measurements th ground glass rom the atmosphere ng over the stop- les, and a rubber pper end of the on, the solutions at least 12 h, and ipet, two samples The samples were dissolved in aq e by addn of oxalic ltered, washed with constant weight as found to be in- vent.	SOURCE AND PURITY Commercial solve over CaO for at led. A middle p fied) was retain flask: b.p. 134 double ammonium scopic purity" a details) and the methods. 1. TH HCl and the exce lized salt was of presence of dry eral h, then at benzoate was ppt nitrate with so zoate dehydrated least 24 h. Ext ried out with HC ing chloride hea of dry HCl and t stored in a desi was prepd from N	ent was permitted to stand least 1 week and then distil- portion (fraction not speci- ned and stored in a stoppered C. Sm salts prepd in 1925 as nitrates were of "spectro- and converted to the oxide (not e anhydr chloride prepd by two he oxide was dissolved in aq ess HCl evapd. The crystal- lehydrated by heating in the HCl first at 100°C for sev- 200°C. 2. The rare earth id from the aq chloride or lium benzoate, and the ben- i by heating to 110°C for at cracting the chloride was car- cl satd ether, and the result- ited at 60°C first in a stream then in dry air. The salt was accator over P_2O_5 . Dry HCl
Isothermal method. About vent + excess salt were pl agitated in a thermostat f Ice + water was used for t The bottles were fitted wi stoppers and were sealed f by placing gum rubber tubi pers and necks of the bott bung was fitted into the u tubing. After equilibrati were allowed to settle for using a calibrated 25 cc p were removed for analysis. evaporated to dryness and HCl and pptd as the oxalat acid. The samples were fi dist water and ignited to the oxide. The oxide was soluble in the organic solu- ESTIMATED ERROR: Soly: precision probably (compilers).	: 75-100 cc of sol- aced in bottles and or at least 12 h. he O°C measurements th ground glass rom the atmosphere ng over the stop- les, and a rubber pper end of the on, the solutions at least 12 h, and ipet, two samples The samples were dissolved in aq e by addn of oxalic ltered, washed with constant weight as found to be in- vent.	SOURCE AND PURIT Commercial solve over CaO for at led. A middle p fied) was retain flask: b.p. 134 double ammonium scopic purity" a details) and the methods. 1. TH HCl and the exce lized salt was of presence of dry eral h, then at benzoate was ppt nitrate with so zoate dehydrated least 24 h. Ext ried out with HC ing chloride hea of dry HCl and t stored in a desi was prepd from N	ent was permitted to stand least 1 week and then distil- portion (fraction not speci- ned and stored in a stoppered C. Sm salts prepd in 1925 as nitrates were of "spectro- and converted to the oxide (no e anhydr chloride prepd by two he oxide was dissolved in aq ess HCl evapd. The crystal- dehydrated by heating in the HCl first at 100°C for sev- 200°C. 2. The rare earth td from the aq chloride or dium benzoate, and the ben- i by heating to 110°C for at tracting the chloride was car- cl satd ether, and the result- ted at 60°C first in a stream then in dry air. The salt was ccator over P ₂ 0 ₅ . Dry HCl laCl + H ₂ S0 ₄ and by passing
Isothermal method. About vent + excess salt were pl agitated in a thermostat f Ice + water was used for t The bottles were fitted wi stoppers and were sealed f by placing gum rubber tubi pers and necks of the bott bung was fitted into the u tubing. After equilibrati were allowed to settle for using a calibrated 25 cc p were removed for analysis. evaporated to dryness and dCl and pptd as the oxalat acid. The samples were fi dist water and ignited to the oxide. The oxide was soluble in the organic solu- CSTIMATED ERROR: Soly: precision probably	: 75-100 cc of sol- aced in bottles and or at least 12 h. he O°C measurements th ground glass rom the atmosphere ng over the stop- les, and a rubber pper end of the on, the solutions at least 12 h, and ipet, two samples The samples were dissolved in aq e by addn of oxalic ltered, washed with constant weight as found to be in- vent.	SOURCE AND PURITY Commercial solve over CaO for at led. A middle p fied) was retain flask: b.p. 134 double ammonium scopic purity" a details) and the methods. 1. TH HCl and the exce lized salt was of presence of dry eral h, then at benzoate was ppt nitrate with so zoate dehydrated least 24 h. Ext ried out with HC ing chloride hea of dry HCl and t stored in a desi was prepd from N	ent was permitted to stand least 1 week and then distil- portion (fraction not speci- ned and stored in a stoppered C. Sm salts prepd in 1925 as nitrates were of "spectro- and converted to the oxide (not e anhydr chloride prepd by two he oxide was dissolved in aq ess HCl evapd. The crystal- dehydrated by heating in the HCl first at 100°C for sev- 200°C. 2. The rare earth td from the aq chloride or dium benzoate, and the ben- i by heating to 110°C for at cracting the chloride was car- cl satd ether, and the result- ted at 60°C first in a stream then in dry air. The salt was ccator over P_2O_5 . Dry HCl MaCl + H_2SO_4 and by passing

COMPONENTS:	0	ORIGINAL MEASUREMENTS:
<pre>(1) Samarium chloride; SmCl₃; [10361-82-7]</pre>	1	Kirmse, E.M.
(2) Alkoxy-ethanols		Tr. II Vses. Konf. po Teor. Rastvorov <u>1971</u> , 200-6.
VARIABLES:	P	PREPARED BY:
T/K = 298		T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:		a
solvent		solubility ^a nature of the mass % mol kg ⁻¹ solid phase
2-methoxyethanol; C ₃ H ₈ 0 ₂ ;	[109-86-4]	5.7 0.24 $SmCl_3 \cdot nC_3 H_8 O_2$ (n=2-3)
2-ethoxyethano1; $C_4H_{10}O_2$;	[110-80-5]	26.3 1.39 SmCl ₃ .2C ₄ H ₁₀ O ₂
^a Molalities calculated by the	compilers.	
	AUXILIARY I	INFORMATION
	AUAILIARI I	
METHOD/APPARATUS/PROCEDURE: Experimental details not given probably similar to previous w author which are compiled throuvolume.	, but were orks of the	SOURCE AND PURITY OF MATERIALS: Nothing specified, but based on previous work by the authors the anhydrous salt was probably prepared by the method of Taylor and Carter (1).
l	Ŀ.	ESTIMATED ERROR:
		Nothing specified.
		REFERENCES: 1. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.

COMPONENTS :	ORIGINAL MEASUREMENTS:
<pre>(1) Samarium chloride; SmCl₃; [10361-82-7]</pre>	Dzhuraev, Kh. Sh.; Mirsaidov, U.; Kurbanbekov, A.; Rakhimova, A.
(2) Diethyl ether (ethyl ether); C ₄ H ₁₀ 0; [60-29-7]	Dokl. Akad. Nauk Tadzh. SSR <u>1976</u> , 19, 32-4.
VARIABLES:	PREPARED BY:
T/K = 293	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of SmCl ₃ in diethyl ether at	20°C was reported to be
-	10 ⁻³ mass %.
/.4 x	to mass %.
The corresponding molality calculated by the	compiler is
2 84 🕶	10 ⁻⁴ mol kg ⁻¹
2.04 X	
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method employed. Equilibrum was	Anhydrous SmCl ₃ prepared by the ethanol
attained within 24 h and it was verified by	solvate method (no details given).
constancy in the Sm concentration. The saturated solution and the equilibrated	Ethyl ether was dried with Na and
solid phase were analyzed. Sm determined	distilled from LiAlH4 before use.
by complexometric titration using urotro- pine buffer and methyl-thymol blue indica-	
tor. Chloride determined by titration with	
AgNO ₃ . The solid phase corresponded to SmCl ₃ .0.5Et ₂ 0 (the etherate was dried under	
vacuum at 40°C prior to analysis).	
	ESTIMATED ERROR:
	Nothing specified.
	wentug opecificu.
	REFERENCES:

218	Samariu	m Chioride		
COMPONENTS: (1) Samarium chloride; Sm [10361-82-7]	Kirmse, E.M. J.; Oelsner	ORIGINAL MEASUREMENTS: Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J.; Oelsner, L.; Niedergesaess, U. Z. Chem. <u>1968</u> , 8, 472-3. Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov. <u>1971</u> , 200-6.		
(2) Ethers	Tr. II Vses.			
VARIABLES:		PREPARED BY:		······
Room temperature: T/K aroun	T. Mioduski	T. Mioduski and M. Salomon		
EXPERIMENTAL VALUES:				
			SmCl ₃ solu	ubility ^{a,b}
solvent			mass %	mol kg ⁻¹
1-ethoxy-2-methoxyethane;	c ₅ H ₁₂ O ₂ ;	[5137-45-1]	0.45	0.018
1,3-dioxolane;	c _{3^H6} 0 ₂ ;	[646-06-0]	2.6	0.104
1,4-dioxane;	c ₄ H ₈ 0 ₂ ;	[123-91-1]	0.07	0.0027
^a Molalities calculated by th	ne compilers.			
^b Nature of solid phases not	specified.			
	-			
	AUXILIAR	Y INFORMATION		
METHOD/APPARATUS/PROCEDURE:		SOURCE AND P	URITY OF MATER	RIALS:
The solute-solvent mixtures	were isothermal	ly The anhydro	us salt was pr	epared by the
agitated at 25°C or at room Authors state that the diff		method of T	aylor and Cart	er (1).
the solubility was within e limits.			formation give	n.
Sm was determined by completion.	xometric titra-			
No other details given.				
		ESTIMATED EN	ROR:	
		Nothing spec		
		REFERENCES:		
			1.D.; Carter, Nucl. Chem.	C.P. <u>1962</u> , 24, 387.

COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Samarium chloride; SmCl₃; [10361-82-7]</pre>	Rossmanith, K.; Auer-Welsbach, C.
	Monstsh. Chem. <u>1965</u> , 96, 602-5.
(2) Tetrahydrofuran; C ₄ H ₈ 0; [109-99-9]	
VARIABLES:	PREPARED BY:
Room temperature: T/K about 293	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of SmCl ₃ in tetrahydrofuran at as	room temperature (about 20 ⁰ C) was reported
1.49 g/1	00 ml solution
The solid phase is	
SmCl ₃ ·1.	9804 ^H 80.
}	
[
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method employed. The solution	Sources and purities not specified.
was equilibrated in an extractor for 60-80	SmC1 ₃ prepared by reaction of the oxide at
hours at room temperature. Samarium was de- termined by the oxalate method and by	1 ° ' 4 1
titration with EDTA using Xylenol Orange	followed by heating the product in a cur- rent of dry nitrogen, and then in vacuum
indicator. For the solid phase analysis,	to remove unreacted NH4C1.
the solvent was determined by difference.	Tetrahydrofuran was distilled from LiAlH ₄ .
Anhydrous substances were handled in a dry	recranyulolulan was distilled from LIAIH4.
box through which was passed a current of	
dry and CO ₂ -free nitrogen.	}
	ESTIMATED EDDOR
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES:
1	
1	

Samanum	Chioride		
COMPONENTS:	ORIGINAL MEASUREMENTS:		
<pre>(1) Samarium chloride; SmCl₃; [10361-82-7]</pre>	Korovin, S.S.; Galaktionova, O.V.; Lebedeva, E.N.; Voronskaya, G.N.		
(2) Tributylphosphate; C ₁₂ H ₂₇ 0 ₄ P; [126-73-8]	Zh. Neorg. Khim. <u>1975</u> , 20, 908–14; Russ. J. Inorg. Chem. (Engl. Transl.) <u>1975</u> , 20, 508–11.		
VARIABLES:	PREPARED BY:		
T/K = 298	T. Mioduski and M. Salomon		
	······································		
EXPERIMENTAL VALUES:			
Composition of sat	urated solution		
mass % mol/kg sln g dm ⁻³ mol	dm ⁻³ mol kg ⁻¹ density/g cm ⁻³ (compiler)		
33.4 1.30 436.5 1.	70 1.95 1.30		
	INFORMATION		
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:		
Satd slns prepared isothermally with mag- netic stirring. Equil was attained after 25-30 d. The sln was centrifuged and an aliquot for analysis taken and added to methanol and pptd with aq NH ₃ . The pptd Sm(OH) ₃ was washed repeatedly and heated to the oxide for gravimetric analysis. The solid phase was analyzed (no details given) for phosphorous and only anhydr SmCl ₃ was found. All operations were performed in a dry box through which a stream of argon was passed.	Anhydrous $SmCl_3$ prepd by chlorination of Sm_2O_3 with CCl_4 vapor (1,2). Source and purity of materials not given. Sm was analyzed gravimetrically, and Cl by Volhard's method. Tributylphosphate (TBP) was purified "by the standard method." No additional details given.		
The major objective of this work was to	ESTIMATED ERROR: No estimates possible.		
The major objective of this work was to	ING ESTIMATES DOSSIDIE.		
establish the nature of complextion between TBP and SmCl ₃ in solution. Additional studies with unsaturated solutions (IR spectra, viscosity, molar conductivities)	REFERENCES:		
establish the nature of complexiion between TBP and SmCl ₃ in solution. Additional studies with unsaturated solutions (IR	REFERENCES: 1. Korshunov, B.G.; Drobot, D.V.; Bukhtiyarov, V.V.; Shevtsova, Z.N. Zh. Neorg. Khim. <u>1964</u> , 9, 1427.		
establish the nature of complextion between TBP and SmCl ₃ in solution. Additional studies with unsaturated solutions (IR spectra, viscosity, molar conductivities)	REFERENCES: 1. Korshunov, B.G.; Drobot, D.V.; Bukhtiyarov, V.V.; Shevtsova, Z.N.		

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COMPONENTS:	1	ORIGINAL MEASUREMENTS:		
(1) Samarium chloride; SmCl ₃ ; [10361-82-7]	ATTENSE, E.M	Kirmse, E.M.		
[10301-02-7]	Tr. II Vses	. Konf. po Tec	or. Rastvorov	
(2) Amines	<u>1971</u> , 200-6	•		
		····		
VARIABLES:	PREPARED BY:			
T/K = 298	T. Mioduski	and M. Salomo	n	
EXPERIMENTAL VALUES:				
		SmCl ₃ solu	hilitrya	
		3 3010	DITICY	
solvent		mass %	mol kg ⁻¹	
2-propanamine; iso-C ₃ H ₉ N;	[75-31-0]	15.2	0.698	
2-propanamine; iso-C ₃ H ₉ N;	[/5/51/0]	13.2	0.098	
h				
2-propen-1-amine ^b ; C ₃ H ₇ N;	[107-11-9]	5.6	0.225	
^a Molalities calculated by the compilers.				
h				
^b The original paper simply specifies the so		and upon r	equest the	
	olvent as C ₃ H ₅ NH	ay, and upon r	equebe ene	
author kindly identified the solvent as a	olvent as C ₃ H5NN Llylamine.	ny, and upon r	equebe end	
author kindly identified the solvent as a	olvent as C ₃ H5NN Llylamine.	ny, and upon r		
author kindly identified the solvent as a	olvent as C ₃ H5NI llylamine.	nz, and upon r		
author kindly identified the solvent as a	olvent as C ₃ H5NN Llylamine.	iz, and upon i		
author kindly identified the solvent as a	olvent as C ₃ H5NN Llylamine.	iz, and upon r		
author kindly identified the solvent as a	olvent as C ₃ H5NN Llylamine.	iz, and upon r		
author kindly identified the solvent as a	olvent as C ₃ H5NN llylamine.	iz, and upon r		
author kindly identified the solvent as a	olvent as C ₃ H5NN Llylamine.	rz, and upon r		
author kindly identified the solvent as a	olvent as C ₃ H5NN			
author kindly identified the solvent as a				
author kindly identified the solvent as a	NY INFORMATION			
author kindly identified the solvent as a AUXILIAN	Y INFORMATION	URITY OF MATER	TALS:	
author kindly identified the solvent as a AUXILIAN METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were	Y INFORMATION SOURCE AND P Nothing spec	URITY OF MATER cified, but ba	NALS: sed on previous	
AUXILIAN METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the	Y INFORMATION SOURCE AND P Nothing spec work by the	URITY OF MATER cified, but ba author the an	TALS: sed on previous hydrous salt was	
author kindly identified the solvent as a AUXILIAN METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were	Y INFORMATION SOURCE AND P Nothing spec work by the	URITY OF MATER cified, but ba author the an epared by the	NALS: sed on previous	
AUXILIAN METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume.	XY INFORMATION SOURCE AND P Nothing spec work by the probably pro-	URITY OF MATER cified, but ba author the an epared by the	TALS: sed on previous hydrous salt was	
AUXILIAN METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this	XY INFORMATION SOURCE AND P Nothing spec work by the probably pro-	URITY OF MATER cified, but ba author the an epared by the	TALS: sed on previous hydrous salt was	
AUXILIAN METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume.	XY INFORMATION SOURCE AND P Nothing spec work by the probably pro-	URITY OF MATER cified, but ba author the an epared by the	TALS: sed on previous hydrous salt was	
AUXILIAN METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume.	XY INFORMATION SOURCE AND P Nothing spec work by the probably pro-	URITY OF MATER cified, but ba author the an epared by the	TALS: sed on previous hydrous salt was	
AUXILIAN METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume.	XY INFORMATION SOURCE AND P Nothing spec work by the probably pro-	URITY OF MATER cified, but ba author the an epared by the	TALS: sed on previous hydrous salt was	
AUXILIAN METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume.	XY INFORMATION SOURCE AND P Nothing spec work by the probably pro-	URITY OF MATER cified, but ba author the an epared by the	TALS: sed on previous hydrous salt was	
AUXILIAN METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume.	XY INFORMATION SOURCE AND P Nothing spec work by the probably pro-	URITY OF MATER cified, but ba author the an epared by the (1).	TALS: sed on previous hydrous salt was	
AUXILIAN METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume.	ESTIMATED ER	URITY OF MATER cified, but ba author the an epared by the (1). ROR:	TALS: sed on previous hydrous salt was	
AUXILIAN METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume.	XY INFORMATION SOURCE AND P Nothing spee work by the probably pre and Carter (URITY OF MATER cified, but ba author the an epared by the (1). ROR:	TALS: sed on previous hydrous salt was	
AUXILIAN METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume.	ESTIMATED ER	URITY OF MATER cified, but ba author the an epared by the (1). ROR:	TALS: sed on previous hydrous salt was	
AUXILIAN METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume.	ESTIMATED ER	URITY OF MATER cified, but ba author the an epared by the (1). ROR:	TALS: sed on previous hydrous salt was	
AUXILIAN METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume.	XY INFORMATION SOURCE AND P Nothing spee work by the probably pre and Carter of ESTIMATED ER Nothing spee REFERENCES:	URITY OF MATER cified, but ba author the an epared by the (1). ROR: rified.	TALS: sed on previous hydrous salt was method of Taylor	
AUXILIAN METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume.	XY INFORMATION SOURCE AND P Nothing spec work by the probably pre and Carter of ESTIMATED ER Nothing spec REFERENCES: 1. Taylor, F	URITY OF MATER cified, but ba author the an epared by the (1). ROR: cified.	TALS: sed on previous hydrous salt was method of Taylor	
AUXILIAN METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume.	XY INFORMATION SOURCE AND P Nothing spec work by the probably pre and Carter of ESTIMATED ER Nothing spec REFERENCES: 1. Taylor, F	URITY OF MATER cified, but ba author the an epared by the (1). ROR: cified.	TALS: sed on previous hydrous salt was method of Taylor	
AUXILIAN METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume.	XY INFORMATION SOURCE AND P Nothing spec work by the probably pre and Carter of ESTIMATED ER Nothing spec REFERENCES: 1. Taylor, F	URITY OF MATER cified, but ba author the an epared by the (1). ROR: cified.	TALS: sed on previous hydrous salt was method of Taylor	
AUXILIAN METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume.	XY INFORMATION SOURCE AND P Nothing spec work by the probably pre and Carter of ESTIMATED ER Nothing spec REFERENCES: 1. Taylor, F	URITY OF MATER cified, but ba author the an epared by the (1). ROR: cified.	TALS: sed on previous hydrous salt was method of Taylor	
AUXILIAN METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume.	XY INFORMATION SOURCE AND P Nothing spec work by the probably pre and Carter of ESTIMATED ER Nothing spec REFERENCES: 1. Taylor, F	URITY OF MATER cified, but ba author the an epared by the (1). ROR: cified.	TALS: sed on previous hydrous salt was method of Taylor	

00170000000	
COMPONENTS: (1) Samarium chloride; SmCl ₃ ;	ORIGINAL MEASUREMENTS: Mikheev, N.B.: Kamengkaya, A.N.: Konowalowa
[10361-82-7]	Mikheev, N.B.; Kamenskaya, A.N.; Konovalova, N.A.; Zhilina, T.A.
	Zh. Neorg. Khim. 1977, 22, 1761-6; Russ.
(2) Hexamethylphosphorotriamide;	J. Inorg. Chem. Engl. Transl. <u>1977</u> , 22,
$C_{6}^{H}_{18}N_{3}^{OP};$ [680-31-9]	955-8.
VARIABLES:	PREPARED BY:
Room Temperature: T/K = 298 ± 3	T. Mioduskí
•	
EXPERIMENTAL VALUES:	
At room temperature, the solubility was report	rted as
0.126 mol di	-3
0.126 mol di	m °
The solid phase is the solvate SmCl ₂ .3HMPT	
, , , , , , , , , , , , , , , , , , ,	
It is apparent that the authors determined the	he solubility of SmCl. several times but
only the above single value was reported.	several times, but
AUXILIARY	INFORMATION
METHOD /APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
Anhydrous SmCl ₃ placed in a test-tube with	SmCl ₃ prepared similar to (1): a 6:1 molar
the solvent in a dry box and shaken at room	mixture of $NH_4C1 + Sm_2O_3$ was heated to 200
temperature. Aliquots removed periodically	to 400°C in a stream of inert gas. Excess
to test for equilibrium. The analysis was	NH4C1 sublimed, and the remaining SmCl ₃
carried out by complexometric titration (no details) and by radioassay using 170 _{Tm} .	contained less than 3% oxide impurity.
"The results obtained by the two methods	Hexamethylphosphorotriamide (HMPT) was
agreed." Analysis showed the solid phase to	purified as in (2).
be SmCl ₃ .3HMPT. Analysis of the solid	
phase performed by complexometric titration for Sm and by the Volhard method for C1:	
HMPT was obtained by difference.	
	ESTIMATED ERROR: Soly: \pm 0.001 mol dm ⁻³ at the 95% confidence
1	level.
1	
	Temp: $25 \pm 3^{\circ}C$.
1	REFERENCES :
	1. Taylor, M.D.; Carter, C.P. J. Inorg.
	Nucl. Chem. <u>1962</u> , 24, 387.
	2. Fomicheva, M.G.; Kessler, Yu.M.;
	Zabusova, S.E.; Alpatova, N.M. Elektrokhimiya 1975, 11, 163.
	Liekowingu <u>1713</u> , 11, 103.

COMPONENTS :		ORIGINAL MEASUREMENTS:
COMPONENTS:		
<pre>1) Samarium chloride; SmCl₃; [10361-82-7]</pre>		Lyubimov, E.I.; Batyaev, I.M.
(2) Tetrachlorostannate; SnCl ₂ [7646-78-8]	;;	Zh. Prikl. Khim. <u>1972</u> , 45, 1176–8.
(3) Phosphorus oxychloride; PC [10025-87-3])Cl3;	
VARIABLES:		PREPARED BY:
T/K = 293		T. Mioduski
Concentration of SnCl4		
EXPERIMENTAL VALUES:		
SnCl ₄ :POCl ₃ ratio	SnCl ₄ concent	
(by volume)	mol dm^{-3}	moles $\text{Sm } \text{dm}^{-3}$
1:250	0.035	0.10
1:100	0.085	0.18
1:50	0.17	0.28
1:25	0.33	0.25
1:15	0.59	0.11
1:10	0.78	0.10
quantitatively converted to th	ne chloride aco	
Sm203	3 + 6POCl3 *	$= 2 \text{SmCl}_3 + 3 P_2 O_3 C I_4$
	AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method used. POCl ₃ solutions were prepared by volu box. The SnCl ₄ content was ver chemical analysis for Sn. This Sm ₂ O ₃ were placed in sealed amp to 20-250°C to increase the rat and then rotated in an air ther 20°C for 2-200 hours. Without equilibrium was established aft	me in a dry fified by solution and oules, heated te of solution, mostat at preheating, ser 200 hours.	SOURCE AND PURITY OF MATERIALS; Sm ₂ O ₃ of "the first sort" was heated at 950°C for 2 hours. "Pure" grade SnCl4 and POCl ₃ were dehy- drated with P ₂ O ₅ and distilled under vacuum.
Preheating to 120°C lowered the tion time at 20° to 2 hours. Sm was determined by colorimetr		
and in some cases by the oxalat The reported solubilities are m based on 3-5 parallel determina	e method. Nean values	ESTIMATED ERROR: Soly: authors state the "coefficient of variance" to be less than 7%. Temp: precision presumably <u>+</u> 0.2K (compiler). REFERENCES:

201/D 01/D 01/D 02	
COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Samarium bromide; SmBr ₃ ;	Kirmse, E.M.
[13759-87-0]	Tr. II Vses. Konf. po Teor. Rastvorov
(2) 1 2-Diothornet $C = 0$	<u>1971</u> , 200-6.
(2) 1,2-Diethoxyethane; C ₆ H ₁₄ O ₂ ; [629-14-1]	
[023-14-1]	
VARIABLES:	PREPARED BY:
<i></i>	
T/K = 298	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	
The solubility of SmBr ₃ in 1,2-dimethoxyetha	ne at 25 ⁰ C was reported as
5	-
	0.8 mass %
The corresponding molality calculated by the	compiler is
The correspondence metalley careatable by the	
	$0.021 \text{ mol kg}^{-1}$
	Ű
	í
The nature of the solid phase was not specif	ied.
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Experimental details not given, but were	Nothing specified, but based on previous
probably similar to previous works of the	work by the author the anhydrous salt was
author which are compiled throughout this	probably prepared by the method of Taylor
volume.	and Carter (1).
Nature of solid phase not specified.	
	ESTIMATED ERROR:
	Nothing specified.
	1
	REFERENCES:
	1. Taylor, M.D.; Carter, C.P.
	J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.
4	
	1

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COMPONENTS:		ORIGINAL MEASUREMENTS: Kirmse, E.M.; Dressler, H.			
<pre>(1) Samarium bromide; SmBr₃; [13759-87-0]</pre>					
(2) Alkyl ethers			2. Chem.	<u>1975</u> , 15, 239-4	0.
(-,					
		-			
VARIABLES:			PREPARED F	3Y:	
Room Temperature (293-2	298 K)			ski and M. Salom	
Koom lemperature (255-	290 K)		1. 111044	SKI and H. Salom	511
EXPERIMENTAL VALUES:	<u></u>	··· ··· ·		·····	
				SmBr co	lub111ty ^a
solvent				mass %	mol kg ⁻¹
	C H 0.	[629-	28-4]	3.0	0.079
1-methoxybutane;	C ₅ H ₁₂ 0;				
1-methoxypentane;	C6 ^H 14 ⁰ ;	[628-	80-8]	2.2	0.058
1-methoxyheptane;	C ₈ H ₁₈ 0;	[629-	32-3]	7.3	0.202
1-methoxyoctane;	с ₉ н ₂₀ 0;	[929-	56-6]	13.5	0.400
1-methoxynonane;	C ₁₀ H ₂₂ O;	[7289	-51-2]	7.6	0.211
1-methoxydecane;	$C_{11}H_{24}0;$	[7289	-52-3]	4.6	0.124
· · · · · · · · · · · · · · · · · · ·	11 24	•	-		
	AU	XILIARY	INFORMATIO	N	<u> </u>
METHOD/APPARATUS/PROCEDU					TALS
METHOD/APPARATUS/PROCEDURE:SOURCE AND PURITY OF MATERIALS:The solute-solvent mixtures were isother- mally agitated (at room temperature) until equilibrium was attained. The anhydrous reagents were handled in a dry box contain- ing P_40_{10} . Pr was determined by complexo= metric titration using Xylenol Orange indi- cator.SOURCE AND PURITY OF MATERIALS: 					
The reported solubiliti based on four determina		alues			
			ESTIMATED	FPPOP.	
		-		pecified.	
{		I			i
			0000000000		
			REFERENCE:	5:	
1					

COMPONENTS: (1) Samarium bromide; SmBr ₃ ; [13759-87-0]	ORIGINAL MEASUREMENTS: Rossmanith, K.
(2) Tetrahydrofuran; C ₄ H ₈ 0; [109-99-9]	Monstsh. Chem. <u>1966</u> , 97, 1357-64.
~ ~	
VARIABLES:	PREPARED BY:
Room temperature: T/K about 294-296	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of SmBr ₃ in tetrahydrofuran a	t 21-23 ⁰ C was reported to be
0.55 g/1	00 ml solution
The solid phase is	
SmBr ₃ .3.	5c4H80.
	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution was equilibrated in an extractor for 60-80 hours at room temperature. Samarium was determined by the oxalate method and by titration with EDTA using Xylenol Orange indicator. For the solid phase analysis, the solvent was determined by difference. Anhydrous substances were handled in a dry	SOURCE AND PURITY OF MATERIALS: Sources and purities not specified. SmBr ₃ prepared by reaction of the oxide at high temperatures with an excess of NH ₄ Br followed by heating the product in a current of dry nitrogen, and then in vacuum to removed unreacted NH ₄ Br. Tetrahydrofuran was distilled from LiAlH ₄ .
box through which was passed a current of dry and CO_2 -free nitrogen.	
	ESTIMATED ERROR: Nothing specified.
	section operation.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
 (1) Samarium bromide; SmBr₃; [13759-87-0] (2) 1,4-Dioxane; C₄H₈0₂; [123-91-1] 	 Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J.; Oelsner, L.; Niedergeases, U. Z. Chem. <u>1968</u>, 8, 472-3; Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov. <u>1971</u>, 200-6.
VARIABLES:	PREPARED BY:
Room temperature: T/K around 298	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of SmBr ₃ in p-dioxane at abou	ut 25 ⁰ C was given as
	1.3 mass %
The corresponding molality calculated by the	e compiler is
	0.034 mol kg ⁻¹
The nature of the solid phase was not specif	ied.
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were isother- mally agitated at 25°C or at room tempera- ture. Authors state that the difference found for the solubility was within experi- mental error limits. Sm was determined by complexometric titra- tion. No other details given.	SOURCE AND PURITY OF MATERIALS: The anhydrous salt was prepared by the method of Taylor and Carter (1). No other information given.
	ESTIMATED ERROR: Nothing specified.
	REFERENCES: 1. Taylor, M.D.; Carter, C.P. J. Inong. Nucl. Chem. <u>1962</u> , 24, 387.

COMPONENTS:	OMPONENTS:		ORIGINAL MEASUREMENTS:		
<pre>(1) Samarium bromide; SmBr₃; [13759-87-0]</pre>		Kirmse, E. M	1.		
(2) Alkyl amines			Konf. po Teo	r. Rastvorov	
VARIABLES:	;	PREPARED BY:			
T/K = 298		T. Mioduski	and M. Salomo	m	
EXPERIMENTAL VALUES:			SmBr ₃ solu	bility ^a	
solvent			mass %	mol kg ⁻¹	
l-propanamine;	n-C ₃ H ₉ N;	[107-10-8]	23.8	0.801	
2-propanamine;	iso-C ₃ H ₉ N;	[75-31-0]	33.1	1.268	
1-butanamine;	n-C4 ^H 11 ^N ;	[109-73-9]	38.5	1.605	
2-butanamine;	sec-C ₄ H ₁₁ N;	[13952-84-6]	23.8	0.801	
di-2-butylamine;	(sec-C ₄ H ₉) ₂ NH	I; [626-23-3]	0.03	8×10^{-4}	
	AUXILIA	RY INFORMATION	· • · · · · · · · · · · · · · · · · · ·		
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PU		1	
Experimental details not giv probably similar to previous author which are compiled th volume.	s works of the	work by the	author the an pared by the	sed on previous hydrous salt was method of Taylor	
Nature of solid phases not a	specified.				
		ESTIMATED ERR	OR:		
		Nothing spec	ified.		
		REFERENCES: 1. Taylor, M J. Inorg.	I.D.; Carter, Nucl. Chem.	C.P. <u>1962</u> , 24, 387.	

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COMPONENTS :	ORIGINAL MEASUREMENTS:			
(1) Samarium iodide; SmI ₃ ;	Moeller, T.; Galasyn, V.			
[13813-25-7]	J. Inorg. Nucl. Chem. <u>1960</u> , 12, 259-65.			
(2) N,N-Dimethylformamide; C ₃ H ₇ NO;	<u></u> ,,			
[68-12-2]				
WARTART PC.	DEDADED BY.			
VARIABLES:	PREPARED BY:			
T/K = 298.15	M. Salomon			
EXPERIMENTAL VALUES:				
The solubility of SmI_3 in $HCON(CH_3)_2$ at $25^{\circ}C$	was reported as			
520.7 g dm ⁻³	3			
520.7 g dm				
and as				
	-3			
0.4666 mol o	im			
The solid phase is the solvate SmI_3 .8HCON(CH ₃) ₂ . The melting point (sealed tube method)				
The solid phase is the solvate $SmI_3.8HCON(CH, of this solvate given as 97.5 - 100.0°C.$	3·2·			
<u></u>				
AUXILIARY	INFORMATION			
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:			
Authors state that solubilities were deter-	The initial material was the rare earth			
mined by analysis of aliquots after equilibration at $25 \pm 0.025^{\circ}$ C, and that techniques	oxide of 99.9+% purity. Iodides were prepd			
were generally similar to those described in	by two methods. 1. Acetyl iodide method			
(1).	(2) where the hydrated acetate is treated			
	with acetyl iodide in benzene. Acetyl iodide prepd as in (3). 2. The iodide was			
The rare earth content was determined by complexometric titration with EDTA at 60°C.	prepd by metathesis by reaction of the			
Iodide was determined by the Volhard method,	hydrated SmCl ₃ with KI in DMF followed by			
and carbon, hydrogen, and nitrogen by usual	addition of benzene and distillation of the			
microanalytical techniques.	benzene-water azeotrope.			
DEDEDENCEC.	For both preparations the solvate SmI ₃ .8DMF			
REFERENCES:	was recrystallized from DMF by addition of			
1. Moeller, T.; Cullen, G.W. J. Inorg. Nucl.	ether.			
Chem. <u>1959</u> , 10, 148.	The solvent, DMF, was prepared as in (4,5),			
2. Watt, G.W.; Gentile, P.S.; Helvenston,	and its electrolytic conductance was			
E.P. J. Am. Chem. Soc. <u>1955</u> , 77, 2752.	$\geq 3.7 \times 10^{-7} \text{ s cm}^{-1} \text{ at } 25^{\circ}\text{C}.$			
3. Biltz, H.; Biltz, W. Laboratory Methods	ESTIMATED ERROR:			
of Inorganic Chemistry (2nd Edition).				
John Wiley. N.Y. <u>1928</u> .	Soly: precision around \pm 0.1% (compiler).			
4. Leader, G.R.; Gormley, J.F. J. Am. Chem.	Temp: precision \pm 0.025 K (authors).			
Soc. <u>1951</u> , 73, 5731.				
 Thomas, A.B.; Rochow, E.G. J. Am. Chem. Soc. <u>1957</u>, 79, 1843. 				

COMPONENTS: (1) Europium fluoride: Eur	 ?o:	ľ	ORIGINAL P		NTS:	
 Europium fluoride; EuF₃; [13765-25-8] Alkyl ethers 			Dressler, H. Dissertationschrift. Paed. Inst. Koethen. GDR. <u>1980</u> .			
VARIABLES:			PREPARED	BY:		
Room Temperature			T. Mioduski and M. Salomon			
EXPERIMENTAL VALUES:					<u></u>	
solvent				-	lubility mol/100g sln	solid phase Eu:F:solvent ratio
1-methoxydecane;	^C 11 ^H 24 ⁰ ;	[72	89-52-3]	0.03	1.44 x 10	-4 1:2.83:0.06
1-(chloromethoxy)butane;	c ₅ H ₁₁ C10;	[23	51-69 - 1]	0.02	9.6 x 10 ⁻⁹	5 1:3.15:0.16
			INFORMATIO			
						-
METHOD/APPARATUS/PROCEDURE: Method analogous to that described in (1). No other information available.		•	SOURCE AND PURITY OF MATERIALS: It appears that the fluoride was prepared as in (1). In spite of drying the fluoride by two methods at 573 K, the Eu:F:H ₂ O ratio was 1:3.01:0.23. No other information available.			
			ESTIMATE	ERROR:		
			Nothing	specifie	1.	
			DEFEDENCE			
			REFERENCE 1. Kirmse Wiss. <u>1978</u> ,	. E.M.	aed. Inst. k	Coethen.
					×	

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COMPONENTS :	ORIGINAL MEASUREMENTS:			
(1) Europium fluoride; EuF ₃ ;	Kirmse, E.M.			
[13765-25-8]	Wiss, Hefte, Paed. Inst. Koethen			
(2) Dimethylsulfoxide; C ₂ H ₆ OS;	<u>1978</u> , 2, 85-90.			
[67-68-5]				
VARIABLES:	PREPARED BY:			
Room Temperature	T. Mioduski			
EXPERIMENTAL VALUES:				
$m_{1} = 1.1111$ of E.E. in (CU.). So on mean to	monotive was alway as			
The solubility of EuF_3 in $(CH_3)_2SO$ at room te	mperature was given as			
0.03 ma	ss %			
m				
The corresponding molality calculated by the				
1.4×10^{-3}	mol kg ⁻¹			
The solid phase was dried in a desiccator over P_4O_{10} and the Eu:F ratio found to be				
almost 1:3.				
	·			
AUXILIARY INFORMATION				
METHOD/APPARATUS/PROCEDURE: Isothermal method. About 100 mg of EuF3 was	SOURCE AND PURITY OF MATERIALS: Eu ₂ 0 ₃ (source and purity not specified) was			
added to 10-20 cm ³ of solvent, and the mix-	dissolved in HCl and the fluoride precipi-			
ture mechanically agitated at room temperature	tated by addition of aq HF. The solid pro-			
for 100 h. 5-10 g of saturated solution were	duced was EuF3.0.5H20 and was dehydrated by			
removed by decanting or by centrifuging, and the solution evaporated to dryness. The	washing with acetone followed by drying at 310°C for 120 hours.			
residue was heated with about 10 cm ³ of 10%				
KOH solution for 1-2 h to obtain solid	The solvent was dried and purified by "standard methods."			
Eu(OH) ₃ and a basic F ⁻ solution. The preci- pitate was washed, dissolved in aq HCl, and	stanuaru metnous.			
Eu determined several times by complexometric				
titration with potentiometric end-point de-				
tection (1). The fluoride content in the filtrate was determined photometrically using	ESTIMATED ERROR:			
Al-Eriochrome cyanine color lake indicator (2).	Soly: results with relative errors exceed- ing 50% were rejected.			
	Temp: unknown.			
The reported solubility is a mean of "numerous parallel determinations," or "at	REFERENCES:			
least two parallel determinations."	1. Schilbach, U.; Kirmse, E.M. Z. Chem.			
	<u>1974,</u> 14, 484.			

 Schilbach, U.; Hetze, I.; Kirmse, E.M. Chemia Analityczna <u>1975</u>, 20, 33.

232 Europium	Fluoride				
COMPONENTS:	ORIGINAL MEASUREMENTS:				
 Europium fluoride; EuF₃; [13765-25-8] 	Kirmse, E.M.				
(2) Pyridine; C ₆ H ₅ N; [110-86-1]	Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85-90.				
VARIABLES:	DEEDADED DV.				
VARIABLES.	PREPARED BY:				
Room Temperature	T. Mioduski				
EXPERIMENTAL VALUES:					
The solubility of EuF ₃ in pyridine at room te	mperature was reported to be				
0.15	mass %				
The corresponding molality calculated by the	compiler is				
7.2 x 1	$0^{-3} \text{ mol } \text{kg}^{-1}$				
The solid phase was dried in a desiccator over P_4O_{11} and the Eu:F ratio found to equal					
almost 1:3.	4 11				
AUXILIARY INFORMATION					
METHOD /APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:				
Isothermal method. About 100 mg of EuF_3 was added to 10-20 cm ³ of solvent, and the mix-	Eu ₂ 0 ₃ (source and purity not specified) was dissolved in HCl and the fluoride precipi-				
ture mechanically agitated at room temperatur	tated by addition of aq HF. The solid pro-				
for 100 h. 5-10 g of saturated solution	duced was EuF ₃ .0.5H ₂ 0 and was dehydrated by washing with acetone followed by drying				
were removed by decanting or by centrifuging, and the solution evaporated to dryness. The	at 310°C for 120 hours.				
residue was heated with about 10 cm ³ of 10% KOH solution for 1-2 h to obtain solid	The solvent was dried and purified by				
Eu(OH) ₃ and a basic F ⁻ solution. The pre- cipitate was washed, dissolved in aq HCl,	"standard methods."				
and Eu determined several times by complexo- metric titration with potentiometric end-					
point detection (1). The fluoride content in	ESTIMATED ERROR:				
the filtrate was determined photometrically using Al-Eriochrome cyanine color lake indicator (2).	Soly: results with relative errors exceed- ing 50% were rejected.				
	Temp: unknown.				
The reported solubility is a mean of "numerous parallel determinations," or "at	REFERENCES:				
least two parallel determinations."	 Schilbach, U.; Kirmse, E.M. Chem. <u>1974</u>, 14, 484. 				
	 Schilbach, U.; Hetze, I.; Kirmse, E.M. Chemia Analityczna <u>1975</u>, 20, 33. 				
COMPONENTS: (1) Europium chlorid [10025-76-0] (2) Alcohols VARIABLES:	e; EuCl3;		Kirms Tr. I <u>1971</u> , PREPARI	200-6. ED BY:	5. po Teor. Rastvorov
--	---	-----------	--	--	--
T/K - 298			T. M1	oduski and N	1. Salomon
EXPERIMENTAL VALUES:			<u> </u>		
				EuCl ₃ s	solubility ^a
solvent				mass %	mole kg ⁻¹
2-methoxyethanol;	с ₃ н ₈ 0 ₂ ;	[109-86-	4]	4.4	0.18 ^b
2-ethoxyethanol;	C ₄ H ₁₀ O ₂ ;	[110-80-	5]	20.8	1.02 ^c
1-propano1;	с ₃ н ₈ 0;	[71-23-8]	33.5	1.95 ^d
^a Molalities calculated ^b Solid phase is EuCl ₃ .		llers.			
^C Solid phase is EuCl ₃ . ^d Solid phase is EuCl ₃ .					
		AUXILIARY	INFORMA	TION	
METHOD/APPARATUS/PROCEI Experimental details r probably similar to pr author which are compi volume.	ot given, but evious works	of the	Nothin work h probah and Ca	ng specified by the autho oly prepared arter (1).	OF MATERIALS: , , but based on previous r, the anhydrous salt was by the method of Taylor
			1	TED ERROR: ng specified	
			REFERE 1. Tay J.	lor, M.D.;	Carter, C.P. . Chem. <u>1962</u> , 24, 387.

COMPONENTS: (1) Europium chloride; EuCl ₃ ; [10025-76-0]				ORIGINAL MEASUREMENTS: Sakharova, N.N.; Sakharova, Yu.G.; Ezhova, T.A.; Izmailova, A.A.				
(2) Ethan	ol; C ₂ H ₆ O; [6	4-17-5]		Zh. Neorg. Khim. <u>1975</u> , 20, 1479-83; Russ. J. Inorg. Chem. (Engl. Transl.) <u>1975</u> , 20,				
(3) Water	; H ₂ O; [7732-	18-5]		830-2.				
VARIABLES:				PREPAREI	BY:			
Temperatur	e			T. Miod	luski and M.	Salomon	1	
EXPERIMENTA	L VALUES:							
	solubility o	f EuCl ₃ .6H ₂ 0 in	n 96.8	% с ₂ н ₅ он	l ^a			
	sample 1	sample 2	samp	le 3	sample 4	mean solub	1	
t/°C	g/100 g ^b	g/100 g	g/10) g	g/100 g	g/100 g	mol kg ^{-lc}	
20	29.23	29.18	29.20	0	29.30	29.23	1.127	
30	29.39	29.32	29.2	2	29.17	29.27	1.129	
40	29.47	29.58	29.8	6	29.94	29.71	1.154	
50	30.95	31.13	30.9	9	31.16	31.05	1.229	
60	33.33	33.14	32.8	7	32.70	33.01	1.345	
^a It is not	clearly state	d whether the	mixtur	e is 96.	8 mass % of 9	6.8 volume %	ethanol.	
^b Solubilit	ies reported a	s grams of hex	ahydra	te in 10) g of solven	t.		
c. Molalitie	s calculated b	y the compiler	з.					
		AUXI	LIARY	INFORMAT	ION			
Isothermal	RATUS/PROCEDUR method used.	Equilibrium w	ras	EuCla.6	AND PURITY OF H ₂ 0 prepd by	dissolving c.	p. grade	
reached af	ter 3-4 h. Id	lentical result uilibrium from	s ob-	crystn.	The crystal	s were dried	in a desic-	
and below.	Two of the d	lata points in r 3 h of equil	the	cator o	ver CaCl ₂ , P ₂	0 ₅ and NaOH. al by titrn w	The crystals	
tion, and	the remaining	two data point of equilibrati	s	Found (%) for Eu: 41	Volhard meth	alcd 41.48).	
1		h aliquot take	_	96.8% e	thanol prepd	.27, 22.10 (c by prolonged	boiling of	
analysis w titration	vas determined with Trilon B.	by complexomet	ric	followe	d by distn.	anol with and Ethanol concr and pycnometri	n determined	
40°C and 6 the hexaby	50°C showed the drate: i.e. et	vithdrawn at 20 solid phase t thanol was not	o be	Soly: r	ED ERROR: esults appare 0.8% (compil	ently precise .ers).	to within	
	the solid phas		790	Temp: n	othing specif	ied.		
The hexahy	drate melted a	at 151.2 - 151.	/ U.	REFEREN	CES:			
1								

COMPON	VENTS:	ORIGINAL MEASUREMENTS:
(1)	Europium chloride; EuCl ₃ ; [10025-76-0]	Kirmse, E.M.; Zwietasch, K.J.
(2)	1,2-Diethoxyethane; C ₆ H ₁₄ 0 ₂ ; [629-14-1]	Z. Chem. <u>1967</u> , 7, 281.
VARIA	BLES:	PREPARED BY:
T/K	≈ 298	T. Mioduski
	IMENTAL VALUES: solubility of EuCl3 in 1,2-diethoxyetha	ne at 25°C was reported to be

0.25 mass %

The corresponding molality calculated by the compiler is

 $0.0097 \text{ mol } \text{kg}^{-1}$

The composition of the solid phase was given in terms of the Eu:Cl:ether ratio as

1:2.91:1.10

AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method used. The anhydrous mixtures were equilibrated at 25°C for several days with frequent shaking. The solid phase was dried in a vacuum desiccator over P ₂ 0 ₅ . Eu was determined by complexometric titra- tion using Xylenol Orange indicator. Chloride was determined by the Volhard titration method.	SOURCE AND PURITY OF MATERIALS: Sources and purities of materials not given The anhydrous chloride was obtained by the method of Taylor and Carter (1). The solvent was prepared by the Williamson synthesis: i.e. by reaction of C2H5I with the monoethylether of ethylene glycol.
	ESTIMATED ERROR: No estimates possible. REFERENCES: 1. Taylor, M.D.; Carter, C.P. J. Inong. Nucl. Chem. <u>1962</u> , 24, 387.

230	Europium	Chioride				
COMPONENTS:	·······	ORIGINAL MEASU	UREMENTS:	<u> </u>		
<pre>(1) Europium chloride; EuCl₃ [10025-76-0]</pre>	;	Kirmse, E.M.; Dressler, H.				
(2) Alkyl ethers		Z. Chem. <u>1975</u> , 15, 239-40.				
VARIABLES:		PREPARED BY:		1		
Room Temperature: (293-298 K)	T. Mioduski a	and M. Salomo	on		
EXPERIMENTAL VALUES:		1		a		
•			solubi ~	_		
solvent			mass %			
1-methoxypentane;	C ₆ H ₁₄ 0;	[628-80-8]		0.016		
1-methoxyheptane;	C ₈ H ₁₈ 0;			0.019		
1-methoxyoctane;	с ₉ н ₂₀ 0;			0.0050		
1-methoxynonane;	C ₁₀ H ₂₂ O;	[7289 - 51-2]	0.5	0.019		
1-methoxydecane;	C ₁₁ H ₂₄ 0;	[7289-52-3]	1.1	0.043		
	AUXILIARY	INFORMATION				
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures we ly agitated (at room temperatu equilibrium was attained. The reagents were handled in a dry ing P_4O_{10} . Eu was determined metric titration using Xyleno indicator.	ure) until e anhydrous y box contain- by complexo- l Orange	SOURCE AND PU Nothing spec		RIALS:		
The reported solubilities are based on four determinations.	mean values					
		ESTIMATED ERR Nothing spec				
		REFERENCES :				

		ODTOTIVAL IMAG					
COMPONENTS: (1) Europium chloride; EuCl ₃ ;		ORIGINAL MEASU		K.J.; Tirschmann,			
[10025-76-0]		J.; Oelsner; Z. Chem. <u>196</u>	L.; Niederge				
(2) Ethers							
			Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov. <u>1971</u> , 200-6.				
VARIABLES:		PREPARED BY:					
Room Temperature: T/K around	298	T. Mioduski	and M. Salom	on			
EXPERIMENTAL VALUES:							
			solub	ility ^{a,b}			
solvent			mass %	mol kg ⁻¹			
1-ethoxy-2-methoxyethane;	C ₅ H ₁₂ O ₂ ;	[5137-45-1]	0.6	0.023			
1,3-dioxolane;	с _{3^н6} 0 ₂ ;	[646-06-0]	3.5	0.14			
1,4-dioxane;	c ₄ H ₈ 0 ₂ ;	[123-91-1]	0.07	0.0027			
^a Molalities calculated by the	compilers.						
^b Nature of the solid phases no							
Mature of the solid phases no	c specified.						
				[
<u></u>		TNEORMARTON	·				
	AUXILIARY	INFORMATION					
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PUR					
The solute-solvent mixtures we mally agitated at 25°C or at r		The anhydrous method of Tay	salt was pre lor and Carte	epared by the er (1).			
ture. Authors state that the	difference						
found for the solubility was w experimental error limits.	ltnin	No other info	rmation given	1.			
Eu was determined by complexom titration.	etric						
No other details given.							
4							
		ESTIMATED ERRO	R:				
		Nothing specif	fied.				
		ł					
		REFERENCES:					
		1. Taylor, M.	D.; Carter,	C.P.			
		J. Inorg.	Nuce. Chem.	<u>1962</u> , 24, 387.			
		1					

COMPONENTS:	ORIGINAL MEASUREMENTS:			
 Europium chloride; EuCl3; [10025-76-0] 	Korovin, S.S.; Galaktionova, O.V.; Lebedeva, E.N.; Voronskaya, G.N.			
(2) Tributy1phosphate; C ₁₂ H ₂₇ 04P; [126-73-8]	Zh. Neorg. Khim. <u>1975</u> , 20, 908–14; Russ. J. Inorg. Chem. (Engl. Transl.) <u>1975</u> , 20, 508–11.			
VARIABLES:	PREPARED BY:			
T/K = 298	T. Mioduski and M. Salomon			
EXPERIMENTAL VALUES:				
	urated solutions ^{a,b}			
mass % mol/kg sln ^c g dm ^{-3c}	mol dm ^{-3c} mol kg ⁻¹ density/g cm ^{-3c}			
35.2 1.35 455	1.76 2.10 1.30			
^a Solid phase is EuCl ₃ .				
^b Molality calculated by the compilers from the	e experimental solubility of 35.2 mass %.			
^C It is implied that these data also correspondent molality calculated from these data is 2.08 m	d to the saturated solution. However the			
motality calculated from these data is 2.00 f				
	2			
AUXILIARY	INFORMATION			
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:			
Saturated solutions prepared isothermally with magnetic stirring. Equilibrium was attained after 25-30 d. The solution was centrifuged and an aliquot for analysis taken and added to methanol and precipitated with	Anhydrous EuCl ₃ prepared by chlorination of Eu_2O_3 with CCl ₄ vapor (1,2). Source and purity of materials not given. Eu was analyzed gravimetrically, and Cl by Volhard's method.			
aq NH ₃ . The pptd Eu(OH)3 was washed repeatedly and heated to the oxide for gravimetric analysis. The solid phase was analyzed (no details given) for phosphorous, and only the anhydrous EuCl ₃ was found.	Tributylphosphate (TBP) was purified "by the standard method." No additional details given.			
All operations were performed in a dry box through which a stream of argon was passed.	ESTIMATED ERROR:			
The major objective of this work was to establish the nature of complexation between TBP and EuCl ₃ in solution.	No estimates possible.			
	REFERENCES: 1. Korshunov, B.G.; Drobot, D.V.; Bukhtiyarov, V.V.; Shevtsova, Z.N. Zh. Neorg. Khim. <u>1964</u> , 9, 1427.			
	 Novikov, G.I.; Tolmacheva, V.D. Zh. Prikl. Khim. <u>1965</u>, 38, 1160. 			
	. 1			

	EL	uropium	Chioride	3		239
COMPONENTS :				MEASUREMENTS	5:	
<pre>(1) Europium chloride [10025-76-0]</pre>	; EuCl ₃ ;		Tr. II Vses. Konf. po Teor. Rastvorov			
(2) Amines			<u>1971</u> ,	200-6.	po 1001. Kasivorov	
VARIABLES:			PREPARED BY:			
T/K = 298		T. Mioduski and M. Salomon				
EXPERIMENTAL VALUES:					_	
					bility ^a	
solvent				mass %	mol kg ⁻¹	
	iso-C ₃ H ₉ N;			11.6	0.508	
2-propen-1-amine ^b ;	57		11-9]	6.0	0.247	
l-butanamine;	C ₄ H ₁₁ N;	[109-	73-9]	25.5	1.325	
^a Molalities calculated	by the compil	075				
^b The original paper si						
	AU	XILIARY	INFORMAT	ION		
METHOD/APPARATUS/PROCEDU	RE:		SOURCE A	ND PURITY OF	MATERIALS:	
Experimental details no probably similar to pre author which are compi- volume.	evious works of	f the	work b was pr	y the author	but based on previor the anhydrous salt red by the method of (1).	
Nature of solid phases	not specified.	•				
			ESTIMAT	ED ERROR:		
			ł	g specified.		
			}			
				lor, M.D.; Ca	arter, C.P. Chem. <u>1962</u> , 24, 387.	
			ļ			

ORIGINAL MEASUREMENTS: COMPONENTS: Mikheev, N.B.; Kamenskaya, A.N.; (1) Europium chloride; EuCl₃; [10025-76-0] Konovalova, N.A.; Zhilina, T.A. (2) Hexamethylphosphorotriamide; C₆H₁₈N₃OP; [680-31-9] Zh. Neorg. Khim. 1977, 22, 1761-6; Russ. J. Inorg. Chem. (Engl. Transl.) 1977, 22, 955-8. VARIABLES: PREPARED BY: Room temperature: $T/K = 298 \pm 3$ T. Mioduski EXPERIMENTAL VALUES: Starting with the solvate EuCl₃.3((CH₃),N),PO, the solubility at $25 \pm 3^{\circ}C^{a}$ was given as $0.121 \pm 0.001 \text{ mol } dm^{-3}$ $^{
m a}$ Table 3 in the English translation of the source paper states the temperature to be $23 \pm 3^{\circ}$ C. This is probably a typographical error as the text clearly states that all measurements were carried out at $25 \pm 3^{\circ}$ C. . . AUXILIARY INFORMATION METHOD/APPARATUS/PROCEDURE: SOURCE AND PURITY OF MATERIALS: EuCl₃.3C₆H₁₈N₃OP prepd by dissolving the Isothermal method used. Salt and solvent hydrate in $C_3H_{18}N_3OP$ and heating to 140-145° C for 5 m. The solvate was pptd by addition were placed in a test-tube in a dry box, and the tube agitated at room temperature (25 \pm of abs ether, washed 7 times with ether, and 3°C) until equilibrium was reached. Alidried over P205 in a stream of dry nitrogen. quots were withdrawn periodically and analyzed for the metal content. Rare earth Yield was about 90%. concentration was determined by complexomet-The solvent was purified as described in ric titration, and by the radiometric method using the isotope Tm-170 ($t_1 = 169$ d). Authors state that results for² both methods (1). agreed. Although not clearly stated, it appears that equilibrium was reached in several weeks to several months. ESTIMATED ERROR: Soly: precision \pm 0.001 mol dm⁻³ at a 95% Solid phase samples washed three times with level of confidence (authors). benzene or ether and dried on a steam bath in an argon atmosphere. The solid phase was Temp: precision \pm 3K. analyzed and found to be EuCl₃.3C₆H₁₈N₃OP. The solvate was analyzed for metal content **REFERENCES:** 1. Fomicheva, M.G.; Kessler, Yu.M.; by Volhard method, and the solvent was obtained by difference. IR spectra confirmed the absence of water. Structural studies of Zabusova, S.E.; Alpatova, N.M. Elektrokhimiya 1975, 11, 163. the solvate also carried out by X-ray analysis.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Europium chloride; EuCl ₃ ; [10025-76-0]	Lyubimov, E.I.; Batyaev, I.M.
<pre>(2) Tetrachlorostannate; SnCl₄; [7646-78-8]</pre>	Zh. Prikl. Khim. <u>1972</u> , 45, 1176–8.
(3) Phosphorus oxychloride; POCl ₃ ; [10025-87-3]	
VARIABLES:	PREPARED BY:
SnCl ₄ concentration	T. Mioduski
T/K = 293	1. MIOUISKI
EXPERIMENTAL VALUES:	
SnCl ₄ :POCl ₃ ratio SnCl ₄ concen	tration solubility of Eu ₂ 03 ^a
(by volume) mol dm ⁻³	moles Eu dm ⁻³
.0 0	0.005
1:250 0.035	0.11
1:100 0.085	0.22
1:50 0.17 1:25 0.33	0.28 0.25
	0.048
1:15 0.59 1:10 0.78	0.11
^a This is also the solubility of EuCl ₃ since the chloride according to	the oxide is quantitatively converted to
$Eu_2O_2 + 6POCl_3$	$= 2EuCl_3 + 3P_2O_3Cl_4$
Assuming P ₂ 0 ₃ Cl ₄ to be soluble, the equilib four component mixture.	rated solutions would then constitute a
AUXILIARY	INFORMATION
MERIOD ADDADATIS / EDOCEDUDE -	COURCE AND DUDITY OF WATERTALS.
METHOD/APPARATUS/FROCEDURE: Isothermal method used. POCl ₃ + SnCl ₄ solutions were prepared by volume in a dry box. The SnCl ₄ content was verified by chemical analysis for Sn. This solution and Eu ₂ O ₃ were placed in sealed ampoules and rotated in an air thermostat at 20°C for 2-200 hours. Without preheating, equili- brium was established after 200 hours. Preheating to 120°C lowered the equilibra- tion time at 20°C to 2 hours.	SOURCE AND PURITY OF MATERIALS: Eu ₂ O ₃ of "the first sort" was ignited at 950°C for 2 hours. "Pure" grade SnCl ₄ and POCl ₃ were dehy- drated with P ₂ O ₅ and distilled under vacuum.
Eu was determined by the oxalate method. The reported solubilities are mean values	ESTIMATED ERROR:
<pre>based on 3-5 parallel determinations. The solubility of EuCl₃ in pure POCl₃ is small, but in the presence of SnCl₄ the solubility increases due to complexation: 2EuCl₃ + 3SnCl₄ = Eu₂(SnCl₆)₃</pre>	Soly: authors state the "coefficient of variance" to be less than 7%. Temp: precision presumably ± 0.2K (compiler). REFERENCES:

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Europium (II) B

COMPONENTS:		1	EASUREMENTS	•	· · ·
<pre>(1) Europium (II) bromide; EuBr₂ [13780-48-8]</pre>	; • • •	Kirmse, E	.M.; Dressl	er, H.	- 014
(2) Alkyl ethers		Z. Chem. :	<u>1975</u> , 15, 2	39-40.	0
				e ta ser ana ana	
	ı				-
VARIABLES:	e 1.4 - 1.6	PREPARED B	Y:		1
Room Temperature (293-298 K)		T. Miodusl	ki and M. S	alomon	1
		l			
EXPERIMENTAL VALUES:	· · · ·	1			
· · · · ·	ı	1		lubility ^a	
solvent			mass %	U	11.1
1-methoxybutane; $C_5H_{12}^{0}$;				0.0048	,
1-methoxypentane; $C_6^{H}_{14}^{0};$		-80-8]		0.029	
1-methoxyheptane; $C_8^{\rm H}{}_{18}^{\rm O};$		-32-3]	1.5	0.049	I.
1-methoxyoctane; $C_9^{H}_{20}^{0}$;	[929-	-56-6]	1.4	0.046	
1-methoxynonane; $C_{10}^{H}_{22}^{0};$	[728	9-51-2]	0.04	0.0013	
1-methoxydecane; $C_{11}H_{24}0;$	[728	9-52-3]	0.7	0.023	
^a Molalities calculated by the comp specified.			or the sorr		
			of the soli		
specified.		INFORMATION			-
	AUXILIARY isother- re) until hydrous k contain- complexo- ange indi-	INFORMATION SOURCE AND Nothing sp	PURITY OF pecified.	MATERIALS;	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were mally agitated (at room temperature equilibrium was attained. The and reagents were handled in a dry boo ing P4010. Eu was determined by on metric titration using Xylenol Orac cator.	AUXILIARY isother- re) until hydrous k contain- complexo- ange indi-	INFORMATION SOURCE AND Nothing sp	PURITY OF pecified.	MATERIALS:	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were mally agitated (at room temperature equilibrium was attained. The and reagents were handled in a dry boo ing P4010. Eu was determined by on metric titration using Xylenol Orac cator.	AUXILIARY isother- re) until hydrous k contain- complexo- ange indi-	INFORMATION SOURCE AND Nothing sp	PURITY OF pecified.	MATERIALS ;	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were mally agitated (at room temperature equilibrium was attained. The and reagents were handled in a dry boo ing P4010. Eu was determined by on metric titration using Xylenol Orac cator.	AUXILIARY isother- re) until hydrous x contain- complexo- ange indi- n values	INFORMATION SOURCE AND Nothing sp	PURITY OF Decified.	MATERIALS:	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were mally agitated (at room temperature equilibrium was attained. The and reagents were handled in a dry boo ing P4010. Eu was determined by on metric titration using Xylenol Orac cator.	AUXILIARY isother- re) until hydrous k contain- complexo- ange indi-	INFORMATION SOURCE AND Nothing sp	PURITY OF pecified.	MATERIALS :	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were mally agitated (at room temperature equilibrium was attained. The and reagents were handled in a dry boo ing P4010. Eu was determined by on metric titration using Xylenol Orac cator.	AUXILIARY isother- re) until hydrous x contain- complexo- ange indi- n values	INFORMATION SOURCE AND Nothing sp ESTIMATED Nothing sp REFERENCES	PURITY OF pecified. ERROR: pecified.	MATERIALS :	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were mally agitated (at room temperature equilibrium was attained. The and reagents were handled in a dry boo ing P4010. Eu was determined by on metric titration using Xylenol Orac cator.	AUXILIARY isother- re) until hydrous x contain- complexo- ange indi- n values	INFORMATION SOURCE AND Nothing sp	PURITY OF pecified. ERROR: pecified.	MATERIALS :	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were mally agitated (at room temperature equilibrium was attained. The and reagents were handled in a dry boo ing P4010. Eu was determined by on metric titration using Xylenol Orac cator.	AUXILIARY isother- re) until hydrous x contain- complexo- ange indi- n values	INFORMATION SOURCE AND Nothing sp ESTIMATED Nothing sp REFERENCES	PURITY OF pecified. ERROR: pecified.	MATERIALS :	

	OPICINAL MEASUREMENTS
COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Europium bromide; EuBr₃; [13750_88_1]</pre>	Rossmanith, K.
[13759-88-1]	Monatsh. Chem. <u>1966</u> , 97, 1357-64.
(2) Tetrahydrofuran; C ₄ H ₈ 0;	100 month on and 1900, 77, 1997-04.
[109-99-9] 40	
VARIABLES:	PREPARED BY:
Room Temperature: $T/K = 294-296$	T. Mioduski
EXPERIMENTAL VALUES:	
	_
The solubility of EuBr ₃ in tetrahydrofuran a	t 21-23°C was reported to be
0.45 g per 100 ml of solution (0.0	11 ₅ mol dm ⁻ , compiler).
1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	
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	and the second
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11	······································
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method employed. The solution was equilibrated in an extractor with agita-	Sources and purities of initial materials not specified. EuBra was prepared by
tion for 60-80 hours at room temperature.	conversion of the oxide by high temperature
Europium was determined by the oxalate	reaction with an excess of NH4Br followed by heating the product in a stream of dry
method and by titration with EDTA using	nitrogen, and then in vacuum to remove
Xylenol Orange indicator. The solvent was determined by difference.	unreacted NH4Br.
	Tetrahydrofuran was distilled from LiAlH ₄ .
Anhydrous materials were handled in a dry box through which was passed a stream of	
nitrogen free of carbon dioxide.	
The solid phase is EuBr ₃ .3.5C ₄ H ₈ 0.	ESTIMATED ERROR:
- 3 40	Nothing specified.
	REFERENCES:

,

		Bronnide			
COMPONENTS :		ORIGINAL MEASU	REMENTS :		· · · ,
<pre>(1) Europium bromide; EuBr₃; [13759-88-1]</pre>	·	Kirmse, E.M. Tr. II Vses.	Kand no Te	or Rastuation	· /
(2) Alkyl amines		<u>1971</u> , 200-6.	Kong. po re	<i>.</i>	, •
			,	1	' I
VARIABLES:	· · ·	PREPARED BY:		1	1.111
T/K = 298		T. Mioduski a	nd M. Salom	on	1 1
EXPERIMENTAL VALUES:					
			solubi	lity ^a	
solvent			mass %	mol kg ⁻¹	
1-propanamine; n-C ₃ H ₉ I	N;	[107-10-8]	11.0	0.316	4
2-propanamine; iso-C ₃ H	^H 9 ^N ;	[75-31-0]	0.08	0.0020	Þ
2-butanamine; sec-C ₄ H	^H 11 ^N ;	[13952-84-6]	0.11	0.0028	,
^a Molalities calculated by the compiler	rs.				
······································					
, ,					
					•
ATTY		INFORMATION			
		SOURCE AND PUT	TTY OF MATE	DTATCA	١.
METHOD/APPARATUS/PROCEDURE: Experimental details not given, but we		Nothing speci			
probably similar to previous works of author which are compiled throughout t	the :	work by the a probably prep and Carter (1)	uthor, the a ared by the	anhydrous sal method of Ta	t was ylor
Nature of solid phases not specified.				$\frac{1}{1+1} = \frac{1}{1+1} \left(\frac{1}{1+1} + \frac{1}{1+1} \right)$	e dit. Ti dite
and the second second second second				a ta sta a sta	1
	1			and an and an	1014
a a serie a construction de la construcción de la construcción de la construcción de la construcción de la cons		ESTIMATED ERR	DR:		······
		Nothing speci	fied.		
•		REFERENCES: 1. Taylor, M.I	D.; Carter.	C.P.	
				<u>1962</u> , 24, 38	7.
	E .				

.

<pre>(1) Gadolinium fluoride; GdF₃; [13765-26-9] (2) Dimethylsulfoxide; C₂H₆OS; [67-68-5] VARIABLES: Room Temperature EXPERIMENTAL VALUES: The solubility of GdF₃ in (CH₃)₂SO at room temp 0.035 mm The corresponding molality calculated by the co 0.0016 mol The solid phase was dried in a desiccator over almost 1:3. AUXILIARY IN METHOD/APPARATUS/PROCEDURE: S</pre>	ass % ompiler is kg ⁻¹
<pre>[13765-26-9] (2) Dimethylsulfoxide; C2H60S; [67-68-5] VARIABLES: Room Temperature EXPERIMENTAL VALUES: The solubility of GdF3 in (CH3)2S0 at room temp 0.035 ma The corresponding molality calculated by the co 0.0016 mol The solid phase was dried in a desiccator over almost 1:3. AUXILIARY IN METHOD/APPARATUS/PROCEDURE:</pre>	Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85-90. REPARED BY: T. Mioduski perature was given as ass % smpiler is kg ⁻¹
<pre>(2) Dimethylsulfoxide; C₂H₆OS; [67-68-5] VARIABLES: Room Temperature EXPERIMENTAL VALUES: The solubility of GdF₃ in (CH₃)₂SO at room temp 0.03₅ m The corresponding molality calculated by the co 0.0016 mol The solid phase was dried in a desiccator over almost 1:3. AUXILIARY IN METHOD/APPARATUS/PROCEDURE:</pre>	1978, 2, 85-90. REPARED BY: F. Mioduski perature was given as ass % mpiler is kg ⁻¹
Room Temperature EXPERIMENTAL VALUES: The solubility of GdF ₃ in (CH ₃) ₂ SO at room temp 0.035 m The corresponding molality calculated by the co 0.0016 mol The solid phase was dried in a desiccator over almost 1:3. AUXILIARY IN METHOD/APPARATUS/PROCEDURE:	F. Mioduski perature was given as ass % mpiler is kg ⁻¹
EXPERIMENTAL VALUES: The solubility of GdF ₃ in (CH ₃) ₂ SO at room temp 0.03 ₅ may The corresponding molality calculated by the co 0.0016 mol The solid phase was dried in a desiccator over almost 1:3. AUXILIARY IN METHOD/APPARATUS/PROCEDURE:	perature was given as ass % ompiler is kg ⁻¹
The solubility of GdF ₃ in (CH ₃) ₂ SO at room temp 0.035 m The corresponding molality calculated by the co 0.0016 mol The solid phase was dried in a desiccator over almost 1:3. AUXILIARY IN METHOD/APPARATUS/PROCEDURE:	ass % ompiler is kg ⁻¹
0.03 ₅ ma The corresponding molality calculated by the co 0.0016 mol The solid phase was dried in a desiccator over almost 1:3. AUXILIARY IN METHOD/APPARATUS/PROCEDURE:	ass % mpiler is kg ⁻¹
The corresponding molality calculated by the co 0.0016 mol The solid phase was dried in a desiccator over almost 1:3. AUXILIARY IN METHOD/APPARATUS/PROCEDURE:	mpiler is kg ⁻¹
0.0016 mol The solid phase was dried in a desiccator over almost 1:3. AUXILIARY IN METHOD/APPARATUS/PROCEDURE:	kg ⁻¹
The solid phase was dried in a desiccator over almost 1:3. AUXILIARY IN METHOD/APPARATUS/PROCEDURE:	
AUXILIARY IN METHOD/APPARATUS/PROCEDURE:	P_4O_{10} and the Gd:F ratio found to be
AUXILIARY IN METHOD/APPARATUS/PROCEDURE:	
METHOD/APPARATUS/PROCEDURE:	
METHOD/APPARATUS/PROCEDURE:	
METHOD/APPARATUS/PROCEDURE:	IFORMATION
added to $10-20 \text{ cm}^3$ of solvent, and the mix- ture mechanically agitated at room temp for 100 h . $5-10 \text{ g}$ of saturated solution were removed by decanting or by centrifuging, w and the solution evaporated to dryness. The residue was heated with about 10 cm^3 of 10% KOH solution for $1-2 \text{ h}$ to obtain solid Gd(OH) ₃ and a basic F ⁻ solution. The preci- pitate was washed, dissolved in aq HC1, and Gd determined several times by complexo- metric titration with potentiometric end- point detection (1). The fluoride content in the filtrate was determined photo- metrically using Al-Eriochrome cyanine color lake indicator (2). The reported solubility is a mean of "numerous parallel determinations," or "at	OURCE AND PURITY OF MATERIALS: d203 (source and purity not specified) was issolved in HCl and the fluoride precipita d by addition of aq HF. The solid produce as GdF ₃ .0.5H ₂ 0 and was dehydrated by washi ith acetone followed by drying at 310°C fo 20 hours. he solvent was dried and purified by standard methods." STIMATED ERROR: oly: results with relative errors exceeding 50% were rejected. emp: nothing specified. EFFRENCES: . Schilbach, U.; Kirmse, E.M. Z. Chem.

246 Gadoliniur	n Chloride
COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Gadolinium chloride; GdCl₃; [10138-52-0]</pre>	Merbach, A.; Pitteloud, M.N.; Jaccard, P. Helv. Chim. Acta <u>1972</u> , 55, 44-52.
(2) Methanol; CH ₄ 0; [67-56-1]	Pitteloud, M.N. These. Faculte des Sciences de l'Universite de Lausanne. <u>1971</u> .
VARIABLES:	PREPARED BY:
T/K = 298.2	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	
	a
	mean solubility ^a
t/°C	mol kg ⁻¹
25	4.21
^a Initial salt was the adduct GdCl ₃ .4CH ₃ OH. yielded GdCl ₃ .4.1CH ₃ OH.	Analysis of the equilibrated solid phase
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method as in (1,2). Mixtures were equilibrated for at least 4 days. Pro- longed operations were performed in a dry box. Gadolinium determined by titration with (NH ₄) ₃ H(EDTA) using a small amount of urotropine buffer and Xylenol Orange indica- tor. Chloride was determined by potentio- metric titration with AgNO ₃ solution. Com- position of the adduct GdCl ₃ .4CH ₃ OH con- firmed by ¹ H NMR and X-ray diffraction. The reported solubility is a mean of 2-4	duct GdCl ₃ .4CH ₃ OH prepared by dissolving the hydrate in a small excess of o-methyl- formate followed by distillation and
determinations.	ESTIMATED ERROR: Soly: precision \pm 0.5% as in (1) (compilers).
	Temp: precision probably at least ± 0.05 K as in (1) (compilers).
	REFERENCES: 1. Brunisholz, F.; Quinche, J.P.; Kalo, A.M. Helv. Chim. Acta <u>1964</u> , 47, 14.
	2. Flatt, R. Chimia <u>1952</u> , 6, 62.

COMPONENTS:	EVALUATOR:
(1) Gadolinium chloride; GdCl ₃ ; [10138-52-0]	Tomasz Mioduski
(2) Ethanol; C ₂ H ₆ O; [64-17-5]	Institute of Nuclear Research Warsaw, Poland

CRITICAL EVALUATION:

The solubility of GdCl₃ in ethanol has been reported only at 298.2 K in two publications (1,2), and both publication report an identical solubility of 2.43 mol kg⁻¹. However Kirmse reported the solid phase to be the monosolvate GdCl₃·C₂H₅OH whereas Merbach et al. reported GdCl₃·4C₂H₅OH as the equilibrated solid phase.

The initial salt used by Kirmse was anhydrous $GdCl_3$ prepared by the method of Taylor and Carter (3). Merbach et al. used $GdCl_3 \cdot 3C_2H_5OH$ as the initial solvate, and which was prepared by their transsolvation method. Since Merbach et al. confirmed the composition of the equilibrated solid phase as the tetrasolvate by ¹H NMR and X-ray diffraction, and since Kirmse does not report details on analysis of the solid phase, we conclude that the tetrasolvate is probably the stable solid phase at 298.2 K.

Merbach et al. state that their result is a mean of 2-4 determinations, and a precision of \pm 0.5 % was estimated by the compilers. Although Kirmse did not report any experimental details, her reported solubility is probably the mean of at least two determinations. In consideration of the agreement in solubility and the precision estimated by the compilers, the *tentative* solubility of GdCl₃ in ethanol at 298.2 K is 2.43 mol kg⁻¹ and the accuracy is estimated to be \pm 0.04 mol kg⁻¹. The stable solid phase at 298.2 K appears to be the tetrasolvate GdCl₃·4C₂H₅OH.

REFERENCES

1. Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov 1971, 200.

(a) Merbach, A.; Pitteloud, M.N.; Jaccard, P. Helv. Chim. Acta <u>1972</u>, 55, 44.
 (b) Pitteloud, M.N. These. Faculte des Sciences de l'Universite de Lausanne. <u>1971</u>.

3. Taylor, M.D.; Carter, C.P. J. Inorg. Hucl. Chem. 1962, 24, 387.

COMPONENTS: ORIGINAL MEASUREMENTS: (1) Gadolinium chloride; GdCl ₃ ; Merbach, A.; Pitteloud, M.N.; Jacca: [10138-52-0] Helv. Chim. Acta 1972, 55, 44-52. (2) Ethanol; C ₂ H ₆ 0; [64-17-5] Pitteloud, M.N. These. Faculte des Sciences de l'Universite de Lausanne. 1971, VARIABLES: PREPARED BY: T/K = 298.2 T. Mioduski and M. Salomon	rd, P.
$[10138-52-0]$ Helv. Chim. Acta <u>1972</u> , 55, 44-52.(2) Ethanol; C_2H_60 ; [64-17-5]Pitteloud, M.N. These. Faculte des Sciences de l'Universite de Lausanne. <u>1971</u> ,VARIABLES: T/K = 298.2PREPARED BY: T. Mioduski and M. Salomon	rd, P.
VARIABLES: PREPARED BY: T/K = 298.2 T. Mioduski and M. Salomon	
T/K = 298.2 T. Mioduski and M. Salomon	
T/K = 298.2 T. Mioduski and M. Salomon	
EXPERIMENTAL VALUES:	
mean solubility ^a	
t/°C mol kg ⁻¹	
25 2.43	
^a Initial salt was the adduct GdCl ₃ .3C ₂ H ₅ OH. Analysis of the equilibrated solid p yielded GdCl ₃ .4.1C ₂ H ₅ OH.	hase
AUXILIARY INFORMATION	
Isothermal method as in (1,2). Mixtures were equilibrated for at least 4 days. Pro- longed operations were performed in a dry box. Gadolinium determined by titration Gd_2O_3 of at least 99.9% purity diss HCl to produce the hexahydrate. Th adduct $GdC1_3.3C_2H_6O$ prepared by dis the hydrate in a small excess of o-	e solving ethyl-
with (NH ₄) ₃ H(EDTA) using a small amount of formate followed by distillation an urotropine buffer and Xylenol Orange indica- crystallization from ethanol.	d
tor. Chloride was determined by potentio- metric titration with AgNO3 solution. Com- Ethanol (Fluka) was used as received	a
position of the adduct $GdCl_3.4C_2H_50$ confirm- ed by ¹ H NMR and X-ray diffraction.	
The reported solubility is a means of 2-4	
determinations. ESTIMATED ERROR:	
Soly: precision \pm 0.5% as in (1) (compilers).	
Temp: precision probably at least \pm	0.05K
as in (1) (compilers), REFERENCES:	
1. Brunisholz, F.; Quinche, J.P.; Ka Helv. Chim. Acta <u>1964</u> , 47, 14.	lo, A.M.
2. Flatt, R. Chímia <u>1952</u> , 6, 62.	

OMPONENTS:	······································		ORIGINA	L MEASUR	EMENTS:	
 Gadolinium chloride; GdCl₃; [10138-52-0] Alcohols 		Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov <u>1971</u> , 200-6.				
VARIABLES:			PREPARI	ED BY:		
т/к = 298			T. Mi	oduski a	nd M. Salom	on
XPERIMENTAL VALUES:			L			
solvent				mass %	mole kg ⁻¹	nature of the solid phase
ethanol;	с _{2^н6} 0;	[64-17-	5]	39.0	2.43	$GdC1_3$. C_2H_60
2-methoxyethanol;	с ₃ н ₈ 0 ₂ ;	[109-86-	-4]	4.0	0.16	$GdCl_3.nC_3H_8O_2$ (n = 2-3)
2-ethoxyethanol;	^{C4^H10⁰2;}	[110-80-	-5]	15.2	0.680	$GdC1_3.C_4H_{10}O_2$
2-propen-1-o1; ^b	с ₃ н ₆ 0;	[107-18-	-6]	30.0	1.63	GdC13.C3H60
^a Molalities calcula ^b The source paper r specified the solv	eports the so	lvent as Ca	н ₅ он. 1	Jpon requ	uest, the au	thor kindly
bThe source paper r	eports the so	lvent as Ca	н ₅ он. т	Jpon requ	uest, the au	thor kindly
bThe source paper r	eports the so	lvent as Ca			lest, the au	thor kindly
bThe source paper r	eports the so ent as allyl a EDURE: s not given, previous wor	lvent as C3 alcohol. AUXILIARY but were ks of the	INFORMA SOURCE Nothi work proba	AND PUR ng speci by the a	ITY OF MATEH fied, but ba uthors, the ared by the	

		-			
COMPONENTS:		MEASUREMENTS:			
<pre>(1) Gadolinium chloride; GdCl₃; [10138-52-0]</pre>	Sakharova, N.N.; Sakharova, Yu.G.; Ezhova, T.A.; Izmailova, A.A.				
(2) Ethanol; C ₂ H ₆ O; [64-17-5]	Zh. Inor J. Inorg	Zh. Inorg. Khim. <u>1975</u> , 20, 1479–83; Russ. J. Inorg. Chem. (Engl. Transl.) 1975, 20,			
(3) Water; H ₂ 0; [7732-18-5]	830-2.	830-2.			
VARIABLES:	PREPARED	BY:			
Temperature	T. Miodu	ski and M. Sal	lomon		
EXPERIMENTAL VALUES:			<u></u>	ž	
solubility of GdCl ₃ .6H ₂ 0 in 96.	8 % с ₂ н ₅ он	a			
sample 1 sample 2 sam	ple 3	sample 4	mean solubi	llities	
t/°C g/100 g ^b g/100 g g/1	.00 g	g/100 g	g/100 g	mol kg ^{-1c}	
20 30.48 30.67 30.	67	30.45	30.56	1.184	
30 29.86 29.70 29.	82	29.78	29.79	1.142	
40 29.88 29.99 29.	87	30.05	29.94	1.150	
50 30.46 30.43 30.	58	30.35	30.45	1.178	
60 31.80 31.63 31.	63	31.73	31.69	1.248	
^a It is not clearly stated whether the mixtu	ure is 96.8	mass % or 96	.8 volume % e	ethanol.	
^b Solubilities reported as grams of hexahydr	ate in 100	g of solvent			
^C Molalities calculated by the compilers.					
				[
AUXILIAR	Y INFORMAT	ION			
METHOD /APPARATUS / PROCEDURE :	SOURCE A	ND PURITY OF	ATERIALS;		
Isothermal method used. Equilibrium was reached after 3-4 h. Identical results ob- tained by approaching equilibrium from above and below. Two of the data points in the table were obtained after 3 h of equilibration, and the remaining two data points were obtained after 4 h of equilibra tion.	- oxide in crystn. cator ov analyzed B, and f Found (% Found (%	20 prepd by d dil (1:3) HC The crystals ver CaCl2, P20 l for the meta or Cl by the) for Gd: 42.) for Cl: 28. chanol prepd b	1 followed by were dried 5 5 and NaOH. 7 1 by titrn w Volhard metho 39, 42.30 (ca 69, 28.54 (ca	y evapn and in a desic- The crystals ith Trilon od. alcd 42.31). alcd 28.65).	
The metal content in each aliquot taken for analysis was determined by complexometric titration with Trilon B.	r c.p. gra followed	nde 93.5% etha i by distn. E pmetrically an	nol with anhy thanol concn	ydr CuSO4 determined	
Analyses of the solids withdrawn at 20°C, 40°C and 60°C showed the solid phase to be the hexahydrate: i.e. ethanol was not found in any of the solid phases.	Soly: re	2D ERROR: esults apparen 0.8% (compile	rs).	to within	
The hexahydrate melted at 156.8 - 157.8°C.	REFERENC	othing specifi CES:	eu.		

COMPONENTS: (1) Gadolinium chloride; GdCl ₃ ; [10138-52-0]	ORIGINAL MEASUREMENTS: Merbach, A.; Pitteloud, M.N.; Jaccard, P. Helv. Chim. Acta <u>1972</u> , 55, 44-52.
(2) 2-Propanol; C ₃ H ₈ 0; [67-63-0]	Pitteloud, M.N. These. Faculte des Sciences de
	l'Universite de Lausanne. <u>1971</u> .
VARIABLES:	PREPARED BY:
T/K = 298.2	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	
	mean solubility ^a
t/°C	mol kg ⁻¹
25	0.32
^a Initial salt was the adduct GdCl ₃ .3iso-PrO phase yielded GdCl ₃ .x-iso-PrOH where x = 3	H. Analysis of the equilibrated solid .0 - 3.1.
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method as in (1,2). Mixtures were equilibrated for at least 4 days. Pro- longed operations were performed in a dry box. Gadolinium determined by titration with (NH ₄) ₃ H(EDTA) using a small amount of urotropine buffer and Xylenol Orange indica- tor. Chloride was determined by potentio- metric titration with AgNO ₃ solution. Com-	SOURCE AND PURITY OF MATERIALS: Gd_2O_3 of at least 99.9% purity dissolved in HCl to produce the hexahydrate. The ad- duct GdCl_3.3C_3H_80 prepared by dissolving the hydrate in a small excess of o-methyl- formate followed by distillation and trans-solvation of the methanol complex with 2-propanol.
position of the adduct GdCl ₃ .3C ₃ H ₈ O confirm- ed by ¹ H NMR and X-ray diffraction. The reported solubility is a mean of 2-4	Iso-propanol (Fluka) was used as received. Purity and absence of water was confirmed by NMR.
determinations.	ESTIMATED ERROR: Soly: precision \pm 0.5% as in (1) (compilers).
	Temp: precision probably at least ± 0.05K
	REFERENCES: 1. Brunisholz, F.; Quinche, J.P.; Kalo, A.M. Helv. Chim. Acta <u>1964</u> , 47, 14.
	2. Flatt, R. Chimia <u>1952</u> , 6, 62.

COMPONENTS :	ORTGINAL MEASUBELON	······································	
<pre>(1) Gadolinium chloride; GdCl₃; [10138-52-0]</pre>	ORIGINAL MEASUREMENTS: McCarty, C.N.		
(2) 2-Methoxyethanol (methyl cellosolve); C ₃ H ₈ O ₂ ; [109-86-4]	Master of Science Thesis. University of Illinois. Urbana, IL, USA. <u>1933</u> 1.		
VARIABLES:	PREPARED BY:		
т/к = 273-323	M. Salomon and T.	Mioduski	
EXPERIMENTAL VALUES:			
	Saturated Solution	٩	
Gd ₂ 03 ^a	GdCl ₃ ^b		
	3	GdC13 ^b	
t/°C g/25 cc	g/dm ³	mol/dm ³	
0 0.6345	36.91	0.1400	
10 0.8111	47.19	0.1790	
20 1.0495 30 1.1564	61.06 67.27	0.2316	
40 1.3202	76.80	0.2552 0.2914	
50 1.4464	84.15	0.3192	
GdCl ₃ from preparations 1 and 2. ^b Recalculated by the compilers using 1977 IUF The equilibrated solid pha		ic masses.	
AUXILIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE: Isothermal method. About 75-100 cc of solvent	SOURCE AND PURITY O	F MATERIALS: was permitted to stand	
+ excess salt were placed in botttles and agitated in a thermostat for at least 12 h. Ice + water was used for the 0°C measure- ments. The bottles were fitted with ground glass stoppers and were sealed from the at- mosphere by placing gum rubber tubing over the stoppers and necks of the bottles. A rubber stopper was fitted into the upper end of the tubing. After equilibration, the slns were allowed to settle for at least 12 h, and using a calibrated 25 cc pipet, two samples were removed for analysis. The samples were evaporated to dryness and dissolved in aq HC1 and pptd as the oxalate by addn of oxalic acid. The samples were filtered, washed with dist water and ignited to constant weight as the oxide. The oxide was found to	over Ca0 for at le A middle portion (was retained and s b.p. 123°C. Gd sal ammonium nitrates purity" and conver anhydr chloride pr The oxide was diss excess HC1 evapd. drated by heating first at 100°C for 2. The rare earth the aq chloride or ate, and the benzo to 110°C for at le chloride was carri	ast 1 week and then distd. fraction not specified) tored in a stoppered flask ts prepd in 1925 as double were of "spectroscopic ted to the oxide, and the epd by two methods. 1. olved in aq HC1 and the The crystd salt was dehy- in the presence of dry HC1 several h, then at 200°C. benzoate was pptd from nitrate with sodium benzo- ate dehydrated by heating ast 24 h. Extraction of the ed out with HC1 satd ether chloride heated at 60°C	
<pre>be insoluble in the organic solvent. ESTIMATED ERROR: Soly: precision probably within 3% (compilers). Temp: precision ± 0.2 K (author).</pre>	air. The salt was over P ₂ 0 ₅ . Dry HC H ₂ SO4 followed by drying towers. REFERENCES:	of dry HCl and then in dry stored in a desiccator 1 was prepd from NaCl + passage through H ₂ SO ₄ 	

COMPONENTE		ORIGINAL MEASUREMEN	
COMPONENTS:	0.001		12:
<pre>(1) Gadolinium chloride; GdCl₃; [10138-52-0]</pre>		McCarty, C.N.	
[10138-32-0]		Master of Science	Thosis
(2) 2-Ethoryethanol (ethyl cellosolve).			Illinois. Urbana, IL,
<pre>(2) 2-Ethoxyethanol (ethyl cellosolve); C₄H₁₀O₂; [110-80-5]</pre>		USA. 1933 ¹	iiiinois. Orbana, ill,
^{4¹10⁰2, ¹¹⁰⁻⁸⁰⁻⁵}		<u>1)))</u>	
VARIABLES:		PREPARED BY:	
T/K = 273 - 323		M. Salomon and T.	Mioduski
EXPERIMENTAL VALUES:			
	Composition of Sat	urated Solutions	
	-	_	a tat b
	Gd203 ^a	GdC13 ^b	GdC13 ^b
. /80	-/25	g/dm ³	mo1/dm ³
t/°C	g/25 cc	g/dm ⁻	mol/dm ³
0	0.2282	12 20	0.0504
10	0.3714	13.28 21.61	
			0.0820
20	0.6029	35.07	0.1331
30	0.9456	55.01	0.2087
40	1.1362	66.10	0.2507
50	1.2442	72.38	0.2746
_			
^a Apparently these are aver	age values of at l	east two analyses fi	rom a given bottle.
The author did not indicat	te whether there w	ere any differences	in results using
GdCl ₃ from preparations 1	and 2.		-
5			
h.			
^b Recalculated by the compi	lers using 1977 IU	PAC recommended ator	nic masses.
The equi	librated solid pha	co not analyzed	
the equi-	ribraced solid pha	se not analyzed	
			1
	AUXILIARY	INFORMATION	
MERIOD ADDADARUS (DROCEDURE)			
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PURITY O	F MATERIALS:
Isothermal method. About 7.		commercial solvent	was permitted to stand
vent + excess salt were place			ast 1 week and then dist.
agitated in a thermostat for	-		fraction not specified)
Ice + water was used for the			tored in a stoppered flask:
The bottles were fitted with	0		ts prepd in 1925 as double
stoppers and were sealed fro	•		vere of "spectroscopic
by placing gum rubber tubing			ted to the oxide, and the
pers and necks of the bottle			epd by two methods. 1.
stopper was fitted into the			olved in aq HC1 and the ex-
tubing. After equilibration,			he crystd salt was dehy-
were allowed to settle for a	-	· · · · · · · · · · · · · · · · · · ·	In the presence of dry HCl
using a calibrated 25 cc pip			several h, then at 200°C.
were removed for analysis.			benzoate was pptd from the
evaporated to dryness and di			cate with sodium benzoate,
and pptd as the oxalate by a			hydrated by heating to
acid. The samples were filt			24 h. Extraction of the
with dist water and ignited			ed out with HCl satd ether,
weight as the oxide. The or	-		chloride heated at 60°C
be insoluble in the organic	sorvent.		of dry HCl and then in dry
ESTIMATED ERROR:			stored in a desiccator
Solve precision probably with	thin 3%		l was prepd from NaCl + bassage through H ₂ SO ₄
Soly: precision probably with (compilers)	-11211 3/0		assage chrough nysoy
(compilers).		drying towers.	
Temp: precision \pm 0.2 K (aut	thor).	REFERENCES:	
			udrieth, L.F. Trans. Elec-
		trochem. Soc. <u>19</u>	34, 66, 135.

COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Gadolinium chloride; GdCl₃; [10138-52-0]</pre>	Dzhuraev, Kh. Sh.; Mirsaidov, U.; Kurbanbekov, A.; Rakhimova, A.
(2) Diethyl ether (ethyl ether); C ₄ H ₁₀ 0; [60-29-7]	Dokl. Akad. Nauk Tadzh. SSR <u>1976</u> , 19, 32-4.
VARIABLES:	PREPARED BY:
T/K = 293	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of GdCl ₃ in diethyl ether at	20°C was reported to be
0.028	mass %
The corresponding molality calculated by the	compiler is
1.06 x	10 ⁻³ mol kg ⁻¹
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. Equilibrium was attained within 24 h and it was verified by constancy in the Gd concentration. The sat- urated solution and the equilibrated solid	SOURCE AND PURITY OF MATERIALS: Anhydrous GdCl ₃ prepared by the ethanol solvate method (no details given). Ethyl ether was dried with Na and distilled from LiAlH ₄ before use.
phase were analyzed. Gd determined by com- plexometric titration in presence of uro- tropine buffer and methyl-thymol blue indi- cator. Chloride determined by titration with AgNO3. The solid phase corresponded to GdCl ₃ .0.5Et ₂ 0 (the etherate was dried under vacuum at 40°C prior to analysis).	
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES:

COMPONENTS :	ORIGINAL MEASUREMENTS:
<pre>(1) Gadolinium chloride; GdCl₃; [10138-52-0]</pre>	Kirmse, E.M.; Zwietasch, K.J. Z. Chem. <u>1967</u> , 7, 281.
(2) 1,2-Diethyoxyethane; C ₆ H ₁₄ O ₂ ; [629-14-1]	
VARIABLES:	PREPARED BY:
T/K = 298	T. Mioduski
	l

EXPERIMENTAL VALUES:

The solubility of $GdCl_3$ in 1,2-diethoxyethane at 25°C was reported to be

0.33 mass %

The corresponding molality calculated by the compiler is

0.0126 mol kg⁻¹

The composition of the solid phase was given in terms of the Gd:Cl:ether ratio as

1:2.91:0.99

AUXILIARY INFORMATION			
ETHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:		
Isothermal method used. The anhydrous mixtures were equilibrated at 25°C for several days with frequent shaking.	Sources and purities of materials not given The anhydrous chloride was obtained by the method of Taylor and Carter (1).		
The solid phase was dried in a vacuum desiccator over $P_{2}O_{5}$.	The solvent was prepared by the Williamson synthesis: i.e. by reaction of C_2H_5I with the monoethylether of ethylene glycol.		
Gd was determined by complexometric titra- tion using Xylenol Orange indicator. Chloride was determined by the Volhard titration method.			
	ESTIMATED ERROR:		
	No estimate possible.		
	REFERENCES: 1. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.		

COMPONENTS :	ORIGINAL MEASUREMENTS:				
(1) Gadorinium chronide, Gdor3,		Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J.; Oelsner, L.; Niedergesaess, U. Z. Chem. <u>1968</u> , 8, 472-3.			
(2) Ethers		Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov. <u>1971</u> , 200-6.			
VARIABLES:		PREPARED BY:			
Room Temperature: T/K around	298	T. Mioduski a	nd M. Salomor	1	
EXPERIMENTAL VALUES:					
			GdCl ₃ soluł	oility ^{a,b}	
solvent			mass %	mol kg ⁻¹	
1-ethoxy-2-methoxyethane;	C ₅ H ₁₂ O ₂ ;	[5137-45-1]	0.55	0.021	
1-methoxypentane;	C ₆ H ₁₄ 0;	[628-80-8]	0.08	0.0030	
1,4-dioxane;		[123-91-1]	0.1	0.0038	
	481	•			
^a Molalities calculated by the	compilers.				
b					
^b Nature of solid phases not sp	ecified.				
1					
					
	AUXILIARY	INFORMATION			
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures we	ra faathar-	SOURCE AND PU			
mally agitated at 25°C or at r	coom tempera-		The anhydrous salt was prepared by the method of Taylor and Carter (1).		
ture. Authors state that the found for the solubility was w		No other dof			
mental error limits.		No other inf	ormation give	:n.	
Gd was determined by complexom tion.	etric titra-				
No other details given.					
		ESTIMATED ERR	OR:		
		Nothing spec	ified.		
		REFERENCES:		· · · · · · · · · · · · · · · · · · ·	
		1. Taylor, M.I J. Inorg.	D.; Carter, C Nucl. Chem. 1	P. . <u>962</u> , 24, 387.	
			-		

COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Gadolinium chloride; GdCl₃; [10138-52-0]</pre>	Rossmanith, K.; Auer-Welsbach, C. Monatsh. Chem. <u>1965</u> , 96, 602-5.
(2) Tetrahydrofuran; C ₄ H ₈ O; [109-99-9]	
VARIABLES:	PREPARED BY:
Room Temperature: T/K about 293	T. Mioduski
EXPERIMENTAL VALUES:	

The solubility of $GdCl_3$ in tetrahydrofuran at 20°C (room temperature) was reported to be

1.91 g per 100 ml of solution

 $(0.0725 \text{ mol } dm^{-3}, \text{ compiler}).$

AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution was equilibrated in an extractor with agita- tion for 60-80 hours at room temperature. Gadolinium was determined by the oxalate method, and by titration with EDTA using Xylenol Orange indicator. The solvent was determined by difference. Anhydrous materials were handled in a dry box through which was passed a stream of nitrogen free of carbon dioxide. The solid phase is GdCl ₃ .2.07C ₄ H ₈ O.	SOURCE AND PURITY OF MATERIALS: Sources and purities of initial materials not specified. GdCl ₃ was prepared by conversion of the oxide by high temperature reaction with an excess of NH ₄ Cl followed by heating the product in a stream of dry nitrogen, and then in vacuum to remove unreacted NH ₄ Cl. Tetrahydrofuran was distilled from LiAlH ₄ . ESTIMATED ERROR: Nothing specified.
	REFERENCES:

COMPONENTS: (1) Gadolinium chloride; GdCl ₃ ;	ORIGINAL MEASUREMENTS: Korovin. S.S.; Galaktionova, O.V.;		
[10138-52-0]	Lebedeva, E.N.; Voronskaya, G.N.		
(2) Tributylphosphate; C ₁₂ H ₂₇ O ₄ P; [126-73-8]	Zh. Neorg. Khim. <u>1975</u> , 20, 908-14; Russ. J. Inorg. Chem. (Engl. Transl.) <u>1975</u> , 20, 508-11.		
VARIABLES:	PREPARED BY:		
T/K = 298	T. Mioduski and M. Salomon		
EXPERIMENTAL VALUES:]		
	aturated solution		
mass % mol/kg sln g dm ⁻³	mol dm ⁻³ mol kg ⁻¹ density/g cm ³ (compiler)		
37.8 1.44 494.0	1.88 2.31 1.33		
The solid phase is GdCl ₃ .			
AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:		
Saturated solutions prepared isothermally with magnetic stirring. Equilibrium was attained after 25-30 d. The solution was centrifuged and an aliquot for analysis taken and added to methanol and pptd with a NH ₃ . The pptd Gd(OH) ₃ was washed repeated- ly and heated to the oxide for gravimetric analysis. The solid phase was analyzed (no details given) for phosphorous and only anhydrous GdCl ₃ was found. All operations were performed in a dry box through which a stream of argon was passed.	Anhydrous GdCl ₃ prepared by chlorination of Gd ₂ O ₃ with CCl ₄ vapor (1,2). Source and purity of materials not given. Gd was analyzed gravimetrically and Cl by Volhard's q method. Tributylphosphate (TBP) was puri- fied "by the standard method." No addition- al details given.		
The major objective of this work was to	ESTIMATED ERROR:		
establish the nature of complexation be- tween TBP and GdCl3 in solution. Additional	No estimates possible.		
IR spectra studies with unsaturated solu-			
tions are discussed in the source paper.	REFERENCES :		
	1. Korshunov, B.G.; Drobot, D.V.;		
	Bukhtiyarov, V.V.; Shevtsova, Z.N. Zh. Neorg. Khim. <u>1964</u> , 9, 1427.		
	2. Novikov, G.I.; Tolmacheva, V.D. Zh. Prikl. Khim. <u>1965</u> , 38, 1160.		

	(Gadoliniu	m Chlor	ide		25
COMPONENTS: ORIGINAL MEASUREMENTS:						
<pre>(1) Gadolinium chloride; GdCl₃; [10138-52-0]</pre>			Kirms	e, E.M.		
(2) Alkyl amines			Tr. II <u>1971</u> ,	I Vses. Konf. 200-6.	po Teor. Rastvorov	
VARIABLES:			PREPARI	ED BY:		
T/K = 298			T. Mioduski and M. Salomon			
EXPERIMENTAL VALUES:			<u>,</u>			-
				GdCl ₂ s	olubility ^a	
solvent				mass %	mol kg ⁻¹	
1-propanamine;	C ₃ H ₉ N;	[107-10	-81	32.4	1.82	
2-propanamine;	2.3	- [75-31-		21.0	1.01	
2-propen-1-amine; ^b	5,5				0.649	
	⁰ 3 ^{<i>n</i>} 7 ^{<i>n</i>} , ^{n-C} 4 ^H 11 ^N ;			23.0	1.13	
2-butanamine;	$sec-C_4^{H}_{11}^{N};$	[13932-	04-0]	18.7	0.873	
author kindly ident						
AUXILIARY INFORMATION						
METHOD/APPARATUS/PROCEDURE:			SOURCE	AND PURITY OF	F MATERIALS:	_
Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume.		work proba	by the author	but based on previous the anhydrous salt was by the method of Taylor		
Nature of solid phas	es not specifie	ed.	1			
			ESTIMA	TED ERROR:		
			ng specified.			
				J		

REFERENCES:

 Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u>, 24, 387.

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COMPONENTS :	ORIGINAL MEASUREMENTS:			
<pre>(1) Gadolinium chloride; GdCl₃; [10138-52-0]</pre>	Mikheev, N.B.; Kamenskaya, A.N.; Konovalova, N.A.; Zhilina, T.A.			
(2) Hexamethylphosphorotriamide; C ₆ H ₁₈ N ₃ OP; [680-31-9]	Zh. Neorg. Khim. <u>1977</u> , 22, 1761-6; Russ. J. Inorg. Chem. (Engl. Transl.) <u>1977</u> , 22, 955-8.			
VARIABLES:	PREPARED BY:			
Room temperature: $T/K = 298 \pm 3$	T. Mioduski			
EXPERIMENTAL VALUES:				
Starting with the solvate $GdCl_3.3((CH_3)_2N)_3PO$, the solubility at 25 ± 3°C ^a was given as 0.125 ± 0.002 mol dm ⁻³ .				
^a Table 3 in the English translation of the s 23 \pm 3°C. This is probably a typographical measurements were carried out at room tempe	error as the text clearly states that all			
AUXILIARY	INFORMATION			
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Salt and solvent were placed in a test-tube in a dry box, and the tube agitated at room temperature $(25 \pm$ 3°C) until equilibrium was reached. Aliquots were withdrawn periodically and analyzed for the metal content. Rare earth concentration was determined by complexometric titration, and by the radiometric method using the isotope Tm-170 (t ₁ = 169 d). Authors state that results for both methods agreed. Although not clearly stated, it appears that equilibrium was reached in several weeks to	SOURCE AND PURITY OF MATERIALS: $GdC1_3.3C_6H_{18}N_3OP$ prepd by dissolving the hydrate in $C_3H_{18}N_3OP$ and heating to 140-150° C for 5 m. The solvate was pptd by addi- tion of abs ether, washed 7 times with ether, and dried over P_2O_5 in a stream of dry nitrogen. Yield was about 90%. The solvent was purified as described in (1).			
several months. Solid phase samples washed three times with benzene or ether and dried on a steam bath in an argon atmosphere. The solid phase was analyzed and found to be GdCl ₃ .3C ₆ H ₁₈ N ₃ OP.	ESTIMATED ERROR: Soly: precision \pm 0.002 mol dm ⁻³ at a 95% level of confidence (authors). Temp: precision \pm 3K.			
The solvate was analyzed for metal content by complexometric titrn, for chloride by the Volhard method, and the solvent was obtained by difference. IR spectra confirmed the absence of water. Structural studies of the solvate also carried out by X-ray analysis.	REFERENCES: 1. Fomicheva, M.G.; Kessler, Yu.M.; Zabusova, S.E.; Alpatova, N.M. Elektrokhimiya <u>1975</u> , 11, 163.			

COMPONENTS :		ORIGINAL MEASUREMENTS:
(1) Gadolinium chloride; GdCl	3;	
[10138-52-0]	-	Lyubimov, E.I.; Batyaev, I.M.
(2) Tetrachlorostannate; SnCl [7646-78-8]	4;	Zh. Prikl. Khim. <u>1972</u> , 45, 1176–8.
(3) Phosphorus oxychloride; F [10025-87-3]	90013;	
VARIABLES:		PREPARED BY:
T/K = 293		T. Mioduski
Concentration of SnCl4		
EXPERIMENTAL VALUES:		· · · · · · · · · · · · · · · · · · ·
SnC14POC13 ratio	SnCl ₄ concentr	
(by volume)	mol dm ⁻³	moles Gd dm^{-3}
0	0	0.015
1:250	0.035	0.11
1:100	0.085	0.27
1:50	0.17	0.29 (0.16)
1:25	0.33	0.079
1:15	0.59	0.042
1:10	0.78	0.11
^a Solutions preheated to 220°C.	. Value in pare	enthesis corresponds to preheating at 120°C.
^b This is also the solubility of quantitatively converted to a	of GdCl ₃ in the the chloride acc	SnCl ₄ -POCl ₃ mixture because the oxide is cording to
Gd ₂ (0 ₃ + 6P0C1 ₃ =	$= 2GdCl_3 + 3P_2O_3Cl_4$
		the considered to be a four component
Thus the equilibrated solution system containing SnCl4, GdC soluble).	ons should actua 13, P ₂ 03Cl ₄ and	ally be considered to be a four component $POCl_3$ (the compiler assumes $P20_3Cl_4$ is
Authors state that the solubit	lity of GdCl ₃ is	s enhanced by complex formation according
$2GdCl_3 + 3SnCl_4 = Gd_2(SnCl_6)_3$		
	AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:
Isothermal method used. POC1 solutions were prepared by vo	lume in a dry	Gd_2O_3 of "the first sort" was ignited at 950°C for 2 hours.
box. The SnCl ₄ content was v chemical analysis for Sn. Th	erified Dy is solution and	"Pure" grade SnCl4 and POCl3 were dehy-
Gd203 were placed in sealed a	mpoules,	drated with P205 and distilled under
heated to 20-250°C to increas	e the rate of	vacuum.
solution, and then rotated in	an air ther-	
mostat at 20°C for 2-200 hour	s. Without	
preheating, equilibrium was e	stablished	
after 200 hours. Preheating	to 120°C	
lowered the equilibration tim	e at 20°C to	
2 hours.		
Gd was determined by colorime	tric analysis,	ESTIMATED ERROR: Soly: authors state the "coefficient of
and in some cases by the oxal	ate method.	variance" to be less than 7%.
The reported solubilities are	mean values	
based on 3-5 parallel determi	nations.	Temp: precision presumably \pm 0.2K (compiler).
1		REFERENCES :
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COMPONENTS :	ORIGINAL MEASUREMENTS:
<pre>(1) Gadolinium bromide; GdBr₃; [13818-75-2]</pre>	Kirmse, E.M.
(2) 1,2-Diethoxyethane; C ₆ H ₁₄ 0 ₂ ; [629-14-1]	Tr. II Vses. Konf. po Teor. Rastvorov <u>1971</u> , 200-6.
VARIABLES:	PREPARED BY:
T/K = 298	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of GdBr ₃ in 1,2-diethoxyethan	e at 25°C was reported as
0.9	nass %.
The corresponding molality calculated by the	compiler is
0.023 mo	1 kg ⁻¹
The nature of the solid phase was not specif	ied.
	INFORMATION
METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this	SOURCE AND PURITY OF MATERIALS: Nothing specified, but based on previous work by the author the anhydrous salt was probably prepared by the method of Taylor
volume.	and Carter (1).
Nature of solid phase not specified.	
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES: 1. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.

COMPONENTS: (1) Gadolinium bromide; GdBr ₃ ; [13818-75-2] (2) Tetrahydrofuran; C ₄ H ₈ O; [109-99-9] VARIABLES: Room Temperature: T/K = 294-296 EXPERIMENTAL VALUES: The solubility of GdBr ₃ in tetrahydrofuran at	ORIGINAL MEASUREMENTS: Rossmanith, K. Monatsh. Chem. <u>1966</u> . 97, 1357-64. PREPARED BY: T. Mioduski t 21-23°C was reported to be
0.38 g per 100 ml of solution	(0.0096 mol dm ⁻³ , compiler).
	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method employed. The solution was equilibrated in an extractor with agita- tion for 60-80 hours at room temperature. Gadolinium was determined by the oxalate method and by titration with EDTA using Xylenol Orange indicator. The solvent was determined by difference. Anhydrous materials were handled in a dry box through which was passed a stream of nitrogen free of carbon dioxide.	Sources and purities of initial materials not specified. $GdBr_3$ was prepared by con- version of the oxide by high temperature reaction with an excess of NH_4Br followed by heating the product in a stream of dry nitrogen, and then in vacuum to remove un- reacted NH_4Br . Tetrahydrofuran was distilled from LiAlH ₄ .
The solid phase is GdBr ₃ .3.5C ₄ H ₈ O.	ESTIMATED ERROR: Nothing specified.
	REFERENCES:

COMPONENTS: (1) Gadolinium bromide; GdBr ₃ ; [13818-75-2]	ORIGINAL MEASUREMENTS: Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J.; Oelsner, L.; Niedergesaess, U. Z. Chem. <u>1968</u> , <i>8</i> , 472-3.
(2) 1,4-Dioxane; C ₄ H ₈ O ₂ ; [123-91-1]	Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov. <u>1971</u> , 200-6.
VARIABLES:	
	PREPARED BY:
Room Temperature: T/K around 298	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of GdBr ₃ in p-dioxane at aroun	d 25°C was given as
0.95	mass %
The corresponding molality calculated by the	compiler is
0.024	mol kg ⁻¹
The nature of the solid phase was not specifi	ed.
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The solute-solvent mixtures were isother- mally agitated at 25°C or at room tempera-	The anhydrous salt was prepared by the method of Taylor and Carter (1).
ture. Authors state that the difference	
found for the solubility was within experi- mental error limits.	No other information given.
Gd was determined by complexometric titra- tion.	
No other details given.	
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES :
]	1. Taylor, M.D.; Carter, C.P.
	J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.
	J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.

Gauoinnu	im Bromide 265
COMPONENTS: (1) Gadolinium bromide; GdBr ₃ ; [13818-75-2]	ORIGINAL MEASUREMENTS: Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov
(2) Alkyl amines	<u>1971</u> , 200-6.
VARIABLES:	PREPARED BY:
T/K = 298	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	
	^{GdBr} 3 solubility ^a
solvent	mass % mol kg ⁻¹
2-propanamine; iso-C ₃ H ₉ N; [75	-31-0] 26.3 0.899
1-butanamine; n-C ₄ H ₁₁ N; [109	-73-9] 27.8 0.970
2-butanamine; sec-C ₄ H ₁₁ N; [1395	2-84-6] 26.25 0.897
di-2-butylamine; (sec-C ₄ H ₉) ₂ NH; [626	-23-3] 0.25 0.0063
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume. Nature of solid phases not specified.	SOURCE AND PURITY OF MATERIALS: Nothing specified, but based on previous work by the author, the anhydrous salt was probably prepared by the method of Taylor and Carter (1).
	ESTIMATED ERROR: Nothing specified. REFERENCES: 1. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.

COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Gadolinium iodide; GdI₃; [13572-98-0]</pre>	Kachkimbaeva, S.A.; Chalova, E.P.; Bleshinskii, S.V.
(2) Tetrahydrofuran; C ₄ H ₈ 0; [109-99-9]	Khim. Kompleks. Soedin. Redk. Soput- stvuyushchikh Elem. <u>1970</u> , 122-6.
VARIABLES:	PREPARED BY:
T/K = 293	T. Mioduski
EXPERIMENTAL VALUES:	In an
The solubility of GdI_3 in tetrahydrofuran at	20°C was reported to be
2.6	7 g dm^{-3}
(0.00496 mc	ol dm ⁻³ , compiler)
	INFORMATION
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were equilibrated isothermally with constant agitation. Solid and liquid phases separated by decantation, and in some cases by centrifuging. Gd de- termined by the oxalate method. I determined by titration with an AgNO ₃ solution (the Volhard method).	with an excess powdered metal (Gd-O-Sort) in an ampoule at 1200°C. The iodide formed sublimated from the hot to the cold part of
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES :
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	<u> </u>

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COMPONENTS:	ORIGINAL MEASUREMENTS:		
<pre>(1) Gadolinium iodide; GdI₃; [13572-98-0]</pre>	Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J.; Oelsner, L.; Niedergeases, U. Z. Chem. <u>1968</u> , <i>8</i> , 472-3.		
(2) 1,4-Dioxane; C ₄ H ₈ O ₂ ; [123-91-1]	Kirmse, E.M. Tr. 11 Vses. Konf. po Teor. Rastvorov. <u>1971</u> , 200-6.		
VARIABLES:	PREPARED BY:		
Room Temperature: T/K around 298	T. Mioduski		

EXPERIMENTAL VALUES:

The solubility of GdI_3 in p-dioxane at about 25°C was given as

0.4 mass %

The corresponding molality calculated by the compiler is

 $0.0075 \text{ mol kg}^{-1}$

The nature of the solid phase was not specified.

AUXILIARY INFORMATION				
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:			
The solute-solvent mixtures were isother- mally agitated at 25°C or at room tempera- ture. Authors state that the difference found for the solubility was within experi- mental error limits.	The anhydrous salt was prepared by the method of Taylor and Carter (1). No other information given.			
Gd was determined by complexometric titra- tion.				
No other details given.				
	ESTIMATED ERROR:			
	Nothing specified.			
	REFERENCES: 1. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.			

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268	Gado	linium lodide				
COMPONENTS :		ORIGINAL M	ORIGINAL MEASUREMENTS:			
(1) Gadolinium iodid	ie; GdI ₃ ;	Kirmse,	Kirmse, E.M.			
	[13572-98-0]		Tr. II Vses. Konf. po Teor. Rastvorov			
(2) Alkyl amines		$\frac{1971}{2}$, 2	<u>1971</u> , 200-6.			
VARIABLES:		PREPARED E	Y :			
T/K = 298			T. Mioduski and M. Salomon			
EXPERIMENTAL VALUES:	 	• <u></u> •				
			solub	dlity ^a		
solvent			mass %	mol kg ⁻¹		
1-propanamine;	n-C ₃ H ₉ N;	[107-10-8]	4.3	0.084		
2-propanamine;	iso-C ₃ H ₉ N;		14.8	0.323		
	$n-C_4H_{11}N;$			0.381		
l-butanamine;						
2-butanamine;	sec-C ₄ H ₁₁ N;	[13952-84-6]	11.5	0.242		
AUXILIARY INFORMATION						
METHOD/APPARATUS/PROCE	DURE:	SOURCE ANI	PURITY OF M	ATERIALS:		
Experimental details probably similar to p	previous works of th	e work by	the author, t	it based on previous the anhydrous salt was		
author which are comp volume.	piled throughout thi	s probably and Cart		the method of Taylor		
Nature of solid phase	as not enerified.	[
nature of Borrd phase	is not specified.					
		j				
		ESTIMATED				
		Nothing	specified.			
		REFERENCE				
		1. Tayl J. I	or, M.D.; Car norg. Nucl. (chem. <u>1962</u> , 24, 387.		
<pre>COMPONENTS: (1) Gadolinium iodide; GdI₃; [13572-98-0] (2) N,N-Dimethylformamide; C₃H₇NO; [68-12-2]</pre>	ORIGINAL MEASUREMENTS: Moeller, T.; Galasyn, V. J. Inorg. Nucl. Chem. <u>1960</u> , 12, 259-65.					
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VARIABLES:	PREPARED BY:					
т/к = 298.15	M. Salomon					

The solubility of GdI₃ in HCON(CH₃)₂ at 25^oC was reported as

 451.0 g dm^{-3}

and as

0.4018 mol dm⁻³

The solid phase is the solvate $GdI_3.8HCON(CH_3)_2$. The melting point (sealed tube method) of this solvate given as $102.0 - 104.0^{\circ}C$.

AUXILIARY	INFORMATION

METHOD/APPARATUS/PROCEDURE: Authors state that solubilities were deter- mined by analysis of aliquots after equili- bration at $25 \pm 0.025^{\circ}$ C, and that techniques were generally similar to those described in (1). The rare earth content was determined by complexometric titration with EDTA at 60°C. Iodide was determined by the Volhard method, and carbon, hydrogen, and nitrogen by usual microanalytical techniques.	(2) where the hydrated acetate is treated with acetyl iodide in benzene. Acetyl iodide prepd as in (3). 2. The iodide was prepd by metathesis by reaction of the hydrated GdCl ₃ with KI in DMF followed by addition of benzene and distillation of the benzene-water azeotrope. For both preparations the solvate GdI ₃ .8DMF
REFERENCES: 1. Moeller, T.; Cullen, G.W. J. Inorg. Nucl. Chem. 1959, 10, 148.	and its electrolytic conductance was ≥ 3.7 x 10 ⁻⁷ S cm ⁻¹ at 25°C. ESTIMATED ERROR:
 Watt, G.W.; Gentile, P.S.; Helvenston, E.P. J. Am. Chem. Soc. <u>1955</u>, 77, 2752. 	Soly: precision around $\pm 0.1\%$ (compiler).
 Biltz, H.; Biltz, W. Laboratory Methods of Inorganic Chemistry (2nd Edition). John Wiley. N.Y. <u>1928</u>. 	Temp: precision \pm 0.025 K (authors).
 Leader, G.R.; Gormley, J.F. J. Am. Chem. Soc. <u>1951</u>, 73, 5731. 	
 Thomas, A.B.; Rochow, E.G. J. Am. Chem. Soc. <u>1957</u>, 79, 1843. 	

COMPONENTS:		ORIGINAL MEASU	EMENTS:	
(1) Terbium fluoride; TbF ₃ ; [13708-63-9]		Dressler, H.		
(2) Ethers		GDR. <u>1980</u> .	chrift. Pa	ed. Inst. Koethen.
VARIABLES: Room Temperature		PREPARED BY: T. Mioduski a	nd M. Salor	non
EXPERIMENTAL VALUES:		L		
			solut	oility ^a
solvent			mass %	10 ⁴ mol/100 g sln
1-methoxydecane;	с ₁₁ н ₂₄ 0;	[7289-52-3]	0.03	1.39 ^a
1-(chloromethoxy)butane;		[2351-69-1]		1.39 ^b
) II			
^a Solid phase. Tb:F:ether:H ₂ 0	ratio found t	o be 1:2.82:0.1	1:0.34.	
^b Solid phase. Tb:F:ether rati	o found to be	1:2.99:0.26.		
	AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PUR		
Method analogous to that descr No other information available		It appears the as in (1). In		ride was prepared drving the
	-	fluoride by to Tb:F:H ₂ O ratio	vo methods	at 573 K, the
		-		
		No other info	mation ava	ilable.
		ESTIMATED ERRO		
		Nothing spec:	fied.	
		REFERENCES:	1 With 4	efte, Paed. Inst.
		Koethen. 19		
				, ·

COMPONENTS:	ORIGINAL MEASUREMENTS:
 Terbium fluoride; TbF₃; [13708-63-9] 	Kirmse, E.M.
(2) Dimethylsulfoxide; C ₂ H ₆ OS; [67-68-5]	Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85-90.
VARIABLES:	PREPARED BY:
Room Temperature	T. Mioduski

The solubility of ${\rm TbF}_3$ in $({\rm CH}_3)_2{\rm SO}$ at room temperature was given as

0.01 mass %.

The corresponding molality calculated by the compiler is

 $4.7 \times 10^{-4} \text{ mol kg}^{-1}$

The solid phase was dried in a desiccator over ${\rm P}_4{\rm O}_{10}$ and the Tb:F ratio found to be almost 1:3.

ATTVTT TARV	INFORMATION
NOVIPIULI	INFORMATION

METHOD/APPARATUS/PROCEDURE: Isothermal method. About 100 mg of TbF ₃ was added to 10-20 cm ³ of solvent, and the mix- ture mechanically agitated at room tempera- ture for 100 h. 5-10 g of saturated solution were removed by decanting or by centrifuging, and the solution evaporated to dryness. The residue was heated with about 10 cm ³ of 10% KOH solution for 1-2 h to obtain solid Tb(OH) ₃ and a basic F ⁻ solution. The pre- cipitate was washed, dissolved in aq HCl, and Tb determined several times by complexo- metric titration with potentiometric end- point detection (1). The fluoride content in the filtrate was determined photometrical- ly using Al-Eriochrome cyanine color lake indicator (2). The reported solubility is a mean of "numerous parallel determinations," or "at least two parallel determinations."	by washing with acetone followed by drying at 310°C for 120 hours. The solvent was dried and purified by "standard methods."

Terbium Chloride

COMPONENTS: (1) Terbium chloride; TbCl ₃ ; [10042-88-3]				ORIGINAL MEASUREMENTS: Sakharova, Yu.G.; Ezhova, T.A.			
(2) Ethanol; C ₂ H ₆ 0; [64-17-5]		Zh. Neo	Zh. Neorg. Khim. 1976, 21, 551-4; Russ.				
(3) Water; H ₂ 0; [7732-18-5]		J. Inorg 296–8.	3. Chem. (Eng	E. Transl.) <u>1</u>	976, 21,		
	-						
VARIABLES:	<u> </u>		PREPARED	BY:			
Temperature	:		T. Miodu	iski and M. S	alomon .		
EXPERIMENTAL	VALUES:	<u></u> <u></u>	I	<u></u>			
	solubility of	TbC1 ₃ .6H ₂ 0 in 9	6.8 % с ₂ н ₅ он	l ^a			
	sample 1	sample 2 s	ample 3	sample 4	mean solub	1	
t/°C	g/100 g ^b	g/100 g g	/100 g	g/100 g	g/100 g	mol kg ^{-lc}	
20	30.75	30.68 3	0.50	30.61	30.63	1.183	
30	29.94	30.03 3	0.32	30.06	30.08	1.152	
40	30.31	30.49 3	0.33	29.94	30.27	1.163	
50	30.84	30.81 3	0.77	30.92	30.83	1.194	
60	32.92	33.03 3	2.65	32.63	32.80	1.307	
^a It is not	clearly stated	whether the mix	ture is 96.	8 mass % or 9	6.8 volume %	ethanol.	
^b Solubiliti	es reported as	grams of hexahy	drate in 10	0 g of solven	t.		
		the compilers.					
norarreres	, carcuracea by						
		AUXILIA	RY INFORMAT	ION			
	ATUS/PROCEDURE		SOURCE A	ND PURITY OF	MATERIALS: dissolving c.	n grade	
reached aft	er 3-4 h. Ide	Equilibrium was ntical results	oxide i	n ⁻ dil (1:3) H	Cl followed b s were dried	y evapn and	
above and b	below. Two of	quilibrium from the data points	cator o	ver CaCl ₂ , P ₂	05 and NaOH.	The	
libration,	and the remain	er 3 hours of eq ing two data	with Tr	- crystals analyzed for the metal by titrn with Trilon B, and for Cl by the Volhard method. The hexahydrate melted at 158.0 -			
points obta	ained after 4 h	of equilibratio	158.8°C	. 96.8% etha	nol prepd by	prolonged	
		aliquot taken f y complexometric		of c.p. grad CuSO ₄ followe	e 93.5% ethan d by distn.	ol with Ethanol	
	with Trilon B.	,	concn d		etrically and		
		thdrawn at 20°C, solid phase to b	e Collection	ED ERROR:			
the hexaby	irate: i.e. eth the solid phase	anol was not fou	nd Soly: r	Soly: results apparently precise to within \pm 0.9 % (compilers).			
			Temp: n	othing specif	ied.		
			REFEREN	CES:			

		Terbium	Chloride		27:
COMPONENTS :		· · · · · · · · · · · · · · · · · · ·	ORIGINAL	MEASUREMENTS	:
(1) Terbium chloride; TbCl ₃ ;			Kirmse,	Е.М.	
[10042-88-3] (2) Alkoxy-ethanol	5		Tr. II Vses. Konf. po Teor. Rastvorov $\frac{1971}{1}$, 200-6.		
VARIABLES:			PREPARED		
T/K = 298			T. Miodu	iski and M. Sa	alomon
EXPERIMENTAL VALUES:			L	<u></u>	
			TbCl ₃ so	lubility ^a	
solvent			•	mol kg ⁻¹	nature of the solid phase
2-methoxyethanol;	с _{3^н8} 0;	[109-86-4]	3.8	0.15	$TbC1_3.nC_3H_80_2$ (n = 2-3)
2-ethoxyethanol;	C4H1002;	[110-80-5]	11.9	0.509	тьс1 ₃ .2с ₄ н ₁₀ 0 ₂
		AUXILIARY	INFORMATI	ION	
METHOD/APPARATUS/PRO Experimental details probably similar to author which are con volume.	s not given, previous wor	ks of the	Nothing work by	the authors prepared by	MATERIALS: ut based on previous the anhydrous salt was the method of Taylor
			ESTIMATE	D ERROR:	
			Nothing	specified.	
			REFERENC 1. Taylo J. Ir	or, M.D.; Car	ter, C.P. hem. <u>1962</u> , 24, 387.
			<u> </u>		

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Terbium chloride; TbCl ₃ ;	Kirmse, E.M.; Zwietasch, K.J.
[10042-88-3]	
(2) 1,2-Diethoxyethane; C ₆ H ₁₄ O ₂ ; [629-14-1]	Z. Chem. <u>1967</u> , 7, 281.
VARIABLES:	PREPARED BY:
T/K ≖ 298	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of TbCl ₃ in 1,2-diethoxyethan	ne at 25°C was reported to be
0.22	2 mass %
The corresponding molality calculated by the	e compiler is
0.0083	3 mol kg ⁻¹
The composition of the solid phase was given	n in terms of the Tb:Cl:ether ratio as
1:2.9	93:1.37
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method used. The anhydrous mixtures were equilibrated at 25°C for	Sources and purities of materials not given. The anhydrous chloride was obtained by the
several days with frequent shaking.	method of Taylor and Carter (1).
The solid phase was dried in a vacuum desiccator over P_2O_5 .	The solvent was prepared by the Williamson synthesis: i.e. by reaction of C_{2H_5I} with
Tb was determined by complexometric titra-	the monoethylether of ethylene glycol.
tion using Xylenol Orange indicator.	
Chloride was determined by the Volhard titration method.	
citization mechou.	1
	ESTIMATED ERROR:
	No estimates possible.
1	1
	PERFORMANCE.
	REFERENCES: 1. Taylor, M.D.; Carter, C.P.
	J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.

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	Terbiu			275	
COMPONENTS: (1) Terbium chloride; TbCl [10042-88-3]	Kirmse, E.M Oelsner, L	ORIGINAL MEASUREMENTS: Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J. Oelsner, L.; Niedergesaess, U. Z. Chem. <u>1968</u> , <i>8</i> , 472-3. Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov. <u>1971</u> , 200-6.			
(2) Ethers					
VARIABLES:		PREPARED BY	:		
Room temperature: T/K arou	ind 298	T. Mioduski	and M. Salo	mon	
EXPERIMENTAL VALUES:			TbCl, sol	ubility ^{a,b}	
solvent			-	mol kg ⁻¹	
1-ethoxy-2-methoxyethane;	c ₅ H ₁₂ 0 ₂ ;	[5137-45-1]	0.6	0.023	
1,4-dioxane;	c ₄ H ₈ 0 ₂ ;	[123-91-1]	0.3	0.011	
^a Molalities calculated by t	he compilers.				
b Nature of solid phases not	specified.				
•					
	AUXILIAR	Y INFORMATION			
METHOD/APPARATUS/PROCEDURE:			PURITY OF MAT		
The solute-solvent mixtures mally agitated at 25°C or a	t room tempera		us salt was p aylor and Car	prepared by the ter (1).	
ture. Authors state that the found for the solubility was imental error limits.	he difference s within exper•	No other in	formation giv	/en.	
Tb was determined by complex titration.	xometric				
No other details given.					
		ESTIMATED E	RROR:		
		Nothing spe	cified.		
		REFERENCES: 1. Taylor,	M.D.; Carter,	C.P.	
		J. Inorg	. Nucl. Chem.	<u>1962</u> , 24, 387.	
		1			

276	Ter	bium	Chloride		
COMPONENTS:			ORIGINAL ME		.
(1) Terbium chloride; [10042-88-3]	тьсі _з ;		Kirmse, E	.M.; Dressle	r, H.
[10042 00 0]		Z. Chem.	<u>1975</u> , 15, 23	9-40.	
(2) Alkyl ethers					
VARIABLES:			PREPARED BY	:	
Room Temperature (293-2	98 K)		T. Miodus	ki and M. Sa	lomon
EXPERIMENTAL VALUES:					_
					ility ^a
solvent				mass %	mol kg ⁻¹
1-methoxybutane;	с ₅ н ₁₂ 0;	[6	28-28-4]	0.23	0.0087
1-methoxypentane;	C ₆ H ₁₄ 0;		28-80-8]		0.027
1-methoxyheptane;	C ₈ H ₁₈ 0;	[6	29-32-3]	3.3	0.129
1-methoxyoctane;	с ₉ н ₂₀ 0;		29-56-6]		0.057
1-methoxynonane;	> 20			2.75	0.107
1-methoxydecane;			289-52-3]		0.073
· · · · · · · · · · · · · · · · · · ·	11-24	•			
<u></u>	AUXIL	.IARY	INFORMATION	· · · · · <u> · · · ·</u>	
METHOD / APPARATUS / PROCEDUS	RE:			PURITY OF MA	TERIALS:
The solute-solvent mixt mally agitated (at room			Nothing sp	ecified.	
equilibrium was attaine reagents were handled i	d. The anhydrou	IS			
ing P ₄ 0 ₁₀ . The was deter metric titration using	rmined by comple	-oxe			
cator.	Nytenor orange 1				
The reported solubiliti based on four determina		ies			
pased on rour determina	LIONS.				
i			ESTIMATED E	RROR:	
			Nothing sp		
			REFERENCES		

(1) Terbium chloride; TbCl3; [10042-88-3] Korovin. S.S.; Galaktionova, O.V.; Lebedeva, E.N.; Voronskaya, G.N. (2) Tributylphosphate; Cl2H2704P; [126-73-8] Zh. Neorg. Khim. 1925, 20, 908-14; Russ. J. Inorg. Chem. (Engl. Thansl.) 1925, 20, 508-11. VARIABLES: T/K = 298 PREPARED BY: T. Mioduski and M. Salomon EXPERIMENTAL VALUES: Composition of saturated solutions mass % mol/kg sln g dm ⁻³ mol dm ⁻³ mol kg-1 density/g cm ⁻³ (compiler) 38.5 1.45 525.0 1.98 2.36 1.36 The solid phase is TbCl3 Source AND PURITY OF MATERIALS: Anlydrous TbCl3 prepared by chlorination of the wold with agnetic stirring. Equilibrium was centrifuged and maliquot for analysis taken and added to metchinion marcipting- taken and added to metchinion marcipting- taken and added to metchinion was centrifuged and maliquot for analysis repeatedly and heated to the oxide for	(1) Terbium chloride; TbCl3; [10042-88-3] (2) TriburyIphorphat; Cl2 ^H 27 ⁰ 4 ^P ; [126-73-8] (3) TriburyIphorphat; Cl2 ^H 27 ⁰ 4 ^P ; [126-73-8] (4) TriburyIphorphat; Cl2 ^H 27 ⁰ 4 ^P ; [126-73-8] (4) TriburyIphorphat; Cl2 ^H 27 ⁰ 4 ^P ; [126-73-8] (5) TriburyIphorphat; Cl2 ^H 27 ⁰ 4 ^P ; [126-73-8] (5) TriburyIphorphat; Cl2 ^H 27 ⁰ 4 ^P ; [126-73-8] (5) TriburyIphorphat; Cl2 ^H 27 ⁰ 4 ^P ; [126-73-8] (5) TriburyIphorphat; Cl2 ^H 27 ⁰ 4 ^P ; [126-73-8] (5) TriburyIphorphat; Cl2 ^H 27 ⁰ 4 ^P ; [126-73-8] (6) TriburyIphorphat; Cl2 ^H 27 ⁰ 4 ^P ; [126-73-8] (7) TriburyIphorphat; Cl2 ^H 27 ⁰ 4 ^P ; [126-73-8] (7) TriburyIphorphat; Cl2 ^H 27 ⁰ 4 ^P ; [126-73-8] (7) TriburyIphorphat; Cl2 ^H 27 ⁰ 4 ^P ; [126-73-8] (7) TriburyIphorphat; Cl2 ^H 27 ⁰ 4 ^P ; [126-73-8] (7) TriburyIphorphat; Cl2 ^H 27 ⁰ 4 ^P ; [126-73-8] (7) TriburyIphorphat; Cl2 ^H 27 ⁰ 4 ^P ; [126-73-8] (7) TriburyIphorphat; Cl2 ^H 27 ⁰ 4 ^P ; [126-73-8] (7) TriburyIphorphat; Cl2 ^H 27 ⁰ 4 ^P ; [126-73-8] (7) TriburyIphorphat; Cl2 ^H 27 ⁰ 4 ^P ; [126-73-8] (7) TriburyIphorphat; Cl2 ^H 27 ⁰ 4 ^P ; [126-73-8] (7) TriburyIphorphat; Cl2 ^H 27 ⁰ 4 ^P ; [126-73-8] (7) TriburyIphorphat; Cl2 ^H 27 ¹ 4 ^P ; [126-73-8] (7) TriburyIphorphat; Cl2 ^H 27 ¹ 4 ^P ; [126-73-8] (7) TriburyIphorphat; Cl2 ^H 27 ¹ 4 ^P ; [126-73-8] (7) TriburyIphorphat; Cl2 ^H 27 ¹ 4 ^P ; [126-73-8] (7) TriburyIphorphat; Cl2 ^H 27 ¹ 4 ^P ; [126-74-8] (7) TriburyIphorphat; Cl2 ^H 27 ¹ 4 ^P ; [126-74-8] (7) TriburyIphorphat; Cl2 ^H 27 ¹ 4 ^P ; [126-74-8] (7) TriburyIphorphat; Cl2 ^H 27 ¹ 4 ^P ; [126-74-8] (7) TriburyIphorphat; Cl2 ^H 14 ^P ; [126-74-8] (8) TriburyIphorphat; Cl2 ^H 14 ^P ; [126-74-8] (8) TriburyIphorphat; Cl2 ^H 14 ^P ; [126-74-8] (8) TriburyIphorphat; C		Terbium	Chloride		27
[10042-88-3] Lebedeva, E.N.; Voronskaya, G.N. (2) Tributylphosphate; Gl2H270gF; [126-73-8] Lebedeva, E.N.; Voronskaya, G.N. (3) Tributylphosphate; Gl2H270gF; [126-73-8] Lebedeva, E.N.; Voronskaya, G.N. //ARIABLES: T.K. Mcong. Khám. 1975, 20, 908-14; Ruda, J. Invog. Chem. (Engl. Transl. 1975, 20, 108-11. //ARIABLES: T.Miduski and M. Salomon T/K = 298 T. Miduski and M. Salomon EXPERIMENTAL VALUES: Composition of saturated solutions mass % mol/kg sln g dm ⁻³ mol dm ⁻³ mol kg-1 density/g cm ⁻³ (compiler) mol kg-1 density/g cm ⁻³ (compiler) 38.5 1.45 525.0 1.98 2.36 1.36 MILIANY INFORMATION M	(10042-88-3] Lebedova, E.N.; Voronskaya, C.N. (2) Tributylphosphate; G12H2704P; I. N.; Voronskaya, C.N. (3) Tributylphosphate; G12H2704P; I. N.; Voronskaya, C.N. ARIABLES: T. Minduski and N. Salomon T/K = 298 T. Minduski and N. Salomon XFERIMENTAL VALUES: Composition of saturated solutions mass X mol/kg sln g dm ⁻³ 38.5 1.45 525.0 1.98 2.36 1.36 The solid phase is TbCl3 SOURCE AND FURITY OF MATERIALS: SOURCE AND FURITY OF MAT	COMPONENTS :		ORIGINAL MEA	SUREMENTS:	·····
(126-73-8) J. Inong. Chem. (Engl. Thankl.) 1975. 20, 508-11. VARIABLES: T/K = 298 T/K = 298 T. Mioduski and M. Salomon EXPERIMENTAL VALUES: Composition of saturated solutions mass X mol/kg sin g dm ⁻³ mol dm ⁻³ mol kg-1 density/g cm ⁻³ (compiler) 38.5 1.45 525.0 The solid phase is TbCl3 The solid phase is TbCl3 NETHOD/APPARATUS/PROCEDURE: SOURCE AND FURITY OF MATERIALS: Saturated solutions propared isothermally Norder and Cl4 vapor (1, 2). Source an pully of materials in given. The was pully of materials in given. The was pully of materials in given. The was pully of materials of given. The was pully of the standard method. All operations were performed in a dry box, and yred (n detatil given) for phophorous, and only the anhydrous TbCl3 was found. All operations were performed in a dry box, through which a stream of argon was passed. The major objective of this work was to estimates possible. ESTIMATED ERROR: No estimates possible. ESTIMATED ERROR: No with yr, S. 1, Tolmachera, V.D.<	[126-73-8] J. TRADE_C. Chem. (Engl. Transl.) 1975, 20, 508-11. ARIABLES: TK = 298 T/K = 298 T. Midduski and M. Salomon APERIMENTAL VALUES: Composition of saturated solutions mass X mol/kg sln g dm ⁻³ mol dm ⁻³ mol kg-1 density/g cm ⁻³ (compiler) 38.5 1.45 Sign 2.36 1.98 AUXILIARY INFORMATION SOURCE AND PURITY OF MATERIALS: Saturated solutions prepared isothermally yith agnetic stirring. Fullibrium vas attained after 23-30 d. The solution vas attaine vas attained af	(1) Terbium chloride; [10042-88-3]	TbCl ₃ ;			
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COMPONENTS: (1) Terbium chloride; TbCl ₃ ; [10042-88-3] (2) Alkyl amines	ORIGINAL MEASUREMENTS: Kirmse, E. M. Tr. II Vses. Konf. po Teor. Rastvorov <u>1971</u> , 200-6.
VARIABLES:	PREPARED BY:
T/K = 298	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	
	TbCl ₃ solubility ^a
solvent	mass % mol kg ⁻¹
2-butanamine; sec-C ₄ H ₁₁ N;	[13952-84-6] 14.6 0.644
di-2-butylamine; (sec-C ₄ H ₉) ₂ l	NH; [626-23-3] 0.15 0.0057
JA	JXILIARY INFORMATION
METHOD / APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
Experimental details not given, but probably similar to previous works author which are compiled throughou volume. Nature of solid phases not specified	of the work by the author, the anhydrous salt was t this probably prepared by the method of Taylor and Carter (1).
	ESTIMATED ERROR: Nothing specified.
	REFERENCES:
	1. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.

COMPO	NENTS :	ORIGINAL MEASUREMENTS:
(1)	Terbium chloride; TbCl ₃ ; [10042-88-3]	Mikheev, N.B.; Kamenskaya, A.N.; Konovalova, N.A.; Zhilina, T.A.
(3)	Hexamethylphosphorotriamide; C ₆ H ₁₈ N ₃ OP; [680-31-9]	Zh. Neorg. Khim. <u>1977</u> , 22, 1761–6; Russ. J. Inorg. Chem. (Engl. Transl.) <u>1977</u> , 22, 955–8.
	ABLES: a temperature: $T/K = 298 \pm 3$	PREPARED BY: T. Mioduski and M. Salomon

Starting with the solvate $\text{TbCl}_3.3((\text{CH}_3)_2\text{N})_3\text{PO}$, the solubility at 25 ± 3°C^a was given as

 $0.128 \text{ mol } \text{dm}^{-3}$

^aTable 3 in the English translation of the source paper states the temperature to be $23 \pm 3^{\circ}$ C. This is probably a typographical error as the text clearly states that all measurements were carried out at $25 \pm 3^{\circ}$ C.

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method. Salt and solvent were	TbCl ₃ .3C ₆ H ₁₈ N ₃ OP prepared by dissolving
placed in a test-tube in a dry box, and the	the hydrate in the solvent and heating to
tube agitated at room temperature until	140-145°C for 5 m. The solvate was pptd
equilibrium was reached. Aliquots were with-	by addition of abs ether, washed 7 times
drawn periodically and analyzed for the	with ether, and dried over P_2O_5 in a stream
metal content. Rare earth concentration was	of dry nitrogen. Yield was about 90%.
determined by complexometric titration, and	
by the radiometric method using the isotope	The solvent was purified as described in
$Tm-170$ ($t_1 = 169$ d). Authors state that	(1).
results for ² both methods agreed. Although	
not clearly stated, it appears that equili-	
brium was reached in several weeks to	
several months.	
	ESTIMATED ERROR:
Solid phase samples washed three times with	ESTIMATED ERROR: Soly: precision \pm 0.007 mol dm ⁻³ at a 95%
benzene or ether and dried on a steam bath	ESTIMATED ERROR: Soly: precision \pm 0.007 mol dm ⁻³ at a 95% level of confidence (authors).
	Soly: precision \pm 0.007 mol dm ⁻³ at a 95% level of confidence (authors).
benzene or ether and dried on a steam bath in an argon atmosphere. The solid phase was analyzed and found to be	Soly: precision \pm 0.007 mol dm ⁻³ at a 95%
benzene or ether and dried on a steam bath in an argon atmosphere. The solid phase was analyzed and found to be	Soly: precision \pm 0.007 mol dm ⁻³ at a 95% level of confidence (authors). Temp: precision \pm 3K.
benzene or ether and dried on a steam bath in an argon atmosphere. The solid phase was analyzed and found to be $TbCl_3.3C_6H_{18}N_3OP$.	Soly: precision <u>+</u> 0.007 mol dm ⁻³ at a 95% level of confidence (authors). Temp: precision <u>+</u> 3K. REFERENCES :
benzene or ether and dried on a steam bath in an argon atmosphere. The solid phase was analyzed and found to be $TbCl_3.3C_6H_{18}N_3OP$. The solvate was analyzed for metal content	<pre>Soly: precision ± 0.007 mol dm⁻³ at a 95% level of confidence (authors). Temp: precision ± 3K. REFERENCES: 1. Fomicheva, M.G.; Kessler, Yu.M.;</pre>
benzene or ether and dried on a steam bath in an argon atmosphere. The solid phase was analyzed and found to be $TbCl_3.3C_6H_{18}N_3OP$. The solvate was analyzed for metal content by complexometric titration, for chloride by	Soly: precision <u>+</u> 0.007 mol dm ⁻³ at a 95% level of confidence (authors). Temp: precision <u>+</u> 3K. REFERENCES :
benzene or ether and dried on a steam bath in an argon atmosphere. The solid phase was analyzed and found to be $TbCl_3.3C_6H_{18}N_3OP$. The solvate was analyzed for metal content	<pre>Soly: precision ± 0.007 mol dm⁻³ at a 95% level of confidence (authors). Temp: precision ± 3K. REFERENCES: 1. Fomicheva, M.G.; Kessler, Yu.M.; Zabusova, S.E.; Alpatova, N.M.</pre>
benzene or ether and dried on a steam bath in an argon atmosphere. The solid phase was analyzed and found to be $TbCl_3.3C_6H_{18}N_3OP$. The solvate was analyzed for metal content by complexometric titration, for chloride by the Volhard method, and the solvent was ob-	<pre>Soly: precision ± 0.007 mol dm⁻³ at a 95% level of confidence (authors). Temp: precision ± 3K. REFERENCES: 1. Fomicheva, M.G.; Kessler, Yu.M.; Zabusova, S.E.; Alpatova, N.M.</pre>
benzene or ether and dried on a steam bath in an argon atmosphere. The solid phase was analyzed and found to be $TbC1_3 \cdot 3C_6H_{18}N_3OP$. The solvate was analyzed for metal content by complexometric titration, for chloride by the Volhard method, and the solvent was ob- tained by difference. IR spectra confirm-	<pre>Soly: precision ± 0.007 mol dm⁻³ at a 95% level of confidence (authors). Temp: precision ± 3K. REFERENCES: 1. Fomicheva, M.G.; Kessler, Yu.M.; Zabusova, S.E.; Alpatova, N.M.</pre>
benzene or ether and dried on a steam bath in an argon atmosphere. The solid phase was analyzed and found to be $TbC1_3 \cdot 3C_6H_18^N_3$ OP. The solvate was analyzed for metal content by complexometric titration, for chloride by the Volhard method, and the solvent was ob- tained by difference. IR spectra confirm- ed the absence of water. Structural	<pre>Soly: precision ± 0.007 mol dm⁻³ at a 95% level of confidence (authors). Temp: precision ± 3K. REFERENCES: 1. Fomicheva, M.G.; Kessler, Yu.M.; Zabusova, S.E.; Alpatova, N.M.</pre>

Terbium Chloride

COMPONENTS:		OPTOTNAL MEACE	IDENGNING .	· · · · · · · · · · · · · · · · · · ·
(1) Terbium chloride; TbCl ₃ ; [10042-4	ORIGINAL MEASUREMENTS: Lyubimov, E.I.; Batyaev, I.M.			
<pre>(2) Tetrachlorostannate; SnCl₄; [7646-78-8]</pre>		Zh. Prikl. Khim. <u>1972</u> , 45, 1176–8.		
(3) Phosphorus oxychloride; POCl ₃ ; [10025-87-3]				
VARIABLES:		PREPARED BY:		
T/K = 293		T. Mioduski		
Concentration of SnCl ₄				
EXPERIMENTAL VALUES:				
SnCl ₄ :POCl ₃ ratio SnCl ₄		entration	solubility/mo	oles Tb dm ^{-3 a,b}
(by volume)	mol di	 m	ть ₂ 03	тъ40 ₇
1:250	0.035		0.069	
1:100	0.085		0.30	0.056
1:50	0.17		0.15 (0.13)	0.18 (0.015)
1:25	0.33		0.067	0.059
1:15	0.59		0.051	0.040
1:10	0.78		0.018	0.047
^a Solutions preheated to 220°C. Values	fn na	renthesis corr	eenond to prehe	ating at 120°C.
Tb ₂ O ₃ + 6POC Authors state that the solubility of Th 2TbCl ₃ -	6C1 ₃ :	-	complex format	ion according to
IXUA	LIARY	INFORMATION	·	
 METHOD/APPARATUS/PROCEDURE: Isothermal method used. POCl₃ + SnCl₄ solutions were prepared by volume in a dry box. The SnCl₄ content was verified by chemical analysis for Sn. This solution and Tb203 were placed in sealed ampoules, heated to 20-250°C to increase the rate of solution, and then rotated in an air thermostat at 20°C for 2-200 hours. Without preheating, equilibrium was established after 200 hours. Preheating to 220°C lowered the equilibra- tion time at 20°C to 2 hours. Tb was determined by colorimetric analysis or the oxalate method. The reported solu- bilities are mean values based on 3-5 parallel determinations. ESTIMATED ERROR: Soly: authors state the "coefficient of variance" to be less than 7%. Temp: precision presumably ± 0.2 K (compile REFERENCES: 				
<u></u>				

Terbium Bromide	Т	erb	ium	Broi	mide
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COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Terbium bromide; TbBr ₃	Rossmanith, K.
[14456-47-4]	Monatsh. Chem. <u>1966</u> , 97, 1357-64.
(2) Tetrahydrofuran; C ₄ H ₈ O;	Monacont. Chem. <u>1900</u> , 77, 1997-04.
[109-99-9] 4 8	
VARIABLES:	PREPARED BY:
Room Temperature: $T/K = 294-296$	
170 - 294 - 296	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of TbBr ₃ in tetrahydrofuran a	t 21-23°C was reported to be
0.29 g per 100	ml of solution
(0.0073 mol dm	, compiler).
1	
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method employed. The solution	Sources and purities of initial materials
was equilibrated in an extractor with agita-	not specified. TbBr3 was prepared by
tion for 60-80 hours at room temperature.	conversion of the oxide by high temperature
Tarbin was determined by the system method	reaction with an excess of NH ₄ Br followed
Terbium was determined by the oxalate method and by titration with EDTA using Xylenol	by heating the product in a stream of dry nitrogen, and then in vacuum to remove un-
Orange indicator. 'The solvent was deter-	reacted NH ₄ Br.
mined by difference.	
	Tetrahydrofuran was distilled from LiAlH ₄ .
Anhydrous materials were handled in a dry	
box through which was passed a stream of nitrogen free of carbon dioxide.	
	ESTIMATED ERROR:
The solid phase is TbBr ₃ .4C ₄ H ₈ O.	LOTTERIED LAROA.
	Nothing specified
	Nothing specified.
	REFERENCES:
	1
1	

COMPONENTS: (1) Terbium bromide; TbBr ₃ ; [14456-47-4]	ORIGINAL MEASUREMENTS: Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J.; Oelsner, L.; Niedergeases, U. Z. Chem. <u>1968</u> , <i>8</i> , 472-3.
(2) 1,4-Dioxane; C ₄ H ₈ O ₂ ; [123-91-1]	Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov. <u>1971</u> , 200-6.
VARIABLES:	PREPARED BY:
Room Temperature: T/K around 298	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of TbBr ₃ in p-dioxane at about	z 25°C was given as
0.9 1	nass %
The corresponding molality calculated by the	compiler is
0.023 m	p1 kg ⁻¹
The nature of the solid phase was not specif	Led.
······································	
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The solute-solvent mixtures were isother- mally agitated at 25°C or at room tempera-	The anhydrous salt was prepared by the method of Taylor and Carter (1).
ture. Authors state that the difference	
found for the solubility was within experimental error limits.	No other information given.
Tb was determined by complexometric titration.	
No other details given.	
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES :
	1. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.

	Terbium	Bromide		28
COMPONENTS :	T	ORIGINAL MEAS	UREMENTS :	
(1) Terbium bromide; TbBr ₃ ;		Kirmse, E.M.		
[14456-47-4] (2) Alkyl amines		Tr. II Vses. Konf. po Teor. Rastvorov 1971, 200-6.		
VARIABLES:		PREPARED BY:		
T/K = 298		T. Mioduski	and M. Salom	on
EXPERIMENTAL VALUES:	1	·		
			TbBr ₃ so	lubility ^a
solvent			mass %	mol kg ⁻¹
1-propanamine; n-C ₃ H ₉	, ^N ; [10	07-10-8]	17.0	0.514
1-butanamine; n-C ₄ H ₁	.1 ^N ; [10	09-73-9]	31.25	1.140
2-butanamine; sec-C ₄	H ₁₁ N; [1:	3952-84-6]	34.7	1.333
	AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE:	AUXILIARY		JRITY OF MATER	
METHOD/APPARATUS/PROCEDURE: Experimental details not given probably similar to previous w author which are compiled thro volume.	n, but were works of the	SOURCE AND PL Nothing spec work by the	cified, but ba author, the a epared by the	RIALS: ased on previous anhydrous salt was method of Taylor
Experimental details not given probably similar to previous w author which are compiled through	n, but were works of the bughout this	SOURCE AND PL Nothing spec work by the probably pre	cified, but ba author, the a epared by the	ased on previous anhydrous salt was
Experimental details not given probably similar to previous w author which are compiled thro volume.	n, but were works of the bughout this	SOURCE AND PL Nothing spec work by the probably pre	cified, but ba author, the a epared by the	ased on previous anhydrous salt was
Experimental details not given probably similar to previous w author which are compiled thro volume.	n, but were works of the bughout this	SOURCE AND PL Nothing spec work by the probably pre	cified, but ba author, the a epared by the	ased on previous anhydrous salt was
Experimental details not given probably similar to previous w author which are compiled thro volume.	n, but were works of the bughout this	SOURCE AND PL Nothing spec work by the probably pre	cified, but be author, the epared by the (1).	ased on previous anhydrous salt was
Experimental details not given probably similar to previous w author which are compiled thro volume.	n, but were works of the bughout this	SOURCE AND PL Nothing spec work by the probably pre and Carter	cified, but be author, the epared by the (1). ROR:	ased on previous anhydrous salt was
Experimental details not given probably similar to previous w author which are compiled thro volume.	n, but were works of the bughout this	SOURCE AND PL Nothing spee work by the probably pre and Carter ESTIMATED ER	cified, but be author, the epared by the (1). ROR:	ased on previous anhydrous salt was

284 Terbium	lodide
COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Terbium iodide; TbI ₃ ; [13813-40-6]	Kachkimbaeva, S.A.; Chalova, E.P.; Bleshinskii, S.V.
(2) Tetrahydrofuran; C ₄ H ₈ 0; [109-99-9]	Khim. Kompleks. Soedin. Redk. Soput- stvuyushchickh Elem. <u>1970</u> , 122–6.
VARIABLES:	
T/K = 293	PREPARED BY: T. Mioduski
1/K - 275	I. MORENE
EXPERIMENTAL VALUES:	
The solubility of TbI ₃ in tetrahydrofuran at	20°C was reported to be
$8.63 \text{ g} \text{ dm}^{-3}$ (0.0160	
	mor dm , compilery.
AUXILIARY	INFORMATION
METHOD / APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
The solute-solvent mixtures were equilibrat-	TbI3 prepared by heating "cp" grade I2 with
ed isothermally by agitation. The phases were separated by decantation, and in some	excess metallic Tb (RETU-1101-68, Tb-1) in a sealed ampoule at 1200°C. TbI ₃ collected
cases by centrifuging. Tb determined by	by sublimation at the cold part of the
the oxalate method. Iodide determined by titration with an AgNO3 solution (the	ampoule. The product was analyzed for Tb and I, and presumably found to be sufficient
Volhard method).	ly pure.
	"C.p." grade tetrahydrofuran (GDR), b.p. = 65.6°C was treated with NaOH and Na, and then distilled from metallic sodium.
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES:

Dysprosiu	m Fluoride 285
COMPONENTS :	ORIGINAL MEASUREMENTS:
 Dysprosium fluoride; DyF₃; 	Kirmse, E.M.
[13569-80-7] (2) Ethanol; C ₂ H ₆ 0; [64-17-5]	Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85-90.
VARIABLES:	PREPARED BY:
Room Temperature	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of \mathtt{DyF}_3 in methanol at room t	emperature was reported to be
0.01	5 mass %
The corresponding molality calculated by the	compiler is
6.8 x 1	$0^{-4} \text{ mol kg}^{-1}$
The solid phase was dried in a desiccator ov almost 1:3.	er P_40_{10} and the Dy:F ratio found to equal
	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method, About 100 mg of DyF ₃ was	SOURCE AND PURITY OF MATERIALS: Dy ₂ O ₃ (source and purity not specified) was
added to $10-20 \text{ cm}^3$ of solvent, and the mix-	dissolved in HC1 and the fluoride precipi-
ture mechanically agitated at room tempera-	tated by addition of aq HF. The solid pro-
ture for 100 h. 5-10 g of saturated solu-	duced was $DyF_3.0.5H_20$ and was dehydrated by
tion were removed by decanting or by centri- fuging, and the solution evaporated to dry- ness. The residue was heated with about 10	washing with acetone followed by drying at 310°C for 120 hours.
cm^3 of 10% KOH solution for 1-2 h to obtain solid Dy(OH) ₃ and a basic F solution. The precipitate was washed, dissolved in aq HCl,	The solvent was dried and purified by "standard methods."
and Dy determined several times by complexo- metric titration with potentiometric end-	
point detection (1). The fluoride content in the filtrate was determined photometrical	ESTIMATED ERROR: Soly: results with relative errors exceed-
ly using Al-Eriochrome cyanine color lake indicator (2).	ing 50% were rejected.
The reported solubility is a mean of "num- erous parallel determinations," or "at	Temp: unknown. REFERENCES:
least two parallel determinations, or "at least two parallel determinations."	1. Schilbach, U.; Kirmse, E.M. Z. Chem. <u>1974</u> , 14, 484.
	 Schilbach, U.; Hetze, I.; Kirmse, E.M. Chemia Analityczna <u>1975</u>, 20, 33.

280	Dyspin	Usiu	m Fluoride			
COMPONENTS:			ORIGINAL M		TS :	
<pre>(1) Dysprosium fluoride; DyF₃; [13569-80-7]</pre>			Dressler	, Н.		
(2) Alkyl ethers		Dissertationschrift. Paed. Inst. Koethen. GDR. <u>1980</u> .				
VARIABLES:			PREPARED E	SY :		
Room temperature			T. Miodu	ski and M	. Salomon	
EXPERIMENTAL VALUES:						
				DuF		
1				•	lubility	solid phase
solvent				mass %	mol/100 g sln	Dy:F:solvent ratio
1-methoxydecane;	C ₁₁ H ₂₄ 0;	[72	89-52-3]	0.03	1.37×10^{-4}	1:2.93:0.10
1-(chloromethoxy)butane;	с ₅ н ₁₁ с10;	[23	51-69-1]	0.01	4.6×10^{-5}	1:2.81:0.11
	AUXILI	ARY	INFORMATIO	N	<u> </u>	
METHOD/APPARATUS/PROCEDURE:			SOURCE AN	D PURITY C	F MATERIALS:	
Method analogous to that de No other information avails).	in (1).	In spite ods at 57:		as prepared as e fluoride by :H ₂ O ratio
			No other	informati	ion available	
			1			
			ESTIMATED Nothing	ERROR: specified	•	
			REFERENCE 1. Kirmso <i>Wiss.</i> <u>1978</u> ,	e, E.M.	ued. Inst. Ko	ethen.
			l			

COMPONENTS :		ORIGINAL MEASUREMENTS:		
(1) (2)	Dysprosium fluoride; DyF ₃ ; [13569-80-7] Tributy1 phosphate; C ₁₂ H ₂₇ 0 ₄ P; [126-73-8]	Kirmse, E.M. Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85-90.		
VARIA	BLES:	PREPARED BY:		
Room Temperature		T. Mioduski		

The solubility of DyF_3 in $[CH_3(CH_2)_3]_3P(0)$ at room temperature was given as

0.01 mass %

The corresponding molality calculated by the compiler is

 $4.6 \times 10^{-4} \text{ mol kg}^{-1}$

The solid phase was dried in a desiccator over P_4O_{10} and the Dy:F ratio determined to be almost 1:3.

SOURCE AND PURITY OF MATERIALS: Dy ₂ O ₃ (source and purity not specified) was dissolved in HCl and the fluoride precipita- ted by addition of aq HF. The solid pro- duced was DyF ₃ .0.5H ₂ O and was dehydrated by washing with acetone followed by drying at 310°C for 120 hours. The solvent was dried and purified by "standard methods."
ESTIMATED ERROR: Soly: results with relative errors exceeding 50% were rejected. Temp: unknown.
 REFERENCES: 1. Schilbach, U.; Kirmse, E.M. Z. Chem. <u>1974</u>, 14, 484. 2. Schilbach, U.; Hetze, I.; Kirmse, E.M. Chemia Analityczna <u>1975</u>, 20, 33.

COMPONENTS:		ORIGINAL MEASUREMENTS:		
(1) (2)	Dysprosium fluoride; DyF ₃ ; [13569-80-7] Dimethylsulfoxide; C ₂ H ₆ OS; [67-68-5]	Kirmse, E.M. Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85-90.		
VARIA	BLES:	PREPARED BY:		
Room Temperature		T. Mioduski		
EXPER	IMENTAL VALUES:			
The s	The solubility of DyF_3 in $(\text{CH}_3)_2$ SO at room temperature was given as			

0.01 mass %

The corresponding molality calculated by the compiler is

 $4.6 \times 10^{-4} \text{ mol kg}^{-1}$

The solid phase was dried in a desiccator over ${\rm P_40}_{10}$ and the Dy:F ratio found to be almost 1:3.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE: SOURCE AND PURITY OF MATERIALS: Isothermal method. About 100 mg of DyF_3 was added to 10-20 cm³ of solvent, and the Dy₂0₃ (source and purity not specified) was dissolved in HCl and the fluoride precipitated by addition of aq HF. The solid mixture mechanically agitated at room temperature for 100 h. 5-10 g of saturated produced was DyF3.0.5H20 and was dehydrated solution were removed by decanting or by by washing with acetone followed by drying at 310°C for 120 hours. centrifuging, and the solution evaporated to dryness. The residue was heated with about 10 $\rm cm^3$ of 10% KOH solution for 1-2 h to obtain solid Dy(OH)₃ and a basic F⁻ solution. The solvent was dried and purified by "standard methods." The precipitate was washed, dissolved in aq HC1, and Dy determined several times by complexometric titration with potentiometric end-point detection (1). The fluoride con-**ESTIMATED ERROR:** tent in the filtrate was determined photo-Soly: results with relative errors exceedmetrically using Al-Eriochrome cyanine color ing 50% were rejected. lake indicator (2). Temp: nothing specified. The reported solubility is a mean of "numerous parallel determinations," or "at least two parallel determinations." **REFERENCES:** 1. Schilbach, U.; Kirmse, E.M. Z. Chem. <u>1974,</u> 14, 484. Schilbach, U.; Hetze, I.; Kirmse, E.M. Chemia Analityczna <u>1975</u>, 20, 33.

COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Dysprosium fluoride; DyF₃; [13569-80-7]</pre>	Kirmse, E.M.
(2) Pyridine; C ₅ H ₅ N; [110-86-1]	Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85–90.
VARIABLES:	PREPARED BY:
Room Temperature	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of DyF_3 in pyridine at room t	emperature was given as
0.03 m	ass %
The corresponding molality calculated by the	
1.4×10^{-3}	mol kg ⁻¹
The solid phase was dried in a desiccator over be almost 1:3.	er P_4O_{10} and the Dy:F ratio determined to
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
added to 10-20 cm ³ of solvent, and the mix-	Dy ₂ O ₃ (source and purity not specified) was dissolved in HCl and the fluoride precipita-
ture mechanically agitated at room tempera-	ted by addition of aq HF. The solid pro-
ture for 100 h. 5-10 g of saturated solu-	duced was DyF3.0.5H20 and was dehydrated
tion were removed by decanting or by centri- fuging, and the solution evaporated to dry-	by washing with acetone followed by drying at 310°C for 120 hours.
ness. The residue was heated with about	
10 cm ³ of 10% KOH solution for 1-2 h to ob-	The solvent was dried and purified by
tain solid $Dy(OH)_3$ and a basic F ⁻ solution. The precipitate was washed, dissolved in aq	"standard methods."
HCl, and Dy determined several times by	
complexometric titration with potentiometric end-point detection (1). The fluoride con-	
tent in the filtrate was determined photo-	ESTIMATED ERROR:
metrically using Al-Eriochrome cyanine	Soly: results with relative errors exceed- ing 50% were rejected.
color lake indicator (2).	
The reported solubility is a mean of	Temp: unknown.
"numerous parallel determinations," or "at least two parallel determinations."	REFERENCES: 1. Schilbach, U.; Kirmse, E.M. Z. Chem.
reast two paratter determinations.	1974, 14, 484.
	 Schilbach, U.; Hetze, I.; Kirmse, E.M. Chemia Analityczna <u>1975</u>, 20, 33.

		· · · · · · · · · · · · · · · · · · ·					
COMPONENTS: (1) Dysprosium chloride; DyCl ₃ ;				ORIGINAL MEASUREMENTS: Sakharova, Yu.G.; Ezhova, T.A.			
[1002	25-74-8]	5	76 N	leorg. Khim. <u>197</u>	6 91 551-4	· RUAA	
(2) Ethar	nol; C ₂ H ₆ 0; [6	4-17-5]	J. In	org. Chem. (Eng	l. Transl.)	<u>1976</u> , 21,	
	; H ₂ 0; [7732-2		296-8	·			
(5) #400	, ¹ ₂ °, [//o ²						
VARIABLES:			PPEPAP	ED BY:			
	-			oduski and M. S	alomon		
Temperatu							
EXPERIMENTAL	VALUES:	<u> </u>					
	solubility o	f DyCl ₃ .6H ₂ 0 in	96.8 % C.H	L-OH ^a			
				-	mean solu	bilition	
	sample 1	-	-	sample 4			
t/°C	g/100 g ^D	g/100 g	g/100 g	g/100 g	g/100 g	mol kg ^{-lc}	
20	33.46	33.38	33.64	33.24	33.43	1.332	
30	32.60	32.40	32.27	32.26	32.38	1.270	
40	31.91	31.98	32.36	32.12	32.09	1.254	
50	33.67	33.39	33.58	33.10	33.43	1.332	
			34.87	35.10	34.91	1.423	
60	35.04	34.00	54.07	55.10	54.71	1.425	
						:	
		AUXILI	ARY INFORM	ATION			
METHOD / APPAI	RATUS / PROCEDURE				MATERIALS:		
Isothermal 1	nethod used. E	; quilibrium was	SOURCE DyCl oxide	AND PURITY OF 3.6H ₂ 0 prepd by a in dil (1:3) H	IC1 followed	by evapn and	
Isothermal reached after obtained by	nethod used. E er 3-4 h. Iden approaching eq	; quilibrium was tical results uilibrium from	SOURCE DyCl oxide cryst	AND PURITY OF 3.6H ₂ O prepd by a in dil (1:3) F cn. The crystals	Cl followed	by evapn and in a desic-	
Isothermal reached after obtained by above and be	method used. E er 3-4 h. Iden approaching eq elow. Two of	; quilibrium was tical results uilibrium from the data points	SOURCE DyCl- oxide cryst cator stals	AND PURITY OF .6H ₂ 0 prepd by e in dil (1:3) H in. The crystals c over CaCl ₂ , P ₂ s analyzed for t	C1 followed were dried 05 and NaOH. the metal by	by evapn and in a desic- The cry- titrn	
Isothermal a reached afte obtained by above and be in the table equilibration	method used. E er 3-4 h. Iden approaching eq elow. Two of e obtained afte on, and the rem	quilibrium was tical results uilibrium from the data points r 3 hours of aining two data	SOURCE DyCl- oxide cryst caton stals with	AND PURITY OF ,6H20 prepd by in dil (1:3) H cn. The crystals c over CaCl2, P2 s analyzed for t Trilon B, and f	Cl followed were dried O5 and NaOH. he metal by for Cl by the	by evapn and in a desic- The cry- titrn volhard	
Isothermal a reached afte obtained by above and be in the table equilibration	method used. E er 3-4 h. Iden approaching eq elow. Two of e obtained afte on, and the rem	quilibrium was tical results uilibrium from the data points r 3 hours of	SOURCE DyCl oxide cryst cator stals with metho 163.1	AND PURITY OF 3.6H ₂ 0 prepd by 2 in dil (1:3) H c over CaCl ₂ , P ₂ 3 analyzed for t Trilon B, and f bd. The hexahyd 1°C. 96.8% etha	Cl followed were dried 05 and NaOH. he metal by for Cl by the rate melted anol prepd by	by evapn and in a desic- The cry- titrn volhard at 161.8 - prolonged	
Isothermal a reached afte obtained by above and be in the table equilibration points obtain The metal co	method used. E er 3-4 h. Iden approaching eq elow. Two of e obtained afte on, and the rem ined after 4 h ontent in each	quilibrium was tical results uilibrium from the data points r 3 hours of aining two data of equilibratior aliquot taken fo	SOURCE DyCl oxide cryst cator stals with metho 163.J boilt anhyd	AND PURITY OF 3.6H ₂ 0 prepd by 4 in dil (1:3) H 5 cover CaCl ₂ , P ₂ 5 analyzed for t Trilon B, and f bd. The hexahyd 1°C. 96.8% ethat ing of c.p. grad dr CuSO4 followe	ICl followed were dried 05 and NaOH. The metal by for Cl by the trate melted nol prepd by te 93.5% ethat	by evapn and in a desic- The cry- titrn e Volhard at 161.8 - p prolonged mol with Ethanol	
Isothermal a reached afte obtained by above and be in the table equilibration points obtain The metal contained analysis was	method used. E er 3-4 h. Iden approaching eq elow. Two of e obtained afte on, and the rem ined after 4 h ontent in each	quilibrium was tical results uilibrium from the data points r 3 hours of aining two data of equilibration	SOURCE DyCl oxide cryst cator stals with nethol 163.J boilt anhyd concr	AND PURITY OF 3.6H ₂ 0 prepd by 4 in dil (1:3) F 5 over CaCl ₂ , P ₂ 5 analyzed for t Trilon B, and f od. The hexahyd 1°C. 96.8% ethat ing of c.p. grad	ICl followed were dried 05 and NaOH. The metal by for Cl by the trate melted nol prepd by te 93.5% ethat	by evapn and in a desic- The cry- titrn e Volhard at 161.8 - p prolonged mol with Ethanol	
Isothermal r reached aft obtained by above and bu in the table equilibration points obtain The metal co analysis was titration with Analyses of	method used. E er 3-4 h. Iden approaching eq elow. Two of e obtained afte on, and the rem ined after 4 h ontent in each s determined by ith Trilon B. the solids wit	quilibrium was tical results uilibrium from the data points r 3 hours of aining two data of equilibration aliquot taken for complexometric hdrawn at 20°C,	SOURCE DyCl oxide cryst cator stals with metho 163.1 boilt anhyc concr pycno ESTIM	AND PURITY OF 3.6H ₂ 0 prepd by 4 in dil (1:3) H in. The crystals 5 over CaCl ₂ , P ₂ 5 analyzed for t Trilon B, and f od. The hexahyd 1°C. 96.8% ethat in CuSO4 followed n detd refractom pometrically.	ICl followed were dried 05 and NaOH. The metal by for Cl by the trate melted nol prepd by te 93.5% ethat	by evapn and in a desic- The cry- titrn e Volhard at 161.8 - p prolonged mol with Ethanol	
Isothermal r reached aft obtained by above and bo in the table equilibration points obtain The metal co analysis was titration was Analyses of 40°C and 60	method used. E er 3-4 h. Iden approaching eq elow. Two of e obtained afte on, and the rem ined after 4 h ontent in each s determined by ith Trilon B. the solids wit °C showed the s	quilibrium was tical results uilibrium from the data points r 3 hours of aining two data of equilibration aliquot taken for complexometric hdrawn at 20°C, olid phase to be	SOURCE DyCl oxide cryst cator stals with metho 163.1 boil anhyce concr pycno ESTIM	AND PURITY OF .6H ₂ 0 prepd by e in dil (1:3) H in. The crystals c over CaCl ₂ , P ₂ s analyzed for t Trilon B, and f od. The hexahyd 1°C. 96.8% ethat ing of c.p. grad in CuSO ₄ followed a detd refractom ometrically. ATED ERROR: : results appared	ICl followed were dried 05 and NaOH. The metal by for Cl by the rate melted nol prepd by 93.5% ethat d by distn. metrically an ently precise	by evapn and in a desic- The cry- titrn e Volhard at 161.8 - prolonged mol with Ethanol d	
Isothermal r reached aft obtained by above and bo in the table equilibration points obtain The metal co analysis was titration was Analyses of 40°C and 60 the hexahyd	method used. E er 3-4 h. Iden approaching eq elow. Two of e obtained afte on, and the rem ined after 4 h ontent in each s determined by ith Trilon B. the solids wit °C showed the s	quilibrium was tical results uilibrium from the data points r 3 hours of aining two data of equilibration aliquot taken for complexometric hdrawn at 20°C, olid phase to be nol was not four	SOURCE DyCl oxide cryst cator stals with metho 163.1 boilt anhyo concr pycno ESTIM	AND PURITY OF $3.6H_{20}$ prepd by $4.6H_{20}$ prepd by $4.6H_{20}$ prepd by $4.6H_{20}$ prepd by $4.3H_{20}$ prepd by $4.3H_{20}$ cover CaCl ₂ , P ₂ $5.3H_{20}$ analyzed for the Trilon B, and for 1° C. 96.8% ethat 1° C. 96.8% ethat	ICl followed were dried 05 and NaOH. The metal by for Cl by the rate melted nol prepd by te 93.5% etha d by distn. metrically an ently precise liers).	by evapn and in a desic- The cry- titrn e Volhard at 161.8 - prolonged mol with Ethanol d	
Isothermal m reached aft obtained by above and by in the table equilibration points obtain The metal contained analysis was titration with Analyses of 40°C and 60 the hexahyd	method used. E er 3-4 h. Iden approaching eq elow. Two of e obtained afte on, and the rem ined after 4 h ontent in each s determined by ith Trilon B. the solids wit °C showed the s rate: i.e. etha	quilibrium was tical results uilibrium from the data points r 3 hours of aining two data of equilibration aliquot taken for complexometric hdrawn at 20°C, olid phase to be nol was not four	SOURCE DyCl- oxide cryst cator stals with metho 163.1 boild anhyd concr pycnd ESTIM Soly Temp	AND PURITY OF $_{1}$.6H ₂ 0 prepd by $_{2}$ in dil (1:3) H in. The crystals $_{3}$ over CaCl ₂ , P ₂ $_{3}$ analyzed for t Trilon B, and f od. The hexahyd $_{1}^{\circ}$ C. 96.8% ethat $_{1}^{\circ}$ C. 96.8% ethat ing of c.p. grad $_{1}^{\circ}$ C. 96.8% ethat $_{1}^{\circ}$ C. 96.8% ethat $_{1}^{\circ}$ C. 96.8% ethat $_{2}^{\circ}$ C. 96.8% ethat $_{2}^{\circ}$ C. 96.8% ethat $_{3}^{\circ}$ C. 96.8% ethat $_{3}^{\circ}$ C. 96.8% ethat $_{4}^{\circ}$ C. 96.8% ethat $_{5}^{\circ}$ C. 96.8% ethat	ICl followed were dried 05 and NaOH. The metal by for Cl by the rate melted nol prepd by te 93.5% etha d by distn. metrically an ently precise liers).	by evapn and in a desic- The cry- titrn e Volhard at 161.8 - prolonged mol with Ethanol d	
Isothermal r reached aft obtained by above and bo in the table equilibration points obtain The metal co analysis was titration was Analyses of 40°C and 60 the hexahyd	method used. E er 3-4 h. Iden approaching eq elow. Two of e obtained afte on, and the rem ined after 4 h ontent in each s determined by ith Trilon B. the solids wit °C showed the s rate: i.e. etha	quilibrium was tical results uilibrium from the data points r 3 hours of aining two data of equilibration aliquot taken for complexometric hdrawn at 20°C, olid phase to be nol was not four	SOURCE DyCl- oxide cryst cator stals with metho 163.1 boild anhyd concr pycnd ESTIM Soly Temp	AND PURITY OF $3.6H_{20}$ prepd by $4.6H_{20}$ prepd by $4.6H_{20}$ prepd by $4.6H_{20}$ prepd by $4.3H_{20}$ prepd by $4.3H_{20}$ cover CaCl ₂ , P ₂ $5.3H_{20}$ analyzed for the Trilon B, and for 1° C. 96.8% ethat 1° C. 96.8% ethat	ICl followed were dried 05 and NaOH. The metal by for Cl by the rate melted nol prepd by te 93.5% etha d by distn. metrically an ently precise liers).	by evapn and in a desic- The cry- titrn e Volhard at 161.8 - prolonged mol with Ethanol d	
Isothermal m reached aft obtained by above and by in the table equilibration points obtain The metal contained analysis was titration with Analyses of 40°C and 60 the hexahyd	method used. E er 3-4 h. Iden approaching eq elow. Two of e obtained afte on, and the rem ined after 4 h ontent in each s determined by ith Trilon B. the solids wit °C showed the s rate: i.e. etha	quilibrium was tical results uilibrium from the data points r 3 hours of aining two data of equilibration aliquot taken for complexometric hdrawn at 20°C, olid phase to be nol was not four	SOURCE DyCl- oxide cryst cator stals with metho 163.1 boild anhyd concr pycnd ESTIM Soly Temp	AND PURITY OF $_{1}$.6H ₂ 0 prepd by $_{2}$ in dil (1:3) H in. The crystals $_{3}$ over CaCl ₂ , P ₂ $_{3}$ analyzed for t Trilon B, and f od. The hexahyd $_{1}^{\circ}$ C. 96.8% ethat $_{1}^{\circ}$ C. 96.8% ethat ing of c.p. grad $_{1}^{\circ}$ C. 96.8% ethat $_{1}^{\circ}$ C. 96.8% ethat $_{1}^{\circ}$ C. 96.8% ethat $_{2}^{\circ}$ C. 96.8% ethat $_{2}^{\circ}$ C. 96.8% ethat $_{3}^{\circ}$ C. 96.8% ethat $_{3}^{\circ}$ C. 96.8% ethat $_{4}^{\circ}$ C. 96.8% ethat $_{5}^{\circ}$ C. 96.8% ethat	ICl followed were dried 05 and NaOH. The metal by for Cl by the rate melted nol prepd by te 93.5% etha d by distn. metrically an ently precise liers).	by evapn and in a desic- The cry- titrn e Volhard at 161.8 - prolonged mol with Ethanol d	
Isothermal m reached aft obtained by above and by in the table equilibration points obtain The metal contained analysis was titration with Analyses of 40°C and 60 the hexahyd	method used. E er 3-4 h. Iden approaching eq elow. Two of e obtained afte on, and the rem ined after 4 h ontent in each s determined by ith Trilon B. the solids wit °C showed the s rate: i.e. etha	quilibrium was tical results uilibrium from the data points r 3 hours of aining two data of equilibration aliquot taken for complexometric hdrawn at 20°C, olid phase to be nol was not four	SOURCE DyCl- oxide cryst cator stals with metho 163.1 boild anhyd concr pycnd ESTIM Soly Temp	AND PURITY OF $_{1}$.6H ₂ 0 prepd by $_{2}$ in dil (1:3) H in. The crystals $_{3}$ over CaCl ₂ , P ₂ $_{3}$ analyzed for t Trilon B, and f od. The hexahyd $_{1}^{\circ}$ C. 96.8% ethat $_{1}^{\circ}$ C. 96.8% ethat ing of c.p. grad $_{1}^{\circ}$ C. 96.8% ethat $_{1}^{\circ}$ C. 96.8% ethat $_{1}^{\circ}$ C. 96.8% ethat $_{2}^{\circ}$ C. 96.8% ethat $_{2}^{\circ}$ C. 96.8% ethat $_{3}^{\circ}$ C. 96.8% ethat $_{3}^{\circ}$ C. 96.8% ethat $_{4}^{\circ}$ C. 96.8% ethat $_{5}^{\circ}$ C. 96.8% ethat	ICl followed were dried 05 and NaOH. The metal by for Cl by the rate melted nol prepd by te 93.5% etha d by distn. metrically an ently precise liers).	by evapn and in a desic- The cry- titrn e Volhard at 161.8 - prolonged mol with Ethanol d	
Isothermal n reached afte obtained by above and by in the table equilibration points obtain The metal co- analysis was titration was Analyses of 40°C and 60 the hexahyd	method used. E er 3-4 h. Iden approaching eq elow. Two of e obtained afte on, and the rem ined after 4 h ontent in each s determined by ith Trilon B. the solids wit °C showed the s rate: i.e. etha	quilibrium was tical results uilibrium from the data points r 3 hours of aining two data of equilibration aliquot taken for complexometric hdrawn at 20°C, olid phase to be nol was not four	SOURCE DyCl- oxide cryst cator stals with metho 163.1 boild anhyd concr pycnd ESTIM Soly Temp	AND PURITY OF $_{1}$.6H ₂ 0 prepd by $_{2}$ in dil (1:3) H in. The crystals $_{3}$ over CaCl ₂ , P ₂ $_{3}$ analyzed for t Trilon B, and f od. The hexahyd $_{1}^{\circ}$ C. 96.8% ethat $_{1}^{\circ}$ C. 96.8% ethat ing of c.p. grad $_{1}^{\circ}$ C. 96.8% ethat $_{1}^{\circ}$ C. 96.8% ethat $_{1}^{\circ}$ C. 96.8% ethat $_{2}^{\circ}$ C. 96.8% ethat $_{2}^{\circ}$ C. 96.8% ethat $_{3}^{\circ}$ C. 96.8% ethat $_{3}^{\circ}$ C. 96.8% ethat $_{4}^{\circ}$ C. 96.8% ethat $_{5}^{\circ}$ C. 96.8% ethat	ICl followed were dried 05 and NaOH. The metal by for Cl by the rate melted nol prepd by te 93.5% etha d by distn. metrically an ently precise liers).	by evapn and in a desic- The cry- titrn e Volhard at 161.8 - prolonged mol with Ethanol d	

COMPONENTS: (1) Dysprosium chlo [10025-74-8]	ride; DyCl ₃ ;	:	ORIGINAL ME Kirmse, E	ASUREMENTS: .M.	
(2) Alkoxy-ethanols			Tr. II Vs. <u>1971</u> , 200	es. Konf. po To 1-6.	cor. Rastvorov
VARIABLES :			PREPARED BY	7.	
T/K = 298				ki and M. Salo	mon
EXPERIMENTAL VALUES:				olubility ^a	
solvent			-	mol kg ⁻¹	nature of the solid phase
2-methoxyethanol;	с ₃ н ₈ 0 ₂ ;	[109-86-4]		0.151	$DyCl_3.nC_3H_80_2$ (n = 2-3)
2-ethoxyethanol;	C4H1002;	[110-80-5]	9.4	0.386	(n = 2-3) DyCl ₃ .2C ₄ H ₁₀ O ₂
	-4-10-23	(2,
a Molalities calculat	ed by the com	pilers.			
		-			
-			THEODILLETON		
METHOD/APPARATUS/PROCE	DURE :	AUXILIARY	INFORMATION	PURITY OF MATE	RTALS
Experimental details probably similar to	not given, b		Nothing s	pecified, but h	based on previous anhydrous salt was
author which are comy volume.				prepared by the	e method of Taylor
			ESTIMATED I Nothing s		
			REFERENCES	:	
			1. Taylor J. Ino	, M.D.; Carter, rg. Nucl. Chem.	, C.P. . <u>1962</u> , 24, 387.
			L		

COMPONENTS .	OBICINAL MEACUDEMINING
COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Dysprosium chloride; DyCl₃; [10025-74-8]</pre>	Dzhuraev, Kh. Sh.; Mirsaidov, U.; Kurbanbekov, A.; Rakhimova, A.
(2) Diethyl ether (ethyl ether); C4 ^H 10 ⁰ ; [60-29-7]	Dokl. Akad. Nauk Tadzh. SSR <u>1976</u> , 19, 32-4.
VARIABLES:	PREPARED BY:
T/K = 293	T. Mioduski
EXPERIMENTAL VALUES:	L
The solubility of DyCl ₃ in diethyl ether at	20°C was reported to be
3.2 ×	: 10 ⁻² mass %
The corresponding molality calculated by the	comptler te
1.19 x	$10^{-3} \text{ mol kg}^{-1}$
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method employed. Equilibrium was attained within 24 h and it was verified by	Anhydrous DyCl ₃ prepared by the ethanol solvate method (no details given).
constancy in the Dy concentration. The sat-	•
urated solution and the equilibrated solid phase were analyzed. Dy determined by com-	Ethyl ether was dried with Na and distilled from $LiAlH_4$.
plexometric titration using urotropine buf-	
fuer and methyl-thymol blue indicator. Chloride determined by titration with AgNO3	
solution. The solid phase corresponded to	
DyCl ₃ .Et ₂ 0 (the etherate was dried under vacuum at 40°C prior to analysis).	•
• • • • • • • • • • • •	
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES :
]

COMPONENTS:	ORIGINAL MEASUREMENTS:	
<pre>(1) Dysprosium chloride; DyCl₃; [10025-74-8]</pre>	Kirmse, E.M.; Zwietasch, K.J.	
(2) 1,2-Diethoxyethane; C ₆ H ₁₄ O ₂ ; [629-14-1]	Z. Chem. <u>1967</u> , 7, 281.	
VARIABLES:	PREPARED BY:	
T/K = 298	T. Mioduski	
EXPERIMENTAL VALUES: The solubility of DyCl ₃ in 1,2-diethoxyethane at 25°C was reported to be 0.25 mass %		
The corresponding molality calculated by the compiler is $0.0093 \text{ mol kg}^{-1}$		
The composition of the solid phase was given in terms of the Dy:Cl:ether ratio as 1:2.91:1.70		

AUXILIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:		
Isothermal method used. The anhydrous mixtures were equilibrated at 25°C for several days with frequent shaking.	Sources and purities of materials not given The anhydrous chloride was obtained by the method of Taylor and Carter (1).		
The solid phase was dried in a vacuum desiccator over P205. Dy was determined by complexometric titra- tion using Xylenol Orange indicator. Chloride was determined by the Volhard titration method.	The solvent was prepared by the Williamson synthesis: i.e. by reaction of C ₂ H ₅ I with the monoethylether of ethylene glycol.		
	ESTIMATED ERROR:		
	No estimates possible.		
	REFERENCES: 1. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.		

COMPONENTS:		ORIGINAL MEASUREMENTS:
(1) Dysprosiu [10025-74	m chloride; DyCl ₃ ; -8]	Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J.; Oelsner, L.; Niedergeases, U. Z. Chem. <u>1968</u> , <i>8</i> , 472-3.
(2) Ethers		Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov <u>1971</u> , 200-6.
VARIABLES:		PREPARED BY:
Room Temperatu	re: T/K around 298	T. Mioduski and M. Salomon
EXPERIMENTAL VAL	LUES:	

			DyCl ₃ solubility ^{a,b}	
solvent			mass %	mol kg ⁻¹
1-ethoxy-2-methoxyethane;	с ₅ н ₁₂ 0 ₂ ;	[5137-45-1]	0.6	0.022
1-methoxypentane;	c ₆ H ₁₄ 0;	[628-80-8]	0.08	0.003
1,4-dioxane;	с ₄ н ₈ 0 ₂ ;	[123-91-1]	0.4	0.015

^aMolalities calculated by the compilers.

 $^{\rm b}{\rm Nature}$ of solid phases not specified.

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The solute-solvent mixtures were isothermal-	The anhydrous salt was prepared by the
ly agitated at 25°C or at room temperature.	method of Taylor and Carter (1).
Authors state that the difference found for	
the solubility was within experimental	No other information given.
error limits.	
Dy was determined by complexometric titra-	
tion.	
No other details given.	
	ESTIMATED ERROR:
	Nothing specified
	Nothing specified.
	1
	REFERENCES:
	1. Taylor, M.D.; Carter, C.P.
	J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.

Dysprosium Chloride		295
COMPONENTS: (1) Dysprosium chloride; DyCl ₃ ; [10025-74-8] (2) Tetrahydrofuran; C ₄ H ₈ 0; [109-99-9]	ORIGINAL MEASUREMENTS: Rossmanith, K.; Auer-Welsbach, C. Monatsh. Chem. <u>1965</u> , 96, 602-5.	
VARIABLES:	PREPARED BY:	
Room Temperature: T/K about 293	T. Mioduski	
	n at 20°C (room temperature) was reported 5 g per 100 ml of solution 20240 mol dm ⁻³ , compiler)	

METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution was equilibrated in an extractor with agitation for 60-80 hours at room tempera- ture. Dysprosium was determined by the oxalate method and by titration with EDTA using	SOURCE AND PURITY OF MATERIALS: Sources and purities of initial materials not specified. DyCl ₃ was prepared by conversion of the oxide by high temperature reaction with an excess of NH ₄ Cl followed by heating the product in a stream of dry nitrogen, and then in vacuum to remove unreacted NH ₄ Cl.
Xylenol Orange indicator. The solvent was determined by difference.	Tetrahydrofuran was distilled from $LiAlH_{A}$.
Anhydrous materials were handled in a dry box through which was passed a stream of nitrogen free of carbon dioxide. The solid phase is DyCl ₃ .3.45C ₄ H ₈ O.	ESTIMATED ERROR: Nothing specified.
	REFERENCES :

		Byspiosid			
		ORIGINAL MEASUREMENTS:			
 Dysprosium chloride; DyCl₃; [10025-74-8] Tributylphosphate; C₁₂H₂₇O₄P; [126-73-8] 		Korovin, S.S.; Galaktionova, O.V.; Lebedeva, E.N.; Voronskaya, G.N.			
		Zh. Neorg. Khim. <u>1975</u> , 20, 908-14; Russ. J. Inorg. Chem. (Engl. Transl.) <u>1975</u> , 20, 508-11.			
VARIABLES:			PREPARED BY:		
T/K = 298			T. Miodusk:	i and M. Salomo	n
EXPERIMENTAL	VALUES:				
	Co	mposition of sa	turated solu	tions	
mass %	mol/kg sln	g dm ⁻³	mol dm^{-3}	mol kg ⁻¹ (compiler)	density/g cm ⁻³
39.2	1.45	534.4	1.98	2.40	1.36
		The solid ph	ase is DyCl ₃		
		AUXILIARY	INFORMATION		
	ATUS/PROCEDURE:			URITY OF MATERI	
	olutions prepared i ic stirring. Equil				by chlorination of (1,2). Source and
attained aft	ter 25-30 d. The s	olution was	purity of m	naterials not g	iven. Dy was
	and an aliquot for methanol and prec		analyzed gr Volhard's m	cavimetrically, nethod.	and C1 by
aq NH3. The	e pptd Dy(OH)3 was	washed repeated		. (7777)	
•	ed to the oxide for The solid phase was	-	Tributylphc the standar	sphate (TBP) w d method." No	as purified "by additional
details give	en) for phosphorous yCl ₃ was found.		details giv		-
-	ons were performed ch a stream of argo	-	ESTIMATED ER		
The major of	- jective of this wo	rk was to		es possible.	
establish th	ne nature of comple and DyCl ₃ in solut	xation	NO ESCIMALE	o hossinie.	
			REFERENCES:		
			Bukhtiya	ov, B.G.; Drobo arov, V.V.; She ug. Khim. <u>1964</u> ,	vtsova, Z.N.
				G.I.; Tolmach L. Khim. <u>1965</u> ,	

COMPONENTS :	and the second				
			ORIGINAL MEASUREMENTS:		
 Dysprosium chloride; DyCl₃; [10025-74-8] 		Kirmse, E.M.			
(2) Amines			1r. 11 Vst 1971, 200	28. Konf. po -6.	o Teor. Rastvorov
VARIABLES:			PREPARED BY: T. Mioduski and M. Salomon		
T/K = 298			T. Miodus	ki and M. Sa	alomon
EXPERIMENTAL VALUES:	<u></u>	I			<u></u>
					a
					ility ^a
solvent					mol kg ⁻¹
2-propanamine;					1.207
2-propen-l-amine; ^b	• 1				
1-butanamine;	$n-C_{4}H_{11}N;$	[109-	-73-9]	21.2	1.001
2-butanamine;	sec-C4H11N;	[1395	52-84-6]	15.4	0.677
	AUXIL	LIARY	INFORMATIO		
METHOD/APPARATUS/PROC Experimental details probably similar to author which are com volume. Nature of solid phas	EDURE: not given, but wer previous works of t piled throughout th	e he	SOURCE ANI Nothing s work by) PURITY OF specified, 1 the author, prepared by	MATERIALS: but based on previous the anhydrous salt was y the method of Taylor

COMPONENTS :	ORIGINAL MEASUREMENTS:
 Dysprosium chloride; DyCl₃; [10025-74-8] 	Mikheev, N.B.; Kamenskaya, A.N.; Konovalova, N.A.; Zhilina, T.A.
<pre>(2) Hexamethylphosphorotriamide; C₆H₁₈N₃OP; [680-31-9]</pre>	Zh. Neorg. Khim. <u>1977</u> , 22, 1761–6; Russ. J. Inorg. Chem. (Engl. Transl.) <u>1977</u> , 22, 955–8.
VARIABLES:	PREPARED BY:
Room temperature: $T/K = 298 \pm 3$	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	
Starting with the solvate $DyCl_3.3((CH_3)_2N)_3Pc_3$	
0.109	mol dm ⁻³
^a Table 3 in the English translation of the solution $23 \pm 3^{\circ}$ C. This is probably a typographical measurements were carried out at $25 \pm 3^{\circ}$ C.	ource paper states the temperature to be error as the text clearly states that all
	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method. Salt and solvent were placed in a test-tube in a dry box, and the tube agitated at room temperature until equil- ibrium was reached. Aliquots were withdrawn periodically and analyzed for the metal content. Rare earth concentration was deter- mined by complexometric titration, and by the radiometric method using the isotope Tm-170 ($t_1 = 169$ d). Authors state that results for ² both methods agreed. Although not clear-	SOURCE AND PURITY OF MATERIALS: DyCl ₃ . $3C_6H_{18}N_3$ OP prepared by dissolving the hydrate in the solvent and heating to 140-145°C for 5 m. The solvate was pptd by addition of abs ether, washed 7 times with ether, and dried over P ₂ O ₅ in a stream of dry nitrogen. Yield was about 90%. The solvent was purified as described in (1).
ly stated, it appears that equilibrium was reached in several weeks to several months.	
Solid phase samples washed three times with benzene or ether and dried on a steam bath in an argon atmosphere. The solid phase was analyzed and found to be $DyCl_3 \cdot 3C_6H_{18}N_3OP$.	ESTIMATED ERROR: Soly: precision \pm 0.002 mol dm ⁻³ at a 95% level of confidence (authors). Temp: precision \pm 3 K.
The solvate was analyzed for metal content by complexometric titration, for chloride by the Volhard method, and the solvent was obtained by difference. IR spectra confirmed the absence of water. Structural studies of the solvate were also carried out by X-ray analysis.	REFERENCES: 1. Fomicheva, M.G.; Kessler, Yu.M.; Zabusova, S.E.; Alpatova, N.M. Elektrokhimiya <u>1975</u> , 11, 163.

ORIGINAL MEASUREMENT	
Lyubimov. E.I.; Bat Zh. Prikl. Khim. 19	
	<u>, ,</u> , , 11/0 ⁻ 0.
PREPARED BY:	······································
T. Mioduski	
	<u></u>
1/ concentration	Dy203 solubility ^{a,b}
$mo1 dm^{-3}$	moles Dy dm ^{-3}
0.085	0.022
0.17	0.023 (0.018)
0.33	0.034
0.59	0.023
0.78	0.032
ccording to 1 ₃ + 3P ₂ 0 ₃ Cl ₄ is enhanced by compley	because the oxide is
INFORMATION	an a
950°C for 2 hours. d "Pure" grade SnCl ₄ d with P_2O_5 and disting	sort" was ignited at and POC13 were dehydrated
	T. Mioduski T. Mioduski $rac{1}{4}$ concentration mol dm ⁻³ 0.085 0.17 0.33 0.59 0.78 arenthesis corresponds the SnCl4-POCl ₃ mixture ccording to $rac{1}{3}$ + 3P ₂ O ₃ Cl ₄ is enhanced by complex Dy ₂ (SnCl ₆) ₃ Y INFORMATION SOURCE AND PURITY OF Dy ₂ O ₃ of "the first 950°C for 2 hours. d "Pure" grade SnCl ₄

COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Dysprosium bromide; DyBr₃; [14456-48-5]</pre>	Kirmse, E.M.
(2) 1,2-Diethyoxyethane; C ₆ H ₁₄ 0 ₂ ; [629-14-1]	Tr. II Vses. Konf. po Teor. Rastvorov <u>1971</u> , 200-6.
VARIABLES:	PREPARED BY:
T/K = 298	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of DyBr ₃ in 1,2-diethoxyethan	e at 25°C was given as
1.2	mass %
The corresponding value of the molality calcu	
0.030	2 mol kg ⁻¹
The nature of the solid phase was not specif:	led.
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume.	Nothing specified, but based on previous work by the author, the anhydrous salt was probably prepared by the method of Taylor and Carter (1).
)	
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES:
	1. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.
	5. morg. moet onum. 1501, 19, 5071

COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Dysprosium bromide; DyBr₃; [14456-48-5]</pre>	Rossmanith, K.
(2) Tetrahydrofuran; C ₄ H ₈ O; [109-99-9]	Monatsh. Chem. <u>1966</u> , 97, 1357-64.
VARIABLES:	PREPARED BY:
Room Temperature: T/K = 294-296	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of DyBr ₃ in tetrahydrofuran a	t 21-23°C was reported to be
0.26 g per 100 ml of solution (0.0065 m	ol dm ⁻³ , compiler).
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method employed. The solution	Sources and purities of initial materials
was equilibrated in an extractor with agitation for 60-80 hours at room tempera-	not specified. DyBr ₃ was prepared by conversion of the oxide by high tempera-
ture.	ture reaction with an excess of NH_4Br
Dysprosium was determined by the oxalate	followed by heating the product in a stream of dry nitrogen, and then in vacuum to
method and by titration with EDTA using	remove unreacted NH ₄ Br.
Xylenol Orange indicator. The solvent was	
determined by difference.	Tetrahydrofuran was distilled from LiAlH ₄ .
Anhydrous materials were handled in a dry	
box through which was passed a stream of nitrogen free of carbon dioxide.	
nitrogen free of carbon dioxide.	ESTIMATED ERROR:
The solid phase is DyBr ₃ .3.5C ₄ H ₈ 0.	Nothing specified.
	REFERENCES :
	1

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COMPONENTS: (1) Dysprosium bromide; DyBr ₃ ; [14456-48-5]	ORIGINAL MEASUREMENTS: Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J.; Oelsner, L.; Niedergeases, U.	
	Z. Chem. <u>1968</u> , 8, 472-3.	
(2) 1,4-Dioxane; C ₄ H ₈ O ₂ ; [123-91-1]	Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov <u>1971</u> , 200-6.	
VARIABLES:	PREPARED BY:	
Room Temperature: T/K around 298	T. Mioduski	
EXPERIMENTAL VALUES:		
The solubility of DyBr ₃ in p-dioxane at about 25°C was given as		
0.95	5 mass %	
the corresponding molality calculated by the	e compiler is	
0.0238	mol kg ⁻¹	
The nature of the solid phase was not specif	ied.	
AUXILIARY	INFORMATION	
METHOD / APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:	
The solute-solvent mixtures were isother- mally agitated at 25°C or at room tempera-	The anhydrous salt was prepared by the method of Taylor and Carter (1).	
ture. Authors state that the difference		
found for the solubility was within experimental error limits.	No other information given.	
Dy was determined by complexometric titra- tion.		
No other details given.		
1	ESTIMATED ERROR:	
	Nothing specified.	
	REFERENCES:	
	 Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u>, 24, 387. 	

COMPONENTS:	ORIGINAL MEASUREMENTS:
 Dysprosium bromide; DyBr₃; 	Kirmse, E.M.
[14456-48-5]	The TT Hand Keyl and The Date of
	Tr. II Vses. Konf. po Teor. Rastvorov <u>1971</u> , 200-6.
(2) 2-Propanamine; iso-C ₃ H ₉ N; [75-31-0]	<u>1971</u> , 200-0.
[75-51-0]	
VARIABLES:	PREPARED BY:
- /// 000	
T/K = 298	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of DyBr ₃ in 2-propanamine at	25°C was reported as
43.0) mass %
The corresponding melolity enlawlated by the	annotice to
The corresponding molality calculated by the	complier is
1 876 -	nol kg ⁻¹
1.070 1	
The nature of the solid phase was not specif	ied.
· · · · ·	
ANVITTADU	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Experimental details not given, but were	Nothing specified, but based on previous
probably similar to previous works of the	work by the author, the anhydrous salt was
author which are compiled throughout this	probably prepared by the method of Taylor
volume.	and Carter (1).
	1
	1
1	
	ESTIMATED ERROR:
	Nothing specified.
1	
]	
	REFERENCES :
}	1. Taylor, M.D.; Carter, C.P.
	J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.
	1
	1

COMPONENTS: (1) Dysprosium iodide; DyI ₃ ; [15474-63-2] (2) Ethanol; C ₂ H ₆ 0; [64-17-5]	ORIGINAL MEASUREMENTS: Yastrebova, L.F.; Grigor, T.I.; Kuznetsova, C.P.; Stepin, B.D. Zh. Neorg. Khim. 1981, 26, 2238-9; Russ, J.	
(3) Water: H ₂ 0; [7732-18-5]	Inorg. Chem. (Engl. Transl.), <u>1981</u> , 26, 1203-4.	
VARIABLES:	PREPARED BY:	
Composition at 273 K	M. Salomon and T. Mioduski	
EXPERIMENTAL VALUES:	· · · · · · · · · · · · · · · · · · ·	
solubilit		
5 2	^{yI} 3	
solvent mass % mass %	mol kg ⁻¹ solid phase	
с ₂ н ₅ он ^b 79.81 61.46	2.936 Dy1 ₃ .9H ₂ 0	
н ₂ 0 88.86 68.43	3.991 "	
^a Results for the anhydrous salt calculated b	y the compilers.	
at equilibrium, the solvent contains 52.39 mass % alcohol and 47.61 mass % water. <u>COMMENTS AND/OR ADDITIONAL DATA</u> : In several instances in investigating the ternary systems, the initial nonohydrate was dehydrated in vacuum (3-4 mm Hg) at 30-40°C. Under these conditions the hexahydrate was produced after 40 hours. Howdver the authors state that in every instance the solid phase in the equilibrated solutions is the nonohydrate.		
AUXILIARY	INFORMATION	
METHOD/APPARATUS/PROCEDURE: Isothermal method used. No information was given on how equilibrium was ascertained. Aliquots of saturated solution were withdraw	SOURCE AND PURITY OF MATERIALS; The nonohydrate, DyI ₃ .9H ₂ O, was synthesized according to (1,2).	
and analyzed for the metal complexometrical- ly, for iodide by a potentiometric volumetri argentometric method, and for water by the Karl Fischer method. The alcohol and water contents in the mixtures ^C were found by	c The alcohol was dried and purified by "recommended" methods.	
quantitative gas chromatography. Solid phas compositions were determined by Schreine- makers' method of residues.	e The source and purity of water was not specified.	
^C These statements indicate that the authors	ESTIMATED ERROR:	
studied the ternary system over a wide rang of compositions. However no phase diagram was given, and the only numerical results reported are those given in the data table	e Nothing specified.	
above. The phase diagram is stated to be similar to that for the NdI ₃ -H ₂ O-C ₄ H ₉ OH system (see the compilation for this system).	REFERENCES: 1. Yakimova, Z.P.; Kuznetsova, G.P.; Ya Yastrebova, L.F.; Stepin, B.D. Zh. Neorg. Khím. <u>1977</u> , 22, 251.	
	 Belousova, A.P.; Kuznetsova, G.P.; Rukk, N.S.; Stepin, B.D. Zh. Neorg. Khim. <u>1979</u>, 24, 1410. 	
Dysprosium lodide

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	Dy	sprosiu	im loalae	30
COMPONENTS :			ORIGINAL MEASU	REMENTS :
(1) Dysprosium iodide; DyI ₃ ; [15474-63-2]		53-2]	Yastrebova, I G.P.; Stepin,	F.; Grigor, T.I.; Kuznetsova B.D.
(2) 1-Butanol; C ₄ H ₁₀ 0; [71-36-3] (3) Water; H ₂ 0; [7732-18-5]			Zh. Neorg. Khim. <u>1981</u> , 26, 2238–9; Russ, J. Inorg. Chem. (Engl. Transl.), <u>1981</u> , 26, 1203–4.	
VARIABLES:	<u></u>		PREPARED BY:	, <u></u> , <u></u> , <u></u> , <u></u> _, <u></u> , <u>_</u> , <u></u>
Composition at 273 K			T. Mioduski and M. Salomon	
EXPERIMENTAL VALUES:		I		<u> </u>
	solu	bility	at O°C	
	Dy13.9H20	Dy	I a	
solvent ^b	mass % ma	iss %	mol kg ⁻¹	solid phase
n-C4H9OH	62.53 48	8.16	1.710	Dy13.9H20
н ₂ 0	88.86 68	3.43	3.991	"
^a Results for the anh	ydrous salt calcula	ited by	the compilers.	
COMMENTS AND/OR ADDI In several instances dehydrated in vacuum	TIONAL DATA: in investigating t (3-4 mm Hg) at 30- 0 hours. However t quilibrated solutio	he ten 40°C. he aut ns is	ary systems, th Under these co hors state that the nonohydrate	Nol and 27.73 mass % water. The initial nonohydrate was anditions, the hexahydrate in every instance the
	AUXI	LIARY	INFORMATION	
METHOD/APPARATUS/PRO Isothermal method us given on how equilib Aliquots of saturate and analyzed for the ly, for iodide by a p argentometric method Karl Fischer method. contents in the mixt quantitative gas chr compositions were de makers' method of re	ed. No information rium was ascertaine d solution were wit metal complexometr otentiometric volum , and for water by The alcohol and w ures ^C were found by omatography. Solid termined by Schrein	d. hdrawn ical- etric the ater phase	The nonohydra according to The alcohol w "recommended"	as dried and purified by
^C These statements indicate that the authors studied the ternary system over a wide range of compositions. However no phase diagram was given, and the only numerical results reported are those given in the data table		hors	ESTIMATED ERRO	PR:
		Nothing speci	fied.	
above. The phase d	iagram is stated to	be	REFERENCES:	
similar to that for the $MI_3 - H_2O - C_4H_9OH$ system (see the compilation for this system).			Z.P.; Kuznetsova, G.P.; , L.F. Stepin, B.D. Zh. Neorg. , 22, 251.	
				A.P.; Kuznetsova, G.P.; Rukk, in, B.D. Zh. Neorg. Khim. 1410.

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COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Dysprosium iodide; DyI₃; [15474-63-2]</pre>	Kachkimbaeva, S.A.; Chalova, E.P.; Bleshinskii, S.V.
(2) Tetrahydrofuran; C ₄ H ₈ O; [109-99-9]	Khim. Kompleks. Soedin. Redk. Soput- stvuyushchikh Elem. <u>1970</u> , 122–6.
VARIABLES :	PREPARED BY:
T/K = 293	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of DyI ₃ in tetrahydrofuran at	20° C was reported to be
·	
3.55:	3 g dm^{-3}
(0.00654 mol	dm ⁻³ , compiler)
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The solute-solvent mixtures were equilibrat- ed isothermally by agitation. The phases were separated by decantation, and in some cases by centrifuging. Dy determined by the oxalate method. I determined by titra- tion with an AgNO ₃ solution (the Volhard method).	
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES :

COMPONENTS:	ORIGINAL MEASUREMENTS:
 Holmium fluoride; HoF₃; [13760-78-6] Alcohols 	Kirmse, E.M. Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85-90.
VARIABLES: Room temperature	PREPARED BY: T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	

		HoF ₃ solubility ^{a,b}		
solvent			mass %	mol kg ⁻¹
methanol	сн ₄ 0;	[67-56-1]	0.01	4.5×10^{-4}
ethanol	с ₂ н ₆ 0;	[64-17-5]	0.01	4.5×10^{-4}

^aMolalities calculated by the compilers.

 $^{\rm b}{\rm Solid}$ phases were dried in a desiccator over ${\rm P_40}_{10}$ and the Ho:F ratio found to equal almost 1:3.

ATIVET TADV	THEODMATTON
AUXILIAKI	INFORMATION

METHOD/APPARATUS/PROCEDURE: Isothermal method. About 100 mg of HoF ₃ was added to $10-20 \text{ cm}^3$ of solvent, and the mix- ture mechanically agitated at room tempera- ture for 100 h. 5-10 g of saturated solu- tion were removed by decanting or by centri- fuging, and the solution evaporated to dry- ness. The residue was heated with about 10 cm ³ of 10% KOH solution for 1-2 h to obtain solid Ho(OH) ₃ and a basic F ⁻ solution. The precipitate was washed, dissolved in aq HC1, and Ho determined several times by complexo- metric titration with potentiometric end- point detection (1). The fluoride content in the filtrate was determined photometri- cally using Al-Eriochrome cyanine color lake indicator.	<pre>SOURCE AND PURITY OF MATERIALS: Ho₂O₃ (source and purity not specified) was dissolved in HCl and the fluoride precipi- tated by addition of aq HF. The solid pro- duced was HoF₃.0.5H₂O and was dehydrated by washing with acetone followed by drying at 310°C for 120 hours. The solvents were dried and purified by "standard methods."</pre> ESTIMATED ERROR: Soly: results with relative errors exceeding 50% were rejected.
The reported solubility is a mean of "numerous parallel determinations," or "at least two parallel determinations."	<pre>Temp: unknown. REFERENCES: 1. Schilbach, U.; Kirmse, E.M. Z. Chem. <u>1974</u>, 14, 484. 2. Schilbach, U.; Hetze, I.; Kirmse, E.M. Chemia Analityczna <u>1975</u>, 20, 33.</pre>

COMPONENTS:	ORIGINAL MEASUREMENTS:		
(1) Holmium fluoride; HoF ₃ ;	Dressler, H.		
[13760-78-6]			
	Dissertationschrift. Paed. Inst. Koethen.		
(2) Ethers	GDR. <u>1980</u> .		
VARIABLES:	PREPARED BY:		
	T. Mioduski and M. Salomon		
EXPERIMENTAL VALUES:			
	solubility		
solvent	mass % mol/100 g sln		
	; $[7289-52-3] 0.03^{a} 1.35 \times 10^{-4}$		
1-methoxydecane; n-C ₁₁ H ₂₄ 0	; [7289-52-3] 0.03 1.35 x 10		
	, r		
1-(chloromethoxy)butane; n-C ₅ H ₁₁ Cl($0 \qquad [2351-69-1] 0.02^{b} \qquad 9.0 \times 10^{-5}$		
a, the state of the Harthand Co			
^a In the solid phase the Ho:F:ether:H $_2$ O m	ratio is 1:2.99:0.02:0.40		
^b In the solid phase the Ho:F:ether ratio	a da 1.2 80.0 06		
In the solid phase the Ho:F:ether ratio	0 15 1:2.89:0.06.		
AUXIL	IARY INFORMATION		
METHOD / APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS;		
Method analogous to that described in () No other information available.	 It appears that the fluoride was prepared as in (1). In spite of drying the 		
	fluoride by two methods at 573 K, the		
	Ho:F:H ₂ O ratio was 1:3.04:0.70.		
	No other information available.		
	No other information available.		
1	ESTIMATED ERROR:		
	Nothing specified		
	Nothing specified.		
	REFERENCES:		
	1. Kirmse, E.M.		
1	Wiss. Hefte, Paed. Inst. Koethen.		
	<u>1978</u> , 2, 85.		
1			

COMPONENTS:		ORIGINAL MEASUREMENTS:	
(1)	Holmium fluoride; HoF ₃ ; [13760-78-6]	Kirmse, E.M.	
(2)	Tributy1 phosphate; C ₁₂ H ₂₇ O ₄ P; [126-73-8]	Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85-90.	
VARIA	ABLES :	PREPARED BY:	
Room	temperature	T. Mioduski	

EXPERIMENTAL VALUES:

The solubility of HoF_3 in $[CH_3(CH_2)_3]_3P(0)$ at room temperature was given as

0.02 mass %

The corresponding molality calculated by the compiler is

 $9.0 \times 10^{-4} \text{ mol kg}^{-1}$

The solid phase was dried in a desiccator over ${\rm P_40}_{10}$ and the Ho:F ratio determined to be almost 1:3.

AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method. About 100 mg of HoF ₃ was added to 10-20 cm ³ of solvent, and the mixture mechanically agitated at room temp- erature for 100 h. 5-10 g of saturated sol- ution were removed by decanting or by cen- trifuging, and the solution evaporated to dryness. The residue was heated with about 10 cm ³ of 10% KOH solution for 1-2 h to obtain solid Ho(OH) ₃ and a basic F ⁻ solu- tion. The precipitate was washed, dissolved in aq HCl, and Ho determined several times by complexometric titration with potentio- metric end-point detection (1). The fluoride content in the filtrate was determined photometrically using Al-Eriochrome cyanine color lake indicator (2). The reported solubility is a mean of "numerous parallel determinations," or "at least two parallel determinations."	<pre>SOURCE AND PURITY OF MATERIALS: Ho203 (source and purity not specified) was dissolved in HCl and the fluoride precipi- tated by addition of aq HF. The solid pro- duced was HoF3.0.5H20 and was dehydrated by washing with acetone followed by drying at 310°C for 120 hours. The solvent was dried and purified by "standard methods."</pre> ESTIMATED ERROR: Soly: results with relative errors exceed- ing 50% were rejected. Temp: unknown. REFERENCES: 1. Schilbach, U.; Kirmse, E.M. Z. Chem. <u>1974</u> , 14, 484. 2. Schilbach, U.; Hetze, I.; Kirmse, E.M. Chemia Analityczna <u>1975</u> , 20, 33.

010		Holman Haonae	
COMP	ONENTS:	ORIGINAL MEASUREMENTS:	
(1) (2)	Holmium fluoride; HoF ₃ ; [13760-78-6] Dimethylsulfoxide; C ₂ H ₆ OS; [67-68-5]	Kirmse, E.M. Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85-90.	
VARI	ABLES:	PREPARED BY:	
Room	Temperature	T. Mioduski	
	RIMENTAL VALUES: solubility of HoF ₃ in (CH ₃) ₂ SO at	room temperature was given as	
		0.02 mass %	
The o	corresponding molality calculated	by the compiler is	
	$9.0 \times 10^{-4} \text{ mol kg}^{-1}$		
The solid phase was dried in a desiccator over P_4O_{10} and the Ho:F ratio found to be almost 1:3.			

AUXILIARY IN	FORMATION
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METHOD/APPARATUS/PROCEDURE: Isothermal method. About 100 mg of HoF ₃ was added to $10-20 \text{ cm}^3$ of solvent, and the mix- ture mechanically agitated at room tempera- ture for 100 h. 5-10 g of saturated solu- tion were removed by decanting or by centri- fuging, and the solution evaporated to dry- ness. The residue was heated with about 10 cm ³ of 10% KOH solution for 1-2 h to ob- tain solid Ho(OH) ₃ and a basic F ⁻ solution. The precipitate was washed, dissolved in aq HC1, and Ho determined several times by	SOURCE AND PURITY OF MATERIALS: Ho ₂ O ₃ (source and purity not specified) was dissolved in HCl and the fluoride pre- cipitated by addition of aq HF. The solid produced was HoF ₃ .0.5H ₂ O and was dehydrated by washing with acetone followed by drying at 310°C for 120 hours. The solvent was dried and purified by "standard methods."
complexometric titration with potentiometric end-point detection (1). The fluoride con- tent in the filtrate was determined photo- metrically using Al-Eriochrome cyanine color lake indicator (2). The reported solubility is a mean of	ESTIMATED ERROR: Soly: results with relative errors exceed- ing 50% were rejected. Temp: nothing specified.
"numerous parallel detemrinations," or "at least two parallel determinations,"	<pre>REFERENCES: 1. Schilbach, U.; Kirmse, E.M. Z. Chem. <u>1974</u>, 14, 484. 2. Schilbach, U.; Hetze, I.; Kirmse, E.M. Chemia Analityczna <u>1975</u>, 20, 33.</pre>

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COMPONENTS: (1) Holmium chloride; HoCl ₃ ; [10138-62-2]			2-2]	ORIGINAL MEASUREMENTS: Sakharova, Yu.G; Ezhova, T.A.			
(2) Ethanol; C ₂ H ₆ 0; [64-17-5] (3) Water; H ₂ 0; [7732-18-5]			Zh. Neorg. Khim. <u>1976</u> , 21, 551-4; Russ. J. Inorg. Chem. (Engl. Transl.) <u>1976</u> , 21, 296-8.				
VARIABLES:				PREPARE			
Temperature				T. Mio	duski and M. S	alomon	
EXPERIMENTA							
		of HoCl ₃ .6H ₂ 0 f					
	sample 1 g/100 g ^b	sample 2	-	ple 3	-		
t/°C							
20	34.62	34.81	34.8		34.87	34.79	1.406
30	33.72	33.85	34.0		33.89	33.87	1.350
40	33.88	34.02	33.8		34.16	33.97	
50	34.25 36.02	34.68 36.11	34.4 35.3		34.56 35.83	34.49	1.388 1.478
		the compilers.					
		AUXI	LIARY	INFORMAT	CION		
Isothermal reached aft obtained by above and b in the tabl equilibrati points obta The metal c analysis wa	er 3-4 h. Ide approaching e elow. Two of e obtained aft on, and the re ined after 4 h	Equilibrium was ntical results quilibrium from the data points er 3 hours of maining two dat of equilibrati aliquot taken	a ia ion. for	HoCl ₃ . oxide crystn cator tals a Trilon The he	AND PURITY OF 6H ₂ O prepd by in dil (1:3) H . The crystals over CaCl ₂ , P ₂ nalyzed for th B, and for Cl xahydrate melt	dissolving c Cl followed were dried 0_5 and NaOH. e metal by t by the Volh. ed at 163.4 by prolonged	by evapn and in a desic- The crys- itrn with ard method.

COMPONENTS :			
	1	EASUREMENTS :	
<pre>(1) Holmium chloride; HoCl₃; [10138-62-2]</pre>		ses. Konf. po	Teor. Rastvorov
(2) Alkoxy-ethanols	<u>1971</u> , 200	J-6.	
	ļ		
VARIABLES:	PREPARED B	Y:	
T/K = 298	T. Miodus	ski and M. Sal	Lomon
EXPERIMENTAL VALUES:		· · · · · · · · · · · · · · · · · · ·	·····
	HoCl ₃ s	solubility ^a	
solvent		mol kg ⁻¹	nature of the solid phase
2-methoxyethano1; C ₃ H ₈ O ₂ ; [109-86-4]] 3.2	0.122	$HoC1_3.nC_3H_8O_2$ (n = 2-3)
2-ethoxyethanol; C4H ₁₀ O ₂ ; [110-80-5]] 8.4	0.338	HoC1 ₃ .2C ₄ H ₁₀ 0 ₂
^a Molalities calculated by the compilers.			
Motalities calculated by the compilers.			
	INFORMATIO		
	INFORMATIO		
METHOD / APPARATUS / PROCEDURE :		PURITY OF MA	
Experimental details not given, but were probably similar to previous works of the			
	previou		out based on a author, the anhydrous
author which are compiled throughout this	previou salt wa	is work by the as probably pi	out based on a author, the anhydrous repared by the method
author which are compiled throughout this volume.	previou salt wa	is work by the	out based on a author, the anhydrous repared by the method
	previou salt wa	is work by the as probably pi	out based on a author, the anhydrous repared by the method
	previou salt wa	is work by the as probably pi	out based on a author, the anhydrous repared by the method
	previou salt wa	is work by the as probably pi	out based on a author, the anhydrous repared by the method
	previou salt wa	is work by the as probably pi	out based on a author, the anhydrous repared by the method
	previou salt wa of Tayl	s work by the as probably pr lor and Carter	out based on a author, the anhydrous repared by the method
	previou salt wa of Tayl	s work by the as probably pi lor and Carten	out based on a author, the anhydrous repared by the method
	previou salt wa of Tayl	s work by the as probably pr lor and Carter	out based on a author, the anhydrous repared by the method
	previou salt wa of Tayl ESTIMATED Nothing	ERROR: 3 specified.	out based on a author, the anhydrous repared by the method
	ESTIMATED Nothing REFERENCE: 1. Taylor	ERROR: g specified. S: c, M.D.; Carte	out based on e author, the anhydrous repared by the method r (1).
	ESTIMATED Nothing REFERENCE: 1. Taylor	ERROR: g specified. S: c, M.D.; Carte	put based on a author, the anhydrous repared by the method (1).
	ESTIMATED Nothing REFERENCE: 1. Taylor	ERROR: g specified. S: c, M.D.; Carte	put based on a author, the anhydrous repared by the method (1).

COMPONENTS :	ORIGINAL MEASUREMENTS:
<pre>(1) Holmium chloride; HoCl₃; [10138-62-2]</pre>	Kirmse, E.M.; Zwietasch, K.J.
[10130-02-2]	Z. Chem. <u>1967</u> , 7, 281.
(2) 1,2-Diethoxyethane; C ₆ H ₁₄ 0 ₂ ;	
[629-14-1]	
VARIABLES:	PREPARED BY:
T/K = 298	T. Mioduski
178 - 290	i iloudat
EXPERIMENTAL VALUES:	
The solubility of HoCl3 in 1,2-diethoxyethan	e at 25°C was reported to be
	7 mass %
0.3	/ mass %
The corresponding molality calculated by the	compiler is
	_1
0.0137	mol kg ⁻¹
The composition of the solid phase was given	in terms of the Ho:Cl:ether ratio as
1:2.97	:1.82
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method used. The anhydrous	Sources and purities of materials not
mixtures were equilibrated at 25°C for	given. The anhydrous chloride was obtained by the method of Taylor and Carter (1).
several days with frequent shaking.	by the method of faylor and carter (1).
The solid phase was dried in a vacuum	The solvent was prepared by the Williamson
desiccator over P205.	synthesis: i.e. by reaction of C2H5I with
	the monoethylether of ethylene glycol.
Ho was determined by complexometric titration using Xylenol Orange indicator.	
Chloride was determined by the Volhard	
titration method.	
	ESTIMATED ERROR:
	No estimates possible.
	REFERENCES:
	1. Taylor, M.D.; Carter, C.P.
	J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.
1	

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COMPONENTS: (1) Holmium chloride;					
<pre>MPONENTS: 1) Holmium chloride; HoCl₃; [10138-62-2] 2) Alkyl ethers</pre>			ORIGINAL MEASUREMENTS: Kirmse, E.M.; Dressler, H. Z. Chem. <u>1975</u> , 15, 239-40.		
VARIABLES: Room temperature: T/K	= 293-298		PREPARED E	SY: on and T. Mi	oduski
EXPERIMENTAL VALUES:	<u>-</u>			<u></u>	
EAFERIMENTAL VALUES:				HoCl, so	lubility ^a
solvent				5	mol kg ⁻¹
1-methoxypentane; ^b	°6 ^H 14 ^O ;	[62	8-80-8]	2.4 ^b	0.091
1-methoxyheptane;	с ₆ н ₁₈ 0;				0.037
1-methoxyoctane;	с ₉ н ₂₀ 0;				0.058
1-methoxynonane;	^C 10 ^H 22 ^O ;				0.068
1-methoxydecane;	с ₁₁ н ₂₄ 0;	[72	89-52-3]	2.5	0.095
	IXUA	LIARY	INFORMATIO	N	·
METHOD/APPARATUS/PROCEDU The solute-solvent mixt at room temperature unt saturated. The anhydro handled in a dry box co Holmium was determined titration using Xylenol The reported solubiliti based on four determined system.	RE: The solution reagents were ontaining P_2O_5 . by complexometric Orange indicators tes are mean values	ted s were e ic or.	SOURCE AN	N D PURITY OF 1 mation given	

COMPONENTS: (1) Holmium chloride; HoCl ₃					
<pre>COMPONENTS: (1) Holmium chloride; HoCl₃; [10138-62-2] (2) Ethers</pre>			ORIGINAL MEASUREMENTS: Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J.; Oelsner, L.; Niedergeases, U. Z. Chem. <u>1968</u> , 8, 472-3.		
(2) Ethers		Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov. <u>1971</u> , 200-6.			
VARIABLES:			PREPARED B	Y:	
Room temperature: T/K aroun	d 298		T. Miodus	ski and M. Sa	lomon
EXPERIMENTAL VALUES:				solubi	lity ^{a,b}
solvent				mass %	mol kg ⁻¹
1-ethoxy-2-methoxyethane;	c ₅ H ₁₂ 0 ₂ ;	[513	7-45-1]	0.65	0.024
di-n-propyl ether;	C ₆ H ₁₄ 0;	[111	-43-3]	0.1	0.004
1-ethoxybutane;	с ₆ н ₁₄ 0;				0.0004
1-methoxypentane;	C ₆ H ₁₄ 0;	[628	-80-8]	2.4	0.091
1,4-dioxane;	C4H802;	[123	-91-1]	0.55	0.020
	AUXILI	ARY	 INFORMATIO	N	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures mally agitated at 25°C or at ture. Authors state that th found for the solubility was mental error limits. Ho was determined by complex titration. No other details given.	were isother- t room tempera he difference s within exper	- I	SOURCE ANI The anhyd method of	PURITY OF M	s prepared by the Carter (1).

COMPONENTS:	ORIGINAL MEASUREMENTS:			
(1) Holmium chloride; HoCl ₃ ;	Rossmanith, K.; Auer-Welsbach, C.			
[10138-62-2]				
	Monatsh. Chem. <u>1965</u> , 96, 602-5.			
(2) Tetrahydrofuran; C ₄ H ₈ O;				
[109-99-9]				
VARIABLES:	PREPARED BY:			
	m Mandu - 1.4			
Room Temperature: T/K about 293	T. Mioduski			
EXPERIMENTAL VALUES:				
The solubility of HoCl ₃ in tetrahydrofuran at 20°C (room temperature) was reported				
to be				
0.698 g per 100	ml of solution			
(0.0257 mol dm	-3. compiler).			
	, comprise).			
AUXILIARY	INFORMATION			
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:			
Isothermal method employed. The solution	Sources and purifies of initial materials			
was equilibrated in an extractor with agita-	not specified. HoCl ₃ was prepared by			
tion for 60-80 hours at room temperature.	conversion of the oxide by high temperature			
Halmium was determined by the sublets method	reaction with an excess of NH ₄ Cl followed			
Holmium was determined by the oxalate method and by titration with EDTA using Xylenol	nitrogen, and then in vacuum to remove			
Orange indicator. The solvent was deter-	unreacted NH ₄ Cl.			
mined by difference.				
	Tetrahydrofuran was distilled from LiAlH ₄ .			
Anhydrous materials were handled in a dry				
box through which was passed a stream of				
nitrogen free of carbon dioxide.				
The solid phase is HoCl ₃ .3.33C ₄ H ₈ O.	ESTIMATED ERROR:			
I The sorra phase to hear 313135044.801	Nothing specified.			
	DEFEDENCES.			
1	REFERENCES:			
1				
1				
1				

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		Holmium	Chloride		3
COMPONENTS :	· · · · · · · · · · · · · · · · · · ·		ORIGINAL MEAST	UREMENTS :	
(1) Holmiu [10138-	m chloride; HoCl ₃ ; -62-2]			.; Galaktionova, N.; Voronskaya, G	
(2) Tribut [126-7]	ylphosphate; C ₁₂ H ₂₇ 0 ₄ P 3-8]	;	Zh. Neorg. K J. Inorg. Ch 508-11.	him. <u>1975</u> , 20, 90 em. (Engl. Transl	08–14; Russ. .) <u>1975</u> , 20,
VARIABLES:			PREPARED BY:		
T/K = 298			T. Mioduski	and M. Salomon	
EXPERIMENTAL	VALUES:				
	Compos	ition of sa	turated soluti	ons	
mass %	mol/kg sln	$g dm^{-3}$	mol dm^{-3}	mol kg ⁻¹ (compilers)	density/g cm
41.0	1.52	573.1	2.12	2.56	1.39
	Th	e solid pha	se is HoCl ₃		
		AUXILIARY	INFORMATION		
METHOD APPAR	ATUS/PROCEDURE:		SOURCE AND PU	RITY OF MATERIALS	•
		h			
	olutions prepared isot	-		Cl ₃ prepared by c	
with magnet:	ic stirring. Equilibr	ium was	the oxide wi	th CC14 vapor (1,	2). Source
attained af	ter 25-30 d. The solu	tion was	and purity o	f materials not g	iven. Ho was
centri fuged	and an aliquot for an	alvsis		vimetrically, and	
0	dded to methanol and p	•		• •	
			,		
	. The pptd Ho(OH) ₃ wa		mad have 1 - 1		
	and heated to the oxid			phate (TBP) was p	
gravimetric	analysis. The solid	phase was	the standard	method." No add	itional
analyzed (n	o details given) for p	hosphorous	details give	n.	
	e anhydrous HoCl, was		- -		
			Į		
All onersti	ons were performed in	a drv bov	1		
-	-				
chrough white	ch a stream of argon w	as passeu.	ESTIMATED ERR	OR:	······································
		·			
	bjective of this work		No estimate	possible.	
establish t	he nature of complexat	ion be-	1		
tween TBP an	nd HoCl3 in solution.				
	-				
			REFERENCES:		
				BC . Dealar D	. V •
				, B.G.; Drobot, D	
				ov, V.V.; Shevtso	
			Zh. Neorg	. Khim. <u>1964</u> , 9,	1427.
			-		
				G.I.; Tolmacheva,	
		1	In. Prikl	. Khim. <u>1965</u> , 38,	TT00
		ļ			

COMPONENTS: (1) Holmium chloride; HoCl ₃ ;	ORIGINAL MEASUREMENTS: Kirmse, E.M.
[10138-62-2]	Tr. II Vses. Konf. po Teor. Rastvorov
(2) Alkyl amines	<u>1971</u> , 200-6.
VARIABLES:	PREPARED BY:
T/K = 298	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	
	HoCl ₃ solubility ^a
solvent	mass % mol kg ⁻¹
1-propanamine; n-C ₃ H ₉ N; [1	.07-10-8] 33.4 1.849
di-2-butylamine; (sec-C3H9N)2NH; [6	26-23-3] 1.2 0.045
and the second terms to complete	
^a Molalities calculated by the compilers.	
	INFORMATION
METHOD/APPARATUS/PROCEDURE:	
Experimental details not given, but were	SOURCE AND PURITY OF MATERIALS: Nothing specified, but based on previous
probably similar to previous works of the author which are compiled throughout this	work by the author, the anhydrous salt was probably prepared by the method of Taylor
volume.	and Carter (1).
Nature of solid phases not specified.	
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES: 1. Taylor, M.D.; Carter, C.P.
	J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.

COMPONENTS :	ORIGINAL MEASUREMENTS:
(1) Holmium chloride; HoCl ₃ ; [10138-62-2]	Mikheev, N.B.; Kamenskaya, A.N.; Konovalova, N.A.; Zhilina, T.A.
<pre>(2) Hexamethylphosphorotriamide; C₆H₁₈N₃OP; [680-31-9]</pre>	Zh. Neorg. Khim. <u>1977</u> , 22, 1761-6; Russ. J. Inorg. Chem. (Engl. Transl.) <u>1977</u> , 22, 955-8.
VARIABLES:	PREPARED BY:
Room temperature: $T/K = 298 \pm 3$	T. Mioduski and M. Salomon

EXPERIMENTAL VALUES:

Starting with the solvate HoCl₃.3C((CH₃)₂N)₃PO, the solubility at 25 \pm 3°C^a was given as

 $0.108 \text{ mol } \text{dm}^{-3}$

^aTable 3 in the English translation of the source paper states the temperature to be $23 \pm 3^{\circ}$ C. This is probably a typographical error as the text clearly states that all measurements were carried out at $25 \pm 3^{\circ}$ C.

AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method. Salt and solvent were placed in a test-tube in a dry box, and the tube agitated at room temperature until equil- ibrium was reached. Aliquots were withdrawn periodically and analyzed for the metal content. Rare earth concentration was deter- mined by complexometric titration, and by the radiometric method using the isotope Tm-170 ($t_1 = 169$ d). Authors state that results for ² both methods agreed. Although not clear- ly stated, it appears that equilibrium was reached in several weeks to several months.	SOURCE AND PURITY OF MATERIALS: HoCl ₃ . $3C_6H_{18}N_3OP$ prepared by dissolving the hydrate in the solvent and heating to 140-145°C for 5 m. The solvate was pptd by addition of abs ether, washed 7 times with ether, and dried over P_2O_5 in a stream of dry nitrogen. Yield was about 90%. The solvent was purified as described in (1).
Solid phase samples washed three times with benzene or ether and dried on a steam bath in an argon atmosphere. The solid phase was analyzed and found to be HoCl ₃ .3C ₆ H ₁₈ N ₃ OP. The solvate was analyzed for metal content by complexometric titration, for chloride by the Volhard method, and the solvent was obtained by difference. IR spectra confirmed the absence of water. Structural studies of the solvate were also carried out by X-ray analysis.	ESTIMATED ERROR: Soly: precision ± 0.001 mol dm ⁻³ at a 95% level of confidence (authors). Temp: precision ± 3 K. REFERENCES: 1. Fomicheva, M.G.; Kessler, Yu.M.; Zabusova, S.E.; Alpatova, N.M. Elektrokhimiya <u>1975</u> , 11, 163.

ORIGINAL MEASUREMENTS:] Lyubimov, E.I.; Batyaev, I.M.
7h. Prikl. Khim. <u>1972</u> , 45, 1176–8.
PREPARED BY:
T. Mioduski
entration solubility ^{a,b}
m ⁻³ moles Ho dm ⁻³
0.003
0.026 (0.015)
0.041
0.031
0.044
renthesis corresponds to preheating at 120° C. e SnCl ₄ -POCl ₃ mixture because the oxide is coording to 2HoCl ₃ + 3P ₂ O ₃ Cl ₄ is enhanced by complex formation according to 4 = Ho ₂ (SnCl ₆) ₃
Y INFORMATION
SOURCE AND PURITY OF MATERIALS: Ho ₂ O ₃ of "the first sort" was ignited at 950°C for 2 hours. d "Pure" grade SnCl ₄ and POCl ₃ were dehydrated with P ₂ O ₅ and distilled under vacuum.
ESTIMATED ERROR: Soly: authors state the "coefficient of variance" to be less than 7%. Temp: precision presumably ± 0.2K (compiler) REFERENCES:

Holmium Bromide	
COMPONENTS: (1) Holmium bromide; HoBr ₃ ; [13825-76-8] (2) Tetrahydrofuran; C ₄ H ₈ O; [109-99-9]	ORIGINAL MEASUREMENTS: Rossmanith, K. Monatsh. Chem. <u>1966</u> , 97, 1357-64.
VARIABLES: Room Temperature: T/K = 294-296 EXPERIMENTAL VALUES: The solubility of HoBr ₃ in tetrahydrofuran a 0.38 g per 100 ml of solution (0.	
AUXILIARY METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution was equilibrated in an extractor with agita- tion for 60-80 hours at room temperature. Holmium was determined by the oxalate method and by titration with EDTA using Xylenol Orange indicator. The solvent was determined by difference. Anhydrous materials were handled in a dry box through which was passed a stream of nitrogen free of carbon dioxide. The solid phase is HoBr3.3.5C4Hg0.	INFORMATION SOURCE AND PURITY OF MATERIALS: Sources and purities of initial materials not specified. HoBr ₃ was prepared by con- version of the oxide by high temperature reaction with an excess of NH ₄ Br followed by heating the product in a stream of dry nitrogen, and then in vacuum to remove un- reacted NH ₄ Br. Tetrahydrofuran was distilled from LiAlH ₄ . ESTIMATED ERROR: Nothing specified.

REFERENCES:

COMPONENTS :	ORIGINAL MEASUREMENTS:
 Erbium fluoride; ErF3; 	Kirmse, E.M.
[13760-83-3]	Wiss. Hefte, Paed. Inst. Koethen
(2) Alcohols	<u>1978</u> , 2, 85-90.
VARIABLES:	PREPARED BY:
Room temperature	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	
	ErF ₃ solubility ^{a,b}
solvent	mass % mol kg ⁻¹
methanol CH ₄ 0; [$67-56-1$] 0.01 4.5×10^{-4}
	64-17-5] 0.01 4.5 x 10 ⁻⁴
ethanol C ₂ H ₆ O [$64-17-5$] 0.01 4.5×10^{-4}
^a Molalities calculated by the compilers.	
b	
^b Solid phases were dried in a desiccator ov almost 1:3.	er P_4O_{10} and the Er:F ratio found to equal
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
added to 10-20 cm ³ of solvent, and the mix-	Er20 ₃ (source and purity not specified) was dissolved in HCl and the fluoride precipi-
ture mechanically agitated at room tempera- ture for 100 h. 5-10 g of saturated solu-	tated by addition of aq HF. The solid produced was ErF ₃ .0.5H ₂ O and was dehydrated
tion were removed by decanting or by centri-	by washing with acetone followed by drying
fuging, and the solution evaporated to dry- ness. The residue was heated with about 10	at 310°C for 120 hours.
cm^3 of 10% KOH solution for 1-2 h to obtain	The solvents were dried and purified by
solid Er(OH)3 and a basic F- solution. The precipitate was washed, dissolved in aq HCL	"standard methods."
and Er determined several times by complexo-	1
metric titration with potentiometric end- point detection (1). The fluoride content	ESTIMATED ERROR:
in the filtrate was determined photometrical ly using Al-Eriochrome cyanine color lake	Soly: results with relative errors exceeding
indicator.	50% were rejected.
The reported solubility is a mean of	Temp: unknown.
"numerous parallel determinations," or "at	REFERENCES :
least two parallel determinations."	 Schilbach, U.; Kirmse, E.M. Z. Chem. <u>1974</u>, 14, 484.
	 Schilbach, U.; Hetze, I.; Kirmse, E.M. Chemia Analityczna <u>1975</u>, 20, 33.

ORIGINAL MEASUREMENTS:
Dressler, H. Dissertationschrift. Paed. Inst. Koethen. GDR. <u>1980</u> .
PREPARED BY:
T. Mioduski and M. Salomon

				ErF ₃ so	lubility	solid phase Er:F:solvent
	solvent			mass %	mo1/100 g sln	ratio
, en	1-methoxydecane;	^{n-C} 11 ^H 24 ⁰ ;	[7289-52-3]	0.02	9x10 ⁻⁵	1:2.95:0.15
	1-(chloromethoxy)butane;	n-C ₅ H ₁₁ C10;	[2351-69-1]	0.02	9x10 ⁻⁵	1:2.88.0.33

AUXILIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:		
Method analogous to that described in (1). No other information available.	It appears that the fluoride was prepared as in (1). In spite of drying the fluoride by two methods at 573 K, the Er:F:H ₂ O ratio was 1:3.01:0.50. No other information available.		
	ESTIMATED ERROR: Nothing specified.		
	REFERENCES: 1. Kirmse, E.M. Wiss. Hefte, Paed. Inst. Koethen. <u>1978</u> , 2, 85.		

COMPONENTS:	ORIGINAL MEASUREMENTS:
 Erbium fluoride; ErF₃; 	Kirmse, E.M.
[13760-83-3]	
	Wiss. Hefte, Paed. Inst. Koethen
(2) Tributyl phosphate; C ₁₂ H ₂₇ O ₄ P;	<u>1978</u> , 2, 85-90.
[126-73-8]	
VARIABLES:	PREPARED BY:
Room Temperature	T. Mioduski
	1. HIGUSKI
EXPERIMENTAL VALUES:	
The solubility of ErF_3 in $[CH_3(CH_2)_3]_3P(0)$ a	t room temperature was given as
0.0	1 mass %
The corresponding molality calculated by the	compiler is
4.5 x	$10^{-4} \text{ mol kg}^{-1}$
The colid phase was dried in a deciserator or	or P.O., and the Frit retie determined to
The solid phase was dried in a desiccator ov be almost 1:3.	er r ₄ 0 ₁₀ and the Err ratio determined to
	· · · · · · · · · · · · · · · · · · ·
AUXILIARY	INFORMATION
METHOD / APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
Isothermal method. About 100 mg of ErF3	Er203 (source and purity not specified)
was added to $10-20 \text{ cm}^3$ of solvent, and the	was dissolved in HCl and the fluoride
mixture mechanically agitated at room temp-	precipitated by addition of aq HF. The
erature for 100 h. 5-10 g of saturated	solid produced was ErF ₃ .0.5H ₂ O and was de-
solution were removed by decanting or by centrifuging, and the solution evaporated to	hydrated by washing with acetone followed by drying at 310°C for 120 hours.
dryness. The residue was heated with about	by drying at 510 t for 120 hours.
10 cm ³ of 10% KOH solution for 1-2 h to	The solvent was dried and purified by
obtain solid Er(OH)3 and a basic F ⁻ solu-	"standard methods."
tion. The precipitate was washed, dissolved	
in aq HC1, and Er determined several times by complexometric titration with potentio-	
metric end-point detection (1). The	DETIVATED DODD.
fluoride content in the filtrate was deter-	ESTIMATED ERROR: Soly: results with relative errors exceed-
mined photometrically using Al-Eriochrome	ing 50% were rejected.
cyanine color lake indicator (2).	Temp: unknown.
The reported solubility is a mean of	temp • untriown •
"numerous parallel determinations," or "at	REFERENCES:
least two parallel determinations."	1. Schilbach, U.; Kirmse, E.M.
1	Z. Chem. <u>1974</u> , 14, 484.
	2. Schilbach, U.; Hetze, I.; Kirmse, E.M.
	Chemia Analityczna <u>1975</u> , 20, 33.

COMPONENTS:	ORIGINAL MEASUREMENTS:
 (1) Erbium fluoride; ErF₃; [13760-83-3] (2) Dimethylsulfoxide; C₂H₆OS; [67-68-5] 	Kirmse, E.M. Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85-90.
VARIABLES:	PREPARED BY:
Room Temperature	T. Mioduski
EXPERIMENTAL VALUES:	

The solubility of ${\rm ErF}_3$ in $({\rm CH}_3)_2{\rm SO}$ at room temperature was given as

0.03 mass %

The corresponding molality calculated by the compiler is

 $1.3 \times 10^{-3} \text{ mol kg}^{-1}$

The solid phase was dried in a desiccator over P_4O_{10} and the Er:F ratio found to be almost 1:3.

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AUXILIAKI	INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method. About 100 mg of ErF3 was	Er_20_3 (source and purity not specified) was
added to 10-20 cm ³ of solvent, and the mix-	dissolved in HCl and the fluoride precipi-
ture mechanically agitated at room tempera-	tated by addition of aq HF. The solid pro-
ture for 100 h. 5-10 g of saturated solu-	duced was ErF3.0.5H20 and was dehydrated by
tion were removed by decanting or by centri-	washing with acetone followed by drying at
fuging, and the solution evaporated to	310°C for 120 hours.
dryness. The residue was heated with about	
10 cm ³ of 10% KOH solution for 1-2 h to	The solvent was dried and purified by
obtain solid $Er(OH)_3$ and a basic F^- solution	"standard methods."
The precipitate was washed, dissolved in	
aq HCl, and Er determined several times by	
complexometric titration with potentio-	
I we have a set of the	
metric end-point detection (1). The	ESTIMATED ERROR:
fluoride content in the filtrate was deter-	Soly: results with relative errors exceed-
fluoride content in the filtrate was deter- mined photometrically using Al-Eriochrome	
fluoride content in the filtrate was deter-	Soly: results with relative errors exceed- ing 50% were rejected.
fluoride content in the filtrate was deter- mined photometrically using Al-Eriochrome cyanine color lake indicator (2).	Soly: results with relative errors exceed-
fluoride content in the filtrate was deter- mined photometrically using Al-Eriochrome cyanine color lake indicator (2). The reported solubility is a mean of	Soly: results with relative errors exceed- ing 50% were rejected.
fluoride content in the filtrate was deter- mined photometrically using Al-Eriochrome cyanine color lake indicator (2).	Soly: results with relative errors exceed- ing 50% were rejected. Temp: unknown. REFERENCES: 1. Schilbach, U.; Kirmse, E.M.
fluoride content in the filtrate was deter- mined photometrically using Al-Eriochrome cyanine color lake indicator (2). The reported solubility is a mean of "numerous prallel determinations," or "at	Soly: results with relative errors exceed- ing 50% were rejected. Temp: unknown. REFERENCES:
fluoride content in the filtrate was deter- mined photometrically using Al-Eriochrome cyanine color lake indicator (2). The reported solubility is a mean of "numerous prallel determinations," or "at	Soly: results with relative errors exceed- ing 50% were rejected. Temp: unknown. REFERENCES: 1. Schilbach, U.; Kirmse, E.M.
fluoride content in the filtrate was deter- mined photometrically using Al-Eriochrome cyanine color lake indicator (2). The reported solubility is a mean of "numerous prallel determinations," or "at	 Soly: results with relative errors exceeding 50% were rejected. Temp: unknown. REFERENCES: 1. Schilbach, U.; Kirmse, E.M. Z. Chem. <u>1974</u>, 14, 484. 2. Schilbach, U.; Hetze, I.; Kirmse, E.M.
fluoride content in the filtrate was deter- mined photometrically using Al-Eriochrome cyanine color lake indicator (2). The reported solubility is a mean of "numerous prallel determinations," or "at	 Soly: results with relative errors exceeding 50% were rejected. Temp: unknown. REFERENCES: 1. Schilbach, U.; Kirmse, E.M. Z. Chem. 1974, 14, 484. 2. Schilbach, U.; Hetze, I.; Kirmse, E.M.

326 Erbium	Fluoride
COMPONENTS :	ORIGINAL MEASUREMENTS:
<pre>(1) Erbium fluoride; ErF₃; [13760-83-3]</pre>	Kirmse, E.M.
(2) Pyridine; C ₆ H ₅ N; [110-86-1]	Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85-90.
VARIABLES:	PREPARED BY:
Room Temperature	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of ErF ₃ in pyridine at room t	emperature was reported to be
0.0	02 mass %
The corresponding molality calculated by the	e compiler is
	$10^{-4} \text{ mol kg}^{-1}$
8.9 x	TO MOT KR
The solid phase was dried in a desiccator ov almost 1:3.	ver P_40_{11} and the Er:F ratio found to equal
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method. About 100 mg of ErF_3 was added to 10-20 cm ³ of solvent, and the	Er ₂ O ₃ (source and purity not specified) was dissolved in HCl and the fluoride precipi-
mixture mechanically agitated at room temp-	tated by addition of aq HF. The solid
erature for 100 h. 5-10 g of saturated solution were removed by decanting or by	produced was ErF3.0.5H20 and was dehydrated by washing with acetone followed by drying
centrifuging, and the solution evaporated	at 310°C for 120 hours.
to dryness. The residue was heated with about 10 cm ³ of 10% er(OH) ₃ and a basic F ⁻	The solvent was dried and purified by
solution. The precipitate was washed, dis-	"standard methods."
solved in aq HCl, and Er determined several times by complexometric titration with	
potentiometric end-point detection (1).	
The fluoride content in the filtrate was determined photometrically using Al-Erio-	ESTIMATED ERROR:
chrome cyanine color lake indicator (2).	Soly: results with relative errors exceed- ing 50% were rejected.
The reported solubility is a mean of	Temp: unknown.
"numerous parallel determinations," or "at least two parallel determinations."	REFERENCES :
	1. Schilbach, U.; Kirmse, E.M. Z. Chem. 1974, 14, 484.
	2. Schilbach, U.; Hetze, I.; Kirmse, E.M. Chemia Analityczna <u>1975</u> , 20, 33.
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	Chloride 327
COMPONENTS: (1) Erbium chloride; ErCl ₃ ; [10138-41-7]	ORIGINAL MEASUREMENTS: Merbach, A.; Pitteloud, M.N.; Jaccard, P. Helv. Chim. Acta <u>1972</u> , 55, 44-52.
(2) Methanol; CH ₄ 0; [67-56-1]	Pitteloud, M.N. <i>These</i> . Faculte des Sciences de l'Universite de Lausanne. <u>1971</u> .
VARIABLES:	PREPARED BY:
T/K = 298.2	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	
	mean solubilities/mol kg ⁻¹
t/°C	a b
25	4.53 4.63
^a Initial salt is the adduct ErCl ₃ .4CH ₃ OH. E found to be ErCl ₃ .4CH ₃ OH.	quilibrated solid phase analyzed and
^b Solutions equilibrated with anhydrous ErCl ₃ but assumed by the compilers to be ErCl ₃ .40	. Equilibrated solid phases not analyzed, H ₃ OH.
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method as in (1,2). Mixtures were equilibrated for at least 4 days. Prolonged operations were performed in a dry box. Erbium determined by titration with (NH4) ₃ H(EDTA) using a small amount of uro- tropine buffer and Xylenol Orange indicator. Chloride was determined by potentiometric titration with AgNO ₃ solution. Composition of the adduct ErCl ₃ .4CH ₃ OH confirmed by ¹ H NMR and X-ray diffraction.	SOURCE AND PURITY OF MATERIALS: Er ₂ O ₃ of at least 99.9% purity dissolved in HCI to produce the hexahydrate. The salt was dehydrated as described in (3). The adduct ErCl ₃ .4CH ₃ OH prepared by dissolving the hydrate in a small excess of o-methyl- formate followed by distillation and crystallization from methanol. Methanol was purified and dried by the Vogel method.
The reported solubilities are mean values of 2-4 determinations.	ESTIMATED ERROR: Soly: precision ± 0.5% as in (1) (compilers)
COMMENTS AND/OR ADDITIONAL DATA: Reference (3) was incorrectly cited in the	Temp: precision probably at least ± 0.05 K as in (1) (compilers).
source paper as: J. Inorg. Nucl. Chem. <u>1958</u> , 7, 224 (this is the reference to a paper by J.H. Freeman and M.L. Smith which described the preparation of anhydrous salts by treat- ment with thionyl chloride). Reference (3) was corrected by the compilers.	REFERENCES: 1. Brunisholz, F.; Quinche, J.P.; Kalo, A.M. Helv. Chim. Acta <u>1964</u> , 47, 14. 2. Flatt, R. Chimia <u>1952</u> , 6, 62. 3. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387 (see COMMENTS at left).

COMPONENTS :	EVALUATOR: Tomasz Mioduski
(1) Erbium chloride; ErCl ₃ ; [10138-41-7]	Institute of Nuclear Research Warsaw, Poland
(2) Ethanol; C ₂ H ₆ 0; [64-17-5]	and Mark Salomon USA ET & DL Ft. Monmouth, NJ, USA

CRITICAL EVALUATION:

The solubility of erbium chloride in ethanol at 298.2 K has been reported in two publications (1,2), and the results are summarized in the following table.

initial solid	equilibrated solid	solubility/mol kg ⁻¹	(ref)
ErCl ₃	ErC1 ₃ ·C ₂ H ₅ OH	3.35	(1)
ErCl ₃	not analyzed	3.48	(2)
ErC1 ₃ ·4C ₂ H ₅ OH	ErC13.4.1C2H50H	3.41	(2)

The publication by Kirmse (1) does not contain experimental details or sources and purities of materials, but they probably were similar to those reported by Merbach et al. (2). For a full description of Kirmse's experimental methods, precision and sources of materials, see the INTRODUCTION to this volume. Kirmse prepared the anhydrous salt by the method of Taylor and Carter (3), and Merbach et al. propably used the method of Freeman and Smith (4). The experimental methods used by Merbach et al. were described in detail: high purity Er_2O_3 (>99.9 %) was used, the stoichiometry of the salts verified by both cation and anion chemical analysis and by X-ray diffraction, the absence of the oxychloride and the purity of the solvent were confirmed. Given these details the compilers have estimated an experimental precision of ± 0.5 % for the final results of Merbach et al. While it is difficult to determine the precision of Kirmse's data, the accuracy of these data are probably 2-3 % at best.

Merbach et al. (2) consider the difference in solubilities of the anhydrous chloride and the tetrasolvate to be due to the formation of small quantities of chloroalcoholates (dissolution of the anhydrous salt is highly exothermal). However Kirmse reports the solid phase to be the monosolvate when starting with the anhydrous salt. If in this case it is true that the "equilibrated" solid phase is the monosolvate, then we would have to conclude that either the monosolvate or the tetrasolvate is metastable. It would appear to the evaluators that the tetrasolvate is the stable solid phase which means that the solubility should be higher in the metastable monosolvate system. The data of Merbach et al. suggest this, but the data of Kirmse is contradictory. It is interesting to note that the average solubility for the "monosolvate" systems is 3.42 mol kg^{-1} which is essentially identical (within experimental error) to the value of 3.41 mol kg^{-1} reported by Merbach et al. for the tetrasolvate system.

In summary it appears that at 298.2 K the stable solid phase is the tetrasolvate, and that we can designate the *tentative* solubility in this system as 3.41 mol kg^{-1} . When solutions are equilibrated with anhydrous ErCl₃, it is not clear whether the resulting saturated solution contains a metastable monosolvate solid phase, or whether the solid phase is actually the stable tetrasolvate.

REFERENCES

1. Kirmse, E. M. Tr. II Vses Konf. po Teor. Rastvorov 1971, 200.

- Merbach, A.; Pitteloud, M.N.; Jaccard, P. Helv. Chum. Acta <u>1972</u>, 55, 44: Pitteloud, M.N. These. Faculté des Sciences de l'Université de Lausanne. 1971.
- 3. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. 1962, 24, 387.
- 4. Freeman, J.H.; Smith, M.L. J. Inorg. Nucl. Chem. 1958, 7, 224.

		Libium	Chionae		328
COMPONENTS: (1) Erbium chloride [10138-41-7] (2) Alcohols	e; ErCl3;		ORIGINAL MEASU Kirmse, E.M. Tr. 11 Vses. 1971, 200-6.	Konf. po	Teor. Rastvorov
VARIABLES: T/K = 298			PREPARED BY: T. Mioduski	and M. Sa	lomon
EXPERIMENTAL VALUES:					
solvent			mass %	mol kg	nature of the -1 solid phase
ethanol;	C ₂ H ₆ O;	[64-17-5]	47.8	3.347	$ErCl_3 \cdot C_2H_60$
2-methoxyethanol;	с ₃ н ₈ 0 ₂ ;	[109-86-4	9] 3.5	0.133	$ErC1_3.nC_3H_8O_2$ (n = 2-3)
2-ethoxyethanol;	c ₄ H ₁₀ 0 ₂ ;	[110-80-5	5] 7.6	0.301	ErC1 ₃ .2C ₄ H ₁₀ 0 ₂
		AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROC		• • • • • • • •	SOURCE AND PUP		
Experimental details probably similar to author which are con volume.	previous work	s of the	work by the	authors, t pared by t	: based on previous :he anhydrous salt was :he method of
			ESTIMATED ERRO	DR:	
			Nothing spec	ified.	
			REFERENCES: 1. Taylor, M J. Inorg.	.D.; Carte Nucl. Che	er, C.P. m. <u>1962</u> , 24, 387.

COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Erbium chloride; ErCl₃; [10138-41-7]</pre>	Merbach, A.; Pitteloud, M.N.; Jaccard, P. Helv. Chím. Acta <u>1972</u> , 55, 44-52.
(2) Ethanol; C ₂ H ₆ O; [64-17-5]	Pitteloud, M.N. <i>These</i> . Faculte des Sciences de l'universite de Lausanne. <u>1971</u> .
VARIABLES:	PREPARED BY:
T/K = 298.2	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	
	mean solubilities/mol kg ⁻¹
t/°C	a b
25	3.41 3.48
	5.40
^a Initial salt is the adduct $ErCl_3.4C_2H_5OH.$ E found to be $ErCl_3.4.1C_2H_5OH.$	quilibrated solid phase analyzed and
^b Solutions equilibrated with anhydrous ErCl ₃ . but assumed by the compilers to be ErCl ₃ .4C ₂ N	Equilibrated solid phases not analyzed,
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method as in (1,2). Mixtures were equilibrated for at least 4 days. Prolonged operations were performed in a dry box. Erbium determined by titration with (NH4) ₃ H(EDTA) using a small amount of urotro- pine buffer and Xylenol Orange indicator. Chloride was determined by potentiometric titration with AgNO3 solution. Composition of the adduct ErCl ₃ .4C ₂ H ₅ O confirmed by ¹ H NMR and X-ray diffraction The reported solubilities are mean values of 2-4 determinations.	 Er203 of at least 99.9% purity dissolved in HCl to produce the hexahydrate. The salt was dehydrated as in (3). The adduct ErCl3.4C2H60 prepared by dissolving the hydrate in a small excess of o-ethylformate followed by distillation and crystallization from ethanol. Ethanol (Fluka) was used as received. Purity and absence of water was confirmed by NMR method.
	ESTIMATED ERROR: Soly: precision \pm 0.5% as in (1) (compilers).
COMMENTS AND/OR ADDITIONAL DATA: Reference (3) was incorrectly cited in the source paper as: J. Inorg. Nucl. Chem. <u>1958</u> , 7, 224 (this is the reference to a paper by J.H. Freeman and M.L. Smith which describes	Temp: precision probably at least ± 0.05K as in (1) (compilers). REFERENCES:
the preparation of anhydrous salts by treatment with thionyl chloride). Reference (3) was corrected by the compilers.	 Brunisholz, F.; Quinche, J.P.; Kalo, A.M. Helv. Chim. Acta <u>1964</u>, 47, 14. Flatt, R. Chimia <u>1952</u>, 6, 62. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl Chem. <u>1962</u>, 24, 387 (see COMMENTS at left).

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COMPONENTS :		ORIGINAL M	EASUREMENTS :		
(1) Erbium chloride; ErCl ₃ ;	Sakharova	Sakharova, Yu.G; Ezhova, T.A.			
(2) Ethanol; C ₂ H ₆ 0; [64-17-5	Zh. Neorg I. Inora	3. Khim. <u>1976</u> , Chem. (Engl.	21, 551-4; Transl.) 19	Russ. 76, 21.	
(3) Water; H ₂ 0; [7732-18-5]	(3) Water; H ₂ 0; [7732-18-5]				
VARIABLES:	·	PREPARED B	Y:		
Temperature		T. Miodus	ski and M. Sal	omon	
EXPERIMENTAL VALUES:			-		
solubility of E	rC1 ₃ .6H ₂ 0 in 9	6.8 % с ₂ н ₅ он	3		
sample 1 sa	ample 2 s	ample 3	sample 4	mean solubi	
t/°C g/100 g ^b g		g/100 g	g/100 g	g/100 g	mol kg ^{-1c}
20 37.86 3	7.57 3	18.19	37.99	37.90	1.599
30 37.38 3	7.68 3	37.61	37.47	37.53	1.574
40 37.67 3	7.50 3	37.37	37.50	37.51	1.573
50 38.58 3	8.84 3	38.62	38.78	38.70	1.654
60 40.29 4	0.49 4	40.02	40.30	40.27	1.766
^b Solubilities reported as gran ^C Molalities calculated by the		rate in 100 g	of solvent.		
	AUXILIAR	Y INFORMATIO	N		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Equilibrium was reached after 3-4 h. Identical results obtained by approaching equilibrium from above and below. Two of the data points in the table obtained after 3 hours of equi- libration, and the remaining two data points obtained after 4 h of equilibration. The metal content in each aliquot taken for analysis was determined by complexometric titration with Trilon B.		r bolling concendent	with Trilon B and for Cl by the Volhard		
Analyses of the solids withdr 40°C and 60°C showed the solid the hexahydrate: i.e. ethanol in any of the solid phases.	ld phase to be		ERROR: sults apparent).9 % (compile thing specifie	rs).	o within
		REFERENCES			

COMPONENTS: (1) Erbium chloride; ErCl ₃ ; [10138-41-7] (2) 2-Propanol; C ₃ H ₈ 0; [67-63-0] VARIABLES: T/K = 298.2 EXPERIMENTAL VALUES:	ORIGINAL MEASUREMENTS: Merbach, A.; Pitteloud, M.N.; Jaccard, P. Helv. Chim. Acta <u>1972</u> , 55, 44-52. Pitteloud, M.N. These. Faculte des Sciences de l'Universite de Lausanne. <u>1971</u> . PREPARED BY: T. Mioduski and M. Salomon mean solubilities/mol kg ⁻¹
t/°C	a b
25	0.84 0.83
 ^aInitial salt is the adduct ErCl₃.3C₃H₇OH. found to be ErCl₃.3.7C₃H₈O. ^bSolutions equilibrated with anhydrous ErCl₃ but assumed by the compilers to be ErCl₃.3C₃ 	. Equilibrated solid phases not analyzed,
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method as in (1,2). Mixtures were equilibrated for at least 4 days. Pro- longed operations were performed in a dry box. Erbium determined by titration with (NH4) ₃ H(EDTA) using a small amount of uro- tropine buffer and Xylenol Orange indicator. Chloride was determined by potentiometric titration with AgNO3 solution. Composition of the adduct ErCl ₃ .3C ₃ H ₈ O confirmed by ¹ H NMR and X-ray diffraction. The reported solubilities are mean values of 2-4 determinations. COMMENTS AND/OR ADDITIONAL DATA: Reference (3) was incorrectly cited in the source paper as: J. Inorg. Nucl. Chem. <u>1958</u> , 7, 224 (this is the reference to a paper by J.H. Freeman and M.L. Smith which describes the preparation of anhydrous salts by treat- ment with thionyl chloride). Reference (3) was corrected by the compilers.	<pre>was dehydrated as in (3). The adduct ErCl₃.3C_{3H₈0 prepared by dissolving the hydrate in a small excess of o-methyl- formate followed by distillation and trans-solvation of the methanol complex with 2-propanol. Iso-propanol (fluka) was used as received. Purity and absence of water was confirmed by NMR. ESTIMATED ERROR: Soly: precision ± 0.5% as in (1) (compilers). Temp: precision probably at least ± 0.05K as in (1) (compilers). REFERENCES: 1. Brunisholz, F.; Quinche, J.P.; Kalo, A.M.}</pre>

Erbium	Chloride	333
COMPONENTS: (1) Erbium chloride; ErCl ₃ ; [10138-41-7] (2) 1,2-Diethoxyethane; C ₆ H ₁₄ O ₂ ; [629-14-1] VARIABLES: T/K = 298	ORIGINAL MEASUREMENTS: Kirmse, E.M.; Zwietasch, K.J. Z. Chem. <u>1967</u> , 7, 281. PREPARED BY: T. Mioduski	
EXPERIMENTAL VALUES:		
The solubility of ErCl ₃ in 1,2-diethoxyethan 0.67	e at 25°C was reported to be ' mass %	
The corresponding molality calculated by the	compiler is	
0.024	7 mol kg ⁻¹	
The composition of the solid phase was given	in terms of the Er:Cl:ether ratio as	1. A.
	ι,	÷
AUXILIARY	INFORMATION	
METHOD/APPARATUS/PROCEDURE: Isothermal method used. The anhydrous mixtures were equilibrated at 25°C for several days with frequent shaking.	SOURCE AND PURITY OF MATERIALS: Sources and purities of materials not given. The anhydrous chloride was obtain by the method of Taylor and Carter (1).	ed
The solid phase was dried in a vacuum desiccator over P_2O_5 . Er was determined by complexometric titration using Xylenol Orange indicator. Chloride was determined by the Volhard titration method.	The solvent was prepared by the Williamso synthesis: i.e. by reaction of C ₂ H ₅ I with the monoethylether of ethylene glycol.	
	ESTIMATED ERROR:	
	No estimates possible.	
	REFERENCES: 1. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.	

COMPONENTS :	EVALUATOR:	
(1) Erbium chloride; ErCl ₃ ; [10138-41-7]	Tomasz Mioduski	
(2) 1,1'-Oxybis-propane (di-n-propyl ether); C ₆ H ₁₄ O; [111-43-3]	Institute of Nuclear Research Warsaw, Poland	
CRITICAL EVALUATION:		
The solubility of erbium chloride in di-n-pro- three publications by Kirmse et al. $(1-3)$. (0.004 mol kg ⁻¹), and in (2,3) the solubility Reference (1) specifies the solid phase as En	In (1) the solubility was given as 0.1 mass % was given as 0.2 mass % (0.007 mol kg ⁻¹).	
Since we believe all the solubility data in (results must be rejected. This also means the phase cannot be assumed to be correct.	(1) to contain a large systematic error, these hat the composition of the equilibrated solid	
The solubility of 0.007 mol kg^{-1} at 298.2 K m tentative solubility, and the precision of the		
REFERI	ENCES	
1. Kirmse, E.M.; Zwietasch, K.J.; Tirschmann 1968, 1, 128.	n, J. Wiss. Hefte, Paed. Inst. Koethen,	
	I • Oelsper I. • Niedergessess II	
 Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J.; Oelsner, L.; Niedergesaess, U. Z. Chem. <u>1968</u>, <i>8</i>, 472. Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov <u>1971</u>, 200. 		

COMPONENTS :	EVALUATOR:
 (1) Erbium chloride; ErCl₃; [10138-41-7] (2) 1-Ethoxybutane (ethyl n-butyl ether); C₆H₁₄0; [628-81-9] 	Tomasz Mioduski Institute of Nuclear Research Warsaw, Poland

CRITICAL EVALUATION:

The solubility of erbium chloride in 1-ethoxybutane at 298.2 K has been reported in three publications by Kirmse et al. (1-3). In (1) the solubility was given as 0.3 mass % (0.011 mol kg⁻¹), and in (2,3) the solubility was given as 0.5 mass % (0.018 mol kg⁻¹). Reference (1) specifies the solid phase as ErCl₃·0.49C₆H₁₄O.

Since we believe all the solubility data in (1) to contain a large systematic error, these results must be rejected. This also means that the composition of the equilibrated solid phase cannot be assumed to be correct.

The solubility of 0.018 mol kg⁻¹ at 298.2 K reported in (2,3) is designated as a *tentative* solubility, and the precision of this value is probably 10 % at best.

REFERENCES

- Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J. Wiss. Hefte, Paed. Inst. Koethen, <u>1968</u>, 1, 128.
- Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J.; Oelsner, L.; Niedergesaess, U. Z. Chem. <u>1968</u>, 8, 472.
- 3. Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov 1971, 200.

Erbium Chloride

COMPONENTS :	EVALUATOR:
(1) Erbium chloride; ErCl ₃ ; [10138-41-7]	Tomasz Mioduski
(2) 1-Methoxypentane (methyl n-amyl ether); C ₆ H ₁₄ O; [628-80-8]	Institute of Nuclear Research Warsaw, Poland

CRITICAL EVALUATION:

The solubility of erbium chloride in 1-methoxypentane at 298.2 K has been reported in three publications by Kirmse et al. (1-3). In (1) the solubility was given as 30.8 mass % (1.63 mol kg⁻¹), and in (2,3) the solubility was given as 33.5 mass % (1.84 mol kg⁻¹). Reference (1) reports the solid phase to be $\text{ErCl}_3 \cdot 0.49C_6H_{14}O$.

Since descriptions of experimental techniques and purities of materials were not given, it is not possible to determine the source of the differences in solubility values. However we can probably conclude that the data in (1) should be rejected.

The solubility data reported in (1) are in all cases significantly different than those subsequently reported by Kirmse (e.g. see the critical evaluations for ErCl_3 in 1-ethoxy-butane and in di-n-propyl ether, and for YCl_3 in 1-methoxypentane). It is interesting to also note that the solubility data reported in (3) are generally in agreement with those data reported by Merbach et al. (4) (e.g. see the critical evaluation for the $\text{ErCl}_3 - \text{C}_2\text{H}_5\text{OH}$ system where the difference between Kirmse's result and Merbach's result is around 2%). On this basis the data in (1) are rejected which also means that the composition of the equilibrated solid phase cannot be assumed to be correct.

The solubility result of 1.84 mol kg⁻¹ at 298.2 K reported in (2,3) is designated as a *tentative* value, and the precision of this value is probably around 2 %.

REFERENCES

- Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J. Wiss. Hefte, Paed. Inst. Koethen, 1968, 1, 128.
- Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J.; Oelsner, L.; Niedergesaess, U.
 Chem. 1968, *8*, 472.
- 3. Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov 1971, 200.
- 4. Merbach, A.; Pitteloud, M.N.; Jaccard, P. Helv. Chim. Acta 1972, 55, 44.

COMPONENTS :	ORIGINAL MEASUREMENTS:
(1) Erbium chloride; ErCl ₃ ;	Kirmse, E.M.; Zwietasch, K.J.; Tirschmann,
[10138-41-7]	J.
(2) Ethers	Wiss. Hefte, Paed. Inst. Koethen <u>1968</u> , 1, 128-30.
VARIABLES:	PREPARED BY:
T/K = 298	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	
	solubility ^a
solvent	mass % mol kg ⁻¹
di-n-propyl ether; C ₆ H ₁₄ 0;	[111-43-3] 0.1 ^b 0.004
1-ethoxybutane; C ₆ H ₁₄ 0;	[628-81-9] 0.3 ^c 0.011
1-methoxypentane; C ₆ H ₁₄ 0;	[628-80-8] 30.8 ^d 1.627
^a Molalities calculated by the com	pilers.
^b Solid phase is ErCl ₃ .0.47C ₆ H ₁₄ 0.	
^c Solid phase is ErCl ₃ .0.37C ₆ H ₁₄ 0.	
^d Solid phase is ErCl ₃ .0.49C ₆ H ₁₄ 0.	
	AUXILIARY INFORMATION
METHOD/APPARATUS/PROCEDURE: Mixtures were agitated isothermal until equilibrium was reached. E determined by complexometric titr Xylenol Orange indicator. No other information available.	r was specified. The anhydrous rare earth

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338	Erbium	Chloride		
COMPONENTS: (1) Erbium chloride; ErCl ₃ ; [10138-41-7] (2) Ethers		ORIGINAL MEASUREMENTS: Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J.; Oelsner, L.; Niedergesaess, U. Z. Chem. <u>1968</u> , 8, 472-3. Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov. <u>1971</u> , 200-6.		
VARIABLES:		PREPARED BY:		
Room Temperature: T/K aroun	nd 298	T. Miodusk	i and M. Salo	mon
EXPERIMENTAL VALUES:		<u> </u>	·····	
			D 01 1	a,b
solvent			mass %	ubility ^{a,b} mol kg ⁻¹
1-ethoxy-2-methoxyethane;	^{C5H120} 2;	[5137-45-1]	0.9	0.033
di-n-propyl ether;	с _{6^H14} 0 ₂ ;	[111-43-3]	0.2	0.007
l-ethoxybutane;		[628-81-9]		0.018
1-methoxypentane;		[628-80-8]		1.841
1,4-dioxane;		[123-91-1]		0.026
	AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures mally agitated at 25°C or at ture. Authors state that th found for the solubility was mental error limits. Er determined by complexomet No other details given.	room tempera- e difference within experi-	The anhydrow method of Ta	URITY OF MATE us salt was pr aylor and Cart Formation give	repared by the cer (1).
		ESTIMATED ER	ROR:	
		Nothing spec	cified.	
		DEPENENCIA		
		REFERENCES: 1. Taylor, J. Inorg	M.D.; Carter, . Nucl. Chem.	C.P. <u>1962</u> , 24, 387.

COMPONENTS :	ORIGINAL MEASUREMENTS:
(1) Erbium chloride; ErCl ₃ ;	Rossmanith, K.; Auer-Welsbach, C.
[10138-41-7] (2) Tetrahydrofuran; C ₄ H ₈ 0;	Monatsh. Chem. <u>1965</u> , 96, 602-5.
[109-99-9]	
VARIABLES:	PREPARED BY:
Deer Terrestures T/V shout 202	T. Mioduski
Room Temperature: T/K about 293	
EXPERIMENTAL VALUES:	
The solubility of ErCl ₃ in tetrahydrofuran a to be	at 20°C (room temperature) was reported
0.786 g per	100 ml of solution
(0.0287 mol	1 dm ⁻³ , compiler).
	,
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method employed. The solution	Sources and purities of initial materials
was equilibrated in an extractor with agitation for 60-80 hours at room tempera-	not specified. ErCl ₃ was prepared by conversion of the oxide by high temperature
ture.	reaction with an excess of NH ₄ Cl followed
Erbium was determined by the oxalate	by heating the product in a stream of dry
method, and by titration with EDTA using Xylenol Orange indicator. The solvent was	nitrogen, and then in vacuum to remove unreacted NH_4C1 .
determined by difference.	diredeted ingot.
	Tetrahydrofuran was distilled from LiAlH ₄ .
Anhydrous materials were handled in a dry box through which was passed a stream of	
nitrogen free of carbon dioxide.	
$m_{\rm eff} = 144 \ m_{\rm eff} \ f = \frac{1}{2} \frac{1}{\sqrt{2}} $	ESTIMATED ERROR:
The solid phase is ErCl ₃ .3.47C ₄ H ₈ O.	Nether model 1
	Nothing specified.
	REFERENCES:
	1

COMPONENTS :	ORIGINAL MEASUREMENTS:			
<pre>(1) Erbium chloride; ErCl₃; [10138-41-7]</pre>	Korovin, S.S.; Galaktionova, O.V.; Lebedeva, E.N.; Voronskaya, G.N.			
(2) Tributylphosphate; C ₁₂ H ₂₇ O ₄ P; [126-73-8]	Zh. Neorg. Khim. <u>1975</u> , 20, 908–14; Russ. J. Inorg. Chem. (Engl. Transl.) <u>1975</u> , 20, 508–11.			
VARIABLES:	PREPARED BY:			
T/K = 298	T. Mioduski and M. Salomon			
EXPERIMENTAL VALUES:				
Composition of satu	rated solutions ^{a,b}			
mass % mol/kg sln ^C g dm ^{-3c}	moldm ^{-3c} molkg ⁻¹ density/g cm ⁻³			
41.3 1.43 530.0	1.94 2.57 1.36			
^a Solid phase is ErCl ₃ .				
^b Molality calculated by the compilers from t	he experimental solubility of 41.3 mass %.			
^C It is <u>implied</u> that these data also correspo molality calculated from these data is 2.35 these data probably do not correspond to sa	mol kg ⁻¹ . The compilers conclude that			
AUXILIARY	INFORMATION			
METHOD/APPARATUS/PROCEDURE: Saturated solutions prepared isothermally with magnetic stirring. Equilibrium was attained after 25-30 d. The solution was centrifuged and an aliquot for analysis taken and added to methanol and precipitated with aq NH ₃ . The pptd Er(OH) ₃ was washed re- peatedly and heated to the oxide for gravi- metric analysis. The solid phase was analyz ed (no details given) for phosphorous and only the anhydrous ErCl ₃ was found. All operations were performed in a dry box through which a stream of argon was passed.	Volhard's method. Tributylphosphate (TBP) was purified "by			
The major objective of this work was to establish the nature of complexation be- tween TBP and ErCl3 in solution.	No estimate possible.			
	 REFERENCES: 1. Korshunov, B.G.; Drobot, D.V.; Bukhtiyarov, V.V.; Shevtsova, Z.N. Zh. Neorg. Khim. <u>1964</u>, 9, 1427. 2. Novikov, G.I.; Tolmacheva, V.D. Zh. Prikl. Khim. <u>1965</u>, 38, 1160. 			
COMPONENTS: (1) Erbium chloride [10138-41-7]				
---	--	--	--	---
(1) Erbium chioride	E-Class	ORIGINAL MEA		
[**********	; ETUI3;	Kirmse, E.M		
(2) Amines		Tr. II Vses <u>1971</u> , 200-6	. Konf. po T •	eor. Rastvorov
VARIABLES:		PREPARED BY:		
T/K = 298			and M. Salo	omon
EXPERIMENTAL VALUES:				
EXPERIMENTAL VALUES:			ErCl ₃ sol	
			9	
solvent			mass %	mol kg ^{·1}
diethylamine;	(C ₂ H ₅) ₂ NH;	[109-89-7]	0.1	0.004
2-propanamine;	3)	[75-31-0]	26.9	1.345
2-propen-1-amine; ^b	с ₃ н ₇ »;	[107-11-9]	29.9	1.559
1-butanamine;	$n-C_4H_{11}N;$	[109-73-9]	27.9	1.414
2-butanamine;	<pre>sec-C₄H₁₁N;</pre>	[13952-84-6]	18.6	0.835
di-2-butylamine;	(sec-C4H9)2N;	[626-23-3]	1.0	0.037
^b The source paper spi identified the solve	ecifies the solvent a ent as allylamine.	s C ₃ H ₅ NH ₂ . Upo:	n request, t	he author kindly
^b The source paper spo identified the solve	ecifies the solvent a ent as allylamine.	s C ₃ H ₅ NH ₂ . Upo	n request, t	he author kindly
^b The source paper sp identified the solv	ent as allylamine.	s C ₃ H ₅ NH ₂ . Upon	n request, t	he author kindly
^b The source paper spe identified the solve METHOD/APPARATUS/PROCE Experimental details probably similar to p author which are comp volume. Nature of the solid p	AUXILIA AUXILIA DURE: not given, but were previous works of the piled throughout this	RY INFORMATION SOURCE AND H Nothing sp work by th was probab Taylor and	PURITY OF MA ecified, but e author, th	TERIALS: : based on previous e anhydrous salt by the method of

Erbium Chloride			
<pre>COMPONENTS: (1) Erbium chloride; ErCl₃; [10138-41-7] (2) Hexamethylphosphorotriamide; C₆H₁₈N₃OP; [680-31-9]</pre>	ORIGINAL MEASUREMENTS: Mikheev, N.B.; Kamenskaya, A.N.; Konovalova, N.A.; Zhilina, T.A. Zh. Neorg. Khim. 1977, 22, 1961-6; Russ. J. Inrog. Chem. (Engl. Transl.) 1977, 22, 955-8.		
VARIABLES:	PREPARED BY:		
Room temperature: T/K = 298 ± 3	T. Mioduski and M. Salomon		
EXPERIMENTAL VALUES:	L		
Starting with the solvate $ErCl_3$, $3C((CH_3)_2N)_3P_1$	O, the solubility at 25 \pm 3°C ^a was given as		
0.098	mol dm ⁻³		
^a Table 3 in the English translation of the so $23 \pm 3^{\circ}$ C. This is probably a typographical measurements were carried out at $25 \pm 3^{\circ}$ C.	urce paper states the temperature to be error as the text clearly states that all		
AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE: Isothermal method. Salt and solvent were placed in a test-tube in a dry box, and the tube agitated at room temperature until equil-	SOURCE AND PURITY OF MATERIALS: ErCl ₃ .3C ₆ H ₁₈ N ₃ OP prepared by dissolving the hydrate in the solvent and heating to 140-145°C for 5 m. The solvate was pptd		

with ether, and dried over P_2O_5 in a stream of dry nitrogen. Yield was about 90%.

by addition of abs ether, washed 7 times

mined by complexometric titration, and by the radiometric method using the isotope Tm-170 The solvent was purified as described in (1) (t] = 169 d). Authors state that results for ²both methods agreed. Although not clearly stated, it appears that equilibrium was reached in several weeks to several months. Solid phase samples washed three times with ESTIMATED ERROR: Soly: precision \pm 0.002 mol dm⁻³ at a 95% benzene or ether and dried on a steam bath in an argon atmosphere. The solid phase was level of confidence (authors). analyzed and found to be ErCl₃.3C₆H₁₈N₃OP. Temp: precision \pm 3 K. The solvate was analyzed for metal content by complexometric titration, for chloride by the **REFERENCES:** Volhard method, and the solvent was obtained by difference. IR spectra confirmed the 1. Fomicheva, M.G.; Kessler, Yu.M.; Zabusova, S.E.; Alpatova, N.M. absence of water. Structural studies of the Elektrokhimiya <u>1975</u>, 11, 163. solvate were also carried out by X-ray analysis.

ibrium was reached. Aliquots were withdrawn

periodically and analyzed for the metal con-

tent. Rare earth concentration was deter-

COMPONENTS:	ErCl ₃ ; [10138-41-7]	ORIGINAL MEAS	UREMENTS: .I.; Batyaev,	тм
(2) Tetrachlorostann [7646-78-8]	ate, Shor ₄ ,	Zh. Prikl.	Khim. <u>1972</u> , 4	5, 1176-8.
(3) Phosphorus oxych [10025-87-3]	loride; POCl ₃ ;			
VARIABLES:		PREPARED BY:		
SnCl ₄ concentration		T. Mioduski		
T/K = 293 and 333				
EXPERIMENTAL VALUES:				20
SnCl ₄ :POCl ₃ ratio	SnCl ₄ concn	solubility of	Er ₂ 0 ₃ /mol Er	
(by volume)	mol dm^{-3}	20°C ^b	20°C ^C	60°C ^d
0		0.002		0.0001
1:250			0.004 0.006	0.005 0.005
1:100 1:50		0.006 0.008 (0.007)	0.006	0.006
1:25		0.024	0.007	0.007
1:15		0.024	0.006	0.005
1:10		0.034	0.006	0.0055
1:5	1.4			0.011
1:1.5	3.0			0.011
1:1 4:1	4.6 6.8		0.010	0.011 0.001
pure SnCl ₄		0.001		
four component mixtu	for 2 hours. (120°C fo			constitute a
	AUXILIA	Y INFORMATION		
box. The SnCl ₄ conte chemical analysis for Er ₂ 0 ₃ were placed in ed to 120°C for 2 how of solution, and them thermostat at 20°C for preheating, equilibri	d. POCl ₃ + SnCl ₄ red by volume in a dry ent was verified by Sn. This solution a sealed ampoules, heat a rotated in an air or 2 hours. Without um was established cheating to 120°C low-	Er ₂ O ₃ of "t 950°C for 2 "Pure" grad drated with te	hours. e SnCl4 and P4 P2O5 and dis	MALS: " was ignited at OCl3 were dehy- tilled under vacuum.
Er was determined by and in some cases by The reported solubili based on 3-5 parallel	ties are mean values	' Soly: autho varia	rs state the nce" to be le	"coefficient of ss than 7%. 1y ± 0.2K (compiler).
The solubility of ErC small, but in the pre solubility increases	sence of SnCl ₄ the	REFERENCES :		
$2\text{ErCl}_3 + 3\text{SnCl}_4 =$	Er ₂ (SnCl ₆) ₃			

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Erbium bromide; ErBr ₃ ;	Kirmse, E.M.
[13536-73-7]	-
	Tr. II Vses. Konf. po Teor. Rastvorov
(2) 1,2-Diethoxyethane; $C_6H_{14}O_2$;	<u>1971</u> , 200-6.
[629-14-1]	
VARIABLES:	PREPARED BY:
T / W 000	m 1/2 - 1 1. 2
T/K = 298	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of ErBr ₃ in 1,2-diethoxyethar	le at 25 C was reported as
1.2	25 mass %
The corresponding molality calculated by the	compiler is
0.00	111 mol kg ⁻¹
0.03	TT MOT KE
The nature of the solid phase was not specif	ied.
1	
AUXILIARY	INFORMATION
METHOD / APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
Experimental details not given, but were	Nothing specified, but based on previous
probably similar to previous works of the	work by the author, the anhydrous salt was
author which are compiled throughout this	probably prepared by the method of
volume.	Taylor and Carter (1).
1	ESTIMATED ERROR:
	Nathing an adding
	Nothing specified.
1	REFERENCES:
	1. Taylor, M.D.; Carter, C.P.
	J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.

COMPONENTS :	ORIGINAL MEASUREMENTS:
 Erbium bromide; ErBr3; 	Rossmanith, K.
[13536-73-7]	
	Monatsh. Chem. <u>1966</u> , 97, 1357-64.
(2) Tetrahydrofuran; C ₄ H ₈ O; [109-99-9]	
[109-99-9]	
VARIABLES:	PREPARED BY:
Room Temperature: $T/K = 294-296$	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of ErBr3 in tetrahydrofuran a	t 21-23°C was reported to be
0.41 g per 10	0 ml of solution
(0.040)	dm ⁻³ , compiler).
(0.0101 mol)	dm , compiler).
	¥
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method employed. The solution	Sources and purities of initial materials
was equilibrated in an extractor with agita-	not specified. ErBr3 was prepared by con-
tion for 60-80 hours at room temperature.	version of the oxide by high temperature
	reaction with an excess of NH4Br followed
Erbium determined by the oxalate method and	by heating the product in a stream of dry
by titration with EDTA using Xylenol Orange	nitrogen, and then in vacuum to remove
indicator. The solvent was determined by	unreacted NH4Br.
difference.	Tetrahydrofuran was distilled from LiAlH ₄ .
Anhydrous materials were handled in a dry	retranyutotulan was distilled from LIAINA.
box through which was passed a stream of	1
nitrogen free of carbon dioxide.	1
The solid phase is ErBr3.3.5C4H80.	ESTIMATED ERROR:
	Nothing specified.
	DEFEDENCIC.
	REFERENCES:
	1

COMPONENTS :	ORIGINAL MEASUREMENTS:
<pre>(1) Erbium bromide; ErBr₃; [13536-73-7]</pre>	Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J.; Oelsner, L.; Niedergeases, U. Z. Chem. 1968, 8, 472-3.
(2) 1,4-Dioxane; C ₄ H ₈ O ₂ ; [123-91-1]	Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov. <u>1971</u> , 200-6.
VARIABLES:	PREPARED BY:
Room Temperature: T/K around 298	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of ErBr3 in p-dioxane at abou	nt 25°C was given as
0.	6 mass %
The corresponding polality calculated by the	annution to
The corresponding molality calculated by the	15 mol kg^{-1}
0.0	15 mol kg -
The nature of the solid phase was not specif	ied.
AUXILIARY	INFORMATION
METHOD /APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
The solute-solvent mixtures were isother- mally agitated at 25°C or at room tempera-	The anhydrous salt was prepared by the method of Taylor and Carter (1).
ture. Authors state that the difference found for the solubility was within	No other information given.
experimental error limits.	
Er was determined by complexometric titration.	
No other details given.	
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES:
	1. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.

EIGINAL MEASU irmse, E.M. r. <i>II Vses</i> . <u>971</u> , 200-6. EEPARED BY: C. Mioduski a [107-10-8] [75-31-0] [109-73-9] [13952-84-6] [626-23-3]	Konf. po Teo and M. Salomo solubil mass % 24.5 38.9 21.4 37.0	n
r. 11 Vses. 1 971, 200-6. REPARED BY: 7. Mioduski a [107-10-8] [75-31-0] [109-73-9] [13952-84-6]	and M. Salomo solubil mass % 24.5 38.9 21.4 37.0	n .ity ^a mol kg ⁻¹ 0.797 1.564 0.669 1.443
<u>971</u> , 200-6. REPARED BY: 2. Mioduski a [107-10-8] [107-31-0] [109-73-9] [13952-84-6]	and M. Salomo solubil mass % 24.5 38.9 21.4 37.0	n .ity ^a mol kg ⁻¹ 0.797 1.564 0.669 1.443
<pre>C. Mioduski a [107-10-8] [75-31-0] [109-73-9] [13952-84-6]</pre>	solubil mass % 24.5 38.9 21.4 37.0	.1ty ^a mol kg ⁻¹ 0.797 1.564 0.669 1.443
<pre>C. Mioduski a [107-10-8] [75-31-0] [109-73-9] [13952-84-6]</pre>	solubil mass % 24.5 38.9 21.4 37.0	.1ty ^a mol kg ⁻¹ 0.797 1.564 0.669 1.443
[107-10-8] [75-31-0] [109-73-9] [13952-84-6]	solubil mass % 24.5 38.9 21.4 37.0	.1ty ^a mol kg ⁻¹ 0.797 1.564 0.669 1.443
[75-31-0] [109-73-9] [13952-84-6]	mass % 24.5 38.9 21.4 37.0	mol kg ⁻¹ 0.797 1.564 0.669 1.443
[75-31-0] [109-73-9] [13952-84-6]	mass % 24.5 38.9 21.4 37.0	mol kg ⁻¹ 0.797 1.564 0.669 1.443
[75-31-0] [109-73-9] [13952-84-6]	mass % 24.5 38.9 21.4 37.0	mol kg ⁻¹ 0.797 1.564 0.669 1.443
[75-31-0] [109-73-9] [13952-84-6]	24.5 38.9 21.4 37.0	0.797 1.564 0.669 1.443
[75-31-0] [109-73-9] [13952-84-6]	38.9 21.4 37.0	1.564 0.669 1.443
[109-73-9] [13952-84-6]	21.4 37.0	0.669 1.443
[13952-84-6]	37.0	1.443
[626-23-3]	0.8	0.020
FORMATION		<u> </u>
Nothing spec work by the probably pre	ified, but b author, the pared by the	ased on previous anhydrous salt was
Nothing spec EFERENCES:	D.: Carter,	C.P. <u>1962</u> , 24, 387.
	URCE AND PUU lothing spec rork by the robably pre aylor and C aylor and C TIMATED ERR Nothing spec CFERENCES:	URCE AND PURITY OF MATER Nork by the author, the Probably prepared by the Caylor and Carter (1).

COMPONENTS :				ORIGINAL MEASUREMENTS:			
(1) Thulium chloride; TmCl ₃ ; [13537-18-3]			Sakharo	va, Yu.G.; H	Ezhova, T.A.		
(2) Ethanol; C ₂ H ₆ O; [64-17-5] (3) Water; H ₂ O; [7732-18-5]			Zh. Neorg. Khim. <u>1976</u> , 21, 551–4; Russ. J. Inorg. Chem. (Engl. Transl.) <u>1976</u> , 21, 296–8.				
WADTADI FC .				2222.422			
Temperatur	VARIABLES:			PREPARE	uski and M.	Salomon	
						1	
EXPERIMENT		f TmCl ₃ .6H ₂ 0	in 96.8%	C.H.OH ^a			
	sample 1		sample		sample 4	mean solu	
t/°C	g/100 g ^b				g/100 g	g/100 g	mol kg ^{-lc}
20	42.09	42.20	42.26		41.91	42.11	1.897
30	41.06	41.16	41.12		41.14	41.11	1.821
40	41.70	41.73	42.09		41.83	41.83	1.876
50	41.17	44.21	44.44		44.50	44.33	2.077
60	47.08	47.26	47.46		47.35	47.29	2.340
		A	UXILIARY	INFORMAT	ION		<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>
Isothermal reached af obtained b above and in the tab equilibrat points obt The metal analysis w titration Analyses o 40°C and 6 the hexahy	ARATUS/PROCEDU method used. ter 3-4 h. Id y approaching below. Two of le obtained af ion, and the r ained after 4 content in eac as determined with Trilon B. f the solids w 0°C showed the drate: 1.e. et the solid phas	Equilibrium entical resu equilibrium the data pos- ter 3 hours of emaining two h of equilibr h aliquot tal by complexomo ithdrawn at 2 solid phase hanol was not	lts from ints of data ration. ken for etric 20°C, to be	TmCl _{3.6} oxide 1 crystn. cator o crystal with Tr method. 163.5°C boiling anhydr concn d pycnome ESTIMAT Soly: r ±	H ₂ O prepd by n dil (1:3) The crysta ver CaCl ₂ , H s analyzed d ilon B, and The hexaby . 96.8% eth of c.p. gra CuSO ₄ follow etd refracto trically. ED ERROR: esults appan 0.9 % (comp othing spec	als were dri ² 205 and NaO for the meta for Cl by t vdrate melte and prepd ade 93.5% et wed by distn ometrically cently preci- pilers).	c.p. grade d by evapn and ed in a desic- H. The 1 by titrn he Volhard d at 162.4 - by prolonged hanol with . Ethanol
							

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Thulium chloride; TmCl ₃ ;	Kirmse, E.M.
[13537-18-3]	The II Hear Keyl in Task Dectusion
	Tr. II Vses. Konf. po Teor. Rastvorov 1971, 200-6.
(2) 2-Methoxyethanol; C ₃ H ₈ O ₂ ; [109-86-4]	<u>1771</u> , 200-0.
[103-00-4]	
VARIABLES:	PREPARED BY:
T/K = 298	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of TmCl3 in 1,2-dimethoxyethar	e at 25°C was reported as
-	
6.3	mass %
The corresponding meinlity colouisted by the	compiler is
The corresponding molality calculated by the	compiler 18
0.244	mol kg ⁻¹
The nature of the solid phase was not specifi	ed.
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Experimental details not given, but were	Nothing specified, but based on previous
probably similar to previous works of	work by the author, the anhydrous salt was
the author which are compiled throughout this	
volume.	and Carter (1).
	ESTIMATED ERROR:
	Nothing specified.
	nothing specified.
	REFERENCES:
	1. Taylor, M.D.; Carter, C.P.
1	J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.

COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Thulium chloride; TmCl₃; [13537-18-3]</pre>	Dzhuraev, Kh. Sh.; Mirsaidov, U.; Kurbanbekov, A.; Rakhimova, A.
(2) Diethyl ether; C ₄ H ₁₀ 0; [60-29-7]	Dokl. Akad. Nauk Tadzh. SSR <u>1976</u> , 19, 32-4
VARIABLES:	PREPARED BY:
T/K = 293	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of TmCl ₃ in diethyl ether at	20°C was reported as
0.0	53 mass %
The corresponding molality calculated by the	
1.94	$\times 10^{-3} \text{ mol kg}^{-1}$
	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. Equilibrium was	SOURCE AND FURITY OF MATERIALS:
attained within 24 h, and it was verified	solvate method (no details given).
by constancy in the Tm concentration. The saturated solution and the equilibrated	Ethyl ether was dried with Na and
solid phase were analyzed. Tm determined by complexometric titration using urotropine	distilled from LiAlH ₄ .
buffer and methyl-thymol blue indicator. Chloride determined by titration with AgN03.	
The solid phase corresponded to TmCl ₃ .Et ₂ 0	
(the etherate was dried under vaccum at 40°C prior to analysis).	
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES :

Thulium Chloride	
COMPONENTS :	ORIGINAL MEASUREMENTS:
(1) Thulium chloride; TmCl ₃ ; [13537-18-3]	Kirmse, E.M.; Zwietasch, K.J.
<pre>(2) 1,2-Diethoxyethane; C₆H₁₄O₂; [629-14-1]</pre>	Z. Chem. <u>1967</u> , 7, 281.
VARIABLES:	PREPARED BY:
T/K = 298	T. Mioduski
EXPERIMENTAL VALUES:	L
The solubility of TmCl ₃ in 1,2-diethoxyethan	e at 25°C was reported to be
0.	88 mass %
The corresponding molality calculated by the	compiler is
0.0	323 mol kg ⁻¹
The composition of the solid phase was given	in terms of the Eu:Cl:ether ratio as
1:2	.97:2.00
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method used. The anhydrous mixtures were equilibrated at 25°C for several days with frequent shaking.	Sources and purities of materials not given. The anhydrous chloride was obtained by the method of Taylor and Carter (1).
The solid phase was dried in a vacuum desiccator over P_2O_5 .	The solvent was prepared by the Williamson synthesis: i.e. by reaction of C_{2H_5I} with
Tm was determined by complexometric titra- tion using Xylenol Orange indicator. Chloride was determined by the Volhard titration method.	the monoethylether of ethylene glycol.
	ESTIMATED ERROR:
	No estimates possible.
	REFERENCES: 1. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.

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COMPONENTS :			ORIGINAL MEASU	REMENTS :	<u> </u>	
 Thulium chloride; TmCl₃; [13537-18-3] Tributylphosphate; C₁₂H₂₇O₄P; [126-73-8] 			Korovin, S.S.; Galaktionova, O.V.; Lebedeva, E.N.; Voronskaya, G.N.			
			Zh. Neorg. Khir J. Inorg. Chem 508-11.	n. <u>1975</u> , 20, 900 . (Engl. Transl.	B-14; Russ.) <u>1975</u> , 20,	
VARIABLES:			PREPARED BY:			
T/K = 298			T. Mioduski an	nd M. Salomon		
EXPERIMENTAL	L VALUES:					
	Comp	osition of sat	turated solution	ns		
mass %	mol/kg sln	g dm ⁻³	mol dm^{-3}	mol kg ⁻¹ (compilers)	density/g cm ⁻³	
41.4	1.49	580.2	2.03	2.57	1.40	
		The solid pl	nase is TmCl ₃			
		AUXILIARY	INFORMATION			
METHOD ADDA	PATHE (PROCEDURE -					
	RATUS/PROCEDURE: solutions prepared is	othermally		ITY OF MATERIALS		
with magnet	ic stirring. Equili	brium was	the oxide with	n CCl4 vapor (1,	2). Source and	
	ter 25-30 d. The so l and an aliquot for a			erials not given Imetrically, and		
	idded to methanol and		Volhard's meth			
	NH3. The pptd Tm(O		m. 1			
-	lly and heated to the analysis. The solid		Tributylphosph the standard m	nate (TBP) was p method." No add	urified "by	
analyzed (n	to details given) for the anhydrous TmCl ₃ was	phosphorous,	details given.			
All operati	ons were performed in tch a stream of argon	n a dry box				
-		-	ESTIMATED ERRO	R:		
	bjective of this work the nature of complexation of the second s			anthin		
	and incl3 in soluci	ation	No estimate po	551010.		
	and incly in soluci	ation				
		ation	REFERENCES: 1. Korshunov, Bukhtiyarov	B.G.; Drobot, D , V.V.; Shevtso	va, Z.N.	
		ation	REFERENCES: 1. Korshunov, Bukhtiyarov Zh. Neorg. 2. Novikov, G.	B.G.; Drobot, D 7, V.V.; Shevtso <i>Khim</i> . <u>1964</u> , 9, I.; Tolmacheva,	va, Z.N. 1427. V.D.	
		ation	REFERENCES: 1. Korshunov, Bukhtiyarov Zh. Neorg. 2. Novikov, G.	B.G.; Drobot, D 7, V.V.; Shevtso Khim. <u>1964</u> , 9,	va, Z.N. 1427. V.D.	

	i i	hulium	Chloride			353
COMPONENTS:			ORIGINAL	MEASUREMENTS	:	
(1) Thulium chlorid	le; TmCl ₃ ;		Kirmse,	, E.M.		
[13537-18-3] (2) Amines			Tr. II Vses. Konf. po Teor. Rastvorov <u>1971</u> , 200-6.			-
VARIABLES:			PREPARED	BY:		
T/K = 298			T. Miod	duski and M. S	Salomon	
EXPERIMENTAL VALUES:	<u></u>	<u></u>	L		<u></u>	
				solubi	lítv ^a	
solvent					mol kg ⁻¹	
2-propanamine;	iso-C ₂ H _o N;	[75-3	1-01			
	• •	$C_{3}H_{7}N;$ [107-3]				
2-propen-1-amine;	⁰ 3 ⁿ 7 ^N 5	[10/-	TT-3]	29.0	1.484	
^a Molalities calculat	ed by the compiler	5.				
^b The original paper						
	AU	XILIARY	INFORMAT			
METHOD/APPARATUS/PRO			-	ND PURITY OF	MATERIALS	
Experimental details probably similar to author which are com volume.	not given, but we previous works of	the	Nothing work by probabl	specified, b the author,	the anhydrous salt	was
Nature of solid phas	es not specified.					
			ESTIMAT	ED ERROR:	·····	
				specified.		
				CES: or, M.D.; Car norg. Nucl. C		7.

COMPONENTS :	ORIGINAL MEASUREMENTS:			
<pre>(1) Thulium chloride; TmCl₃; [13537-18-3]</pre>	Mikheev, N.B.; Kamenskaya, A.N.; Konovalova, N.A.; Zhilina, T.A.			
(2) Hexamethylphosphorotriamide; C ₆ H ₁₈ N ₃ OP; [680-31-9]	Zh. Neorg. Khim. <u>1977</u> , 22, 1761–6; Russ. J. Inorg. Chem. (Engl. Transl.) <u>1977</u> , 22, 955–8.			
VARIABLES:	PREPARED BY:			
Room temperature: $T/K = 298 \pm 3$	T. Mioduski and M. Salomon			
EXPERIMENTAL VALUES:				
Starting with the solvate $TmC1_3.3((CH_3)_2N)_3P0$,	, the solubility at 25 \pm 3°C ^a was given as			
$0.0935 \text{ mol } \text{dm}^{-3}$				
^a Table 3 in the English translation of the sou 23 \pm 3°C. This is probably a typographical emeasurements were carried out at 25 \pm 3°C.	arce paper states the temperature to be error as the text clearly states that all			
AUXILIARY	INFORMATION			
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:			
Isothermal method. Salt and solvent were	Anhydrous TmCl ₃ , prepared by modification of			
placed in a test-tube in a dry box, and the	Taylor and Carter's method (1) by subliming			
tube agitated at room temperature until equilibrium was reached. Aliquots were with-	NH4Cl from a mixture of TmCl_3 with 6 moles of NH_4Cl in a stream of inert gas at 200-			
drawn periodically and analyzed for the metal	400°C. The product contained less than 3%			
content. Rare earth concentration was deter- mined by complexometric titration, and by	of TmOC1.			
the radiometric method using the isotope	The solvent was purified as in (2).			
Tm 170 ($t_1 = 169$ d). Authors state that results for both methods agreed. Although				
not clearly stated, it appears that equili- brium was reached in several weeks to				
several months.	ESTIMATED ERROR:			
Solid phase samples washed three times with	Soly: precision \pm 0.001 mol dm ⁻³ at a 95%			
benzene or ether and dried on a steam bath in an argon atmosphere. The solid phase was analyzed and found to be TmCl ₂ .3C ₆ H ₁ eN ₃ OP.	level of confidence (authors). Temp: precision \pm 3K.			
The sol ate was analyzed for metal content by complexometric titration, for chloride by	REFERENCES: 1. Taylor, M.D.; Carter, C.P. J. Inorg.			
the Volhard method, and the solvent was ob-	Nucl. Chem. <u>1962</u> , 24, 387.			
tained by difference. IR spectra confirmed the absence of water. Structural studies of	2. Fomicheva, M.G.; Kessler, Yu.M.; Zabusova, S.E.; Alpatova, N.M.			
the solvate were also carried out by X-ray analysis.	Elektrokhimiya <u>1975</u> , 11, 163.			
L				

	ODTOTNAL ARACHINDURING
COMPONENTS: (1) Thulium chloride; TmCl ₃ ;	ORIGINAL MEASUREMENTS:
[13537-18-3]	Lyubimov, E.I.; Batyaev, I.M.
(2) Tetrachlorostannate; SnCl ₄ ; [7646-78-8]	Zh. Prikl. Khim. <u>1972</u> , 45, 1176-8.
(3) Phosphorus oxychloride; POCl ₃ ; [10025-87-3]	
VARIABLES:	PREPARED BY:
T/K = 293 Concentration of SnCl ₄	T. Mioduski
EXPERIMENTAL VALUES:	
	a b
	oncentration Tm ₂ O ₃ solubility ^{a,b}
(by volume) mol	dm ⁻³ moles Tm dm ⁻³
1:100 0.0	85 0.8
1:50 0.1	
1:25 0.3	
1:15 0.5	9 1.3
1:10 0.7	8 2.1
^a This is also the solubility of TmCl ₃ in quantitatively converted to the chloride	the SnCl ₄ -POCl ₃ mixtures because the oxide is according to
$Tm_2O_3 + 6POCl_3$	$= 2 \text{TmC1}_3 + 3 P_2 0_3 \text{C1}_4$
Thus the equilibrated solutions should ac system containing SnCl ₄ , TmCl ₃ , $P_2O_3Cl_4$ a soluble).	tually be considered to be a four component nd POCl ₃ (the compiler assumes $P_2O_3Cl_4$ is
^b Mixtures preheated to 220°C for 2 hours parenthesis indicates preheating at 120°	prior to equilibration at 20°C (value in C.)
AUXILI	ARY INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method used. POCl ₃ + SnCl ₄ solutions were prepared by volume in a dr	SOURCE AND PURITY OF MATERIALS: Tm ₂ O ₃ of "the first sort" was heated at 950°C for 2 hours.
box. The SnCl4 content was verified by chemical analysis for Sn. This solution Tm_2O_3 were placed in sealed ampoules, hea to $20-250$ °C to increase the rate of solut and then rotated in an air thermostat at for 2-200 hours. Without preheating, equ ibrium was established after 200 hours. heating to 220°C lowered the equilibration time at 20° to 2 hours.	ted drated with P ₂ O ₅ and distilled under vacuum. ion, 20°C i1- Pre-
Im was determined by colorimetric analysis	LOTTINIED ERROR.
and in some cases by the oxalate method. The reported solubilities are mean values	Solv: authors state the "coefficient of
and in some cases by the oxalate method.	Soly: authors state the "coefficient of variance" to be less than 7%.
and in some cases by the oxalate method. The reported solubilities are mean values	Soly: authors state the "coefficient of variance" to be less than 7%.
and in some cases by the oxalate method. The reported solubilities are mean values	Soly: authors state the "coefficient of variance" to be less than 7%. Temp: precision presumably ± 0.2K (compiler).
and in some cases by the oxalate method. The reported solubilities are mean values	Soly: authors state the "coefficient of variance" to be less than 7%. Temp: precision presumably ± 0.2K (compiler).
and in some cases by the oxalate method. The reported solubilities are mean values	Soly: authors state the "coefficient of variance" to be less than 7%. Temp: precision presumably ± 0.2K (compiler).

	OPTOTNAL MEACUIDENTING
COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Thulium bromide; TmBr₃; [14456-51-0]</pre>	Rossmanith, K.
[14450 51=0]	Monatsh. Chem. <u>1966</u> , 97, 1357-64.
(2) Tetrahydrofuran; C ₄ H ₈ O;	
[109-99-9]	
VARIABLES:	PREPARED BY:
Room Temperature: T/K = 294-296	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of TmBr3 in tetrahydrofuran a	at 21-23°C was reported to be
The solubility of imbr3 in tetranydroluran a	at 21-25 C was reported to be
0.41 g pe	r 100 ml of solution
(0.0100 m	ol dm ⁻³ , compiler).
	1
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution	SOURCE AND PURITY OF MATERIALS: Sources and purities of initial materials
was equilibrated in an extractor with agita-	
tion for 60-80 hours at room temperature.	version of the oxide by high temperature
	reaction with an excess of NH4Br followed by
Thulium was determined by the oxalate	heating the product in a stream of dry
method and by titration with EDTA using Xylenol Orange indicator. The solvent was	nitrogen, and then in vacuum to remove unreacted $NH_{4}Br$.
determined by difference.	unreacted might.
	Tetrahydrofuran was distilled from LiAlH ₄ .
Anhydrous materials were handled in a dry	
box through which was passed a stream of	
nitrogen free of carbon dioxide.	
The solid phase is TmBr ₃ .3C ₄ H ₈ O.	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES:
1	
1	

COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Ytterbium fluoride; YbF3; [13760-80-0]</pre>	Kirmse, E.M. Wiss. Hefte, Paed. Inst. Koethen
<pre>(2) Dimethylsulfoxide; C₂H₆OS; [67-68-5]</pre>	<u>1978</u> , 2, 85-90.
VARIABLES:	PREPARED BY:
Room Temperature	T. Mioduski
EXPERIMENTAL VALUES:	

The solubility of ${\tt YbF_3}$ in $({\tt CH_3})_2{\tt S0}$ at room temperature was given as

0.04 mass %.

The corresponding molality calculated by the compiler is

 $0.0017 \text{ mol kg}^{-1}$

The solid phase was dried in a desiccator over P_4O_{10} and the Yb:F ratio found to be almost 1:3.

AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method. About 100 mg of YbF ₃ was added to 10-20 cm ³ of solvent, and the mix- ture mechanically agitated at room tempera- ture for 100 h. 5-10 g of saturated solution were removed by decanting or by centrifuging, and the solution evaporated to dryness. The residue was heated with about 10 cm ³ of 10% KOH solution for 1-2 h to obtain solid Yb(OH) ₃ and a basic F ⁻ solution. The pre- cipitate was washed, dissolved in aq HCl, and Yb determined several times by complexo- metric titration with potentiometric end- point detection (1). The fluoride content in the filtrate was determined photometrical- ly using Al-Eriochrome cyanine color lake indicator (2). The reported solubility is a mean of "numerous parallel determinations," or "at least two parallel determinations."	dissolved in HCl and the fluoride precipi- tated by addition of aq HF. The solid pro- duced was $YbF_3.0.5H_2O$ and was dehydrated

358 Ytterbiun	n Fluoride
COMPONENTS: (1) Ytterbium fluoride; YbF ₃ ;	ORIGINAL MEASUREMENTS: Kirmse, E.M.
[13760-80-0] (2) Pyridine; C ₅ H ₅ N; [110-86-1]	Wiss. Hefte, Paed. Inst. Koethen <u>1978</u> , 2, 85-90.
VARIABLES:	PREPARED BY:
Room Temperature	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of YbF ₃ in pyridine at room te	mperature was given as
0.0	3 mass %
The corresponding molality calculated by the	compiler is
1.3 x	$10^{-3} \text{ mol } \text{kg}^{-1}$
The solid phase was dried in a desiccator ove almost 1:3.	r P_40_{10} and the Yb:F ratio determined to be
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method. About 100 mg of YbF ₃ was added to 10-20 cm ³ of solvent, and the mix- ture mechanically agitated at room tempera- ture for 100 h. 5-10 g of saturated solu- tion were removed by decanting or by centri- fuging, and the solution evaporated to dry- ness. The residue was heated with about 10 cm ³ of 10% KOH solution for 1-2 h to ob- tain solid Yb(OH) ₃ and a basic F ⁻ solution. The precipitate was washed, dissolved in aq HC1, and Yb determined several times by complexometric titration with potentiometric end-point detection (1). The fluoride con-	SOURCE AND PURITY OF MATERIALS: Yb203 (source and purity not specified) was dissolved in HCl and the fluoride precipita- ted by addition of aq HF. The solid pro- duced was YbF3.0.5H20 and was dehydrated by washing with acetone followed by drying at 310°C for 120 hours. The solvent was dried and purified by "standard methods."
tent in the filtrate was determined photo- metrically using Al-Eriochrome cyanine color lake indicator (2). The reported solubility is a mean of	Soly: results with relative errors exceed- ing 50% were rejected. Temp: unknown.
"numerous parallel determinations," or "at least two parallel determinations."	 REFERENCES: 1. Schilbach, U.; Kirmse, E.M. Z. Chem. <u>1974</u>, 14, 484. 2. Schilbach, U.; Hetze, I.; Kirmse, E.M. Chemia Analityczna 1975, 20, 33.
	<u> </u>

Ytterbium	Chloride 359
COMPONENTS :	ORIGINAL MEASUREMENTS:
<pre>(1) Ytterbium chloride; YbCl₃; [10361-91-8]</pre>	Merbach, A.; Pitteloud, M.N.; Jaccard, P. Helv. Chim. Acta <u>1972</u> , 55, 44-52.
(2) Methanol; CH ₄ 0; [67-56-1]	Pitteloud, M.N. These. Faculte des Sciences de l'Universite de Lausanne. <u>1971</u> .
VARIABLES:	PREPARED BY:
T/K = 298.2	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	
	mean solubility ^a
t/°C	mol kg ⁻¹
25	4.90
^a Initial salt is the adduct YbCl ₃ .4CH ₃ OH. E found to be YbCl ₃ .3.8CH ₃ OH.	quilibrated solid phase analyzed and
	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method as in (1,2). Mixtures were equilibrated for at least 4 days. Pro- longed operations were performed in a dry box. Ytterbium determined by titration with (NH ₄) ₃ H(EDTA) using a small amount of uro- tropine buffer and Xylenol Orange indicator. Chloride was determined by potentiometric titration with AgNO ₃ solution. Composition of the adduct YbCl ₃ .4CH ₃ OH confirmed by ¹ H NMR and X-ray diffraction.	YbCl ₃ .4CH ₃ OH prepared by dissolving the hydrate in a small excess of o-methyl- formate followed by distillation and
The reported solubilities are mean values of 2-4 determinations.	ESTIMATED ERROR:
	Soly: precision ±0.5% as in (1) (compilers). Temp: precision probably at least ± 0.05 K as in (1) (compilers).
	REFERENCES: 1. Brunisholz, F.; Quinch, J.P.; Kalo, A.M. Helv. Chim. Acta <u>1964</u> , 47, 14. 2. Flatt, R. Chimia <u>1952</u> , 6, 62.

COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Ytterbium chloride; YbCl₃; [10361-91-8]</pre>	Merbach, A.; Pitteloud, M.N.; Jaccard, P. Helv. Chim. Acta <u>1972</u> , 55, 44-52.
(2) Ethanol; C ₂ H ₆ O; [64-17-5]	Pitteloud, M.N. These. Faculte des Sciences de l'Universite de Lausanne. <u>1971</u> .
VARIABLES:	PREPARED BY:
T/K = 298.2	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	
	mean solubility ^a
t/°C	mol kg ⁻¹
25	4.26
^a Initial salt is the adduct YbCl ₃ .3C ₂ H ₅ OH. to be YbCl ₃ .3.6C ₂ H ₅ OH.	Equilibrated solid phase analyzed and found
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method as in (1,2). Mixtures were equilibrated for at least 4 days. Pro- longed operations were performed in a dry box. Ytterbium determined by titration with $(NH_4)_3H(EDTA)$ using a small amount of uro- tropine buffer and Xylenol Orange indicator. Chloride was determined by potentiometric titration with AgNO ₃ solution. Composition of the adduct YbCl ₃ .3C ₂ H ₅ O confirmed by ¹ H NMR and X-ray diffraction. The reported solubilities are mean values of 2-4 determinations.	YbCl ₃ .3C ₂ H ₆ O prepared by dissolving the hydrate in a small excess of o-ethylformate followed by distillation and crystalliza- tion from ethanol. Ethanol (Fluka) was used as received. Purity and absence of water was confirmed by NMR method.
	Soly: precision $\pm 0.5\%$ as in (1) (compilers).
	Temp: precision probably at least <u>+</u> 0.05K as in (1) (compilers).
	 REFERENCES: 1. Brunisholz, F.; Quinche, J.P.; Kalo, A.M. Helv. Chim. Acta <u>1964</u>, 47, 14. 2. Flatt, R. Chimia <u>1952</u>, 6, 62.

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COMPONENTS:	m chloride: N	(bCl.; [10361-	-91-81	ORIGINAL Sakharo	. MEASUREMENT va, Yu.G.; E	S: zhova, T.A.	
(1) Ytterbium chloride; YbCl ₃ ; [10361-91-8]			•1		rg. Khim. <u>19</u>		-4. RUAA
(2) Ethanol;	-			J. Inor	g. Chem. (En	gl. Transl.)	<u>1976</u> , 21,
(3) Water;	H ₂ 0; [7732-]	L8-5]		296-8.]
VARIABLES:				PREPARE	D BY:		
Temperature				T. Miod	uski and M.	Salomon	
EXPERIMENTAL	VALUES:						
s	olubility of	$YbCl_3.6H_20$ in	96.8	% с ₂ н ₅ он	a		
s	ample 1	sample 2	sampl	e 3	sample 4	mean solu	bilities
t/°C g	g/100 g ^b	g/100 g	g/100	g	g/100 g	g/100 g	mol kg ^{-lc}
20 4	7.38	47.30	47.45		47.35	47.37	2.323
30 4	7.70	47.65	47.74		47.76	47.71	2.355
40 4	49.54	49.65	49.59	I	49.63	49.60	2.540
50 5	51.95	52.10	51.90	1	51.85	51.95	2.790
	58.20	58.35	58.29	1	58.40	58.31	3.610
Molalities o	^C Molalities calculated by the compilers.						
		AUXI	LIARY	INFORMAT			
METHOD/APPARA	TUS/PROCEDURE	:		SOURCE	AND PURITY O	F MATERIALS:	
Isothermal method used. Equilibrium was reached after 3-4 h. Identical results obtained by approaching equilibrium from above and below. Two of the data points in the table obtained after 3 hours of equilibration, and the remaining two data points obtained after 4 h of equilibration. The metal content in each aliquot taken for analysis was determined by complexometric titration with Trilon B. Analyses of the solids withdrawn at 20°C, 40°C and 60°C showed the solid phase to be the hexahydrate: i.e. ethanol was not found in any of the solid phases.			YbCl ₃ .6H ₂ O prepd by dissolving c.p. grade oxide in dil (1:3) HCl followed by evapn and crystn. The crystals were dried in a desic- cator over CaCl ₂ , P ₂ O ₅ and NaOH. The crystals analyzed for the metal by titrn with Trilon B, and for Cl by the Volhard method. The hexahydrate melted at 153.0 - 155.2°C. 96.8% ethanol prepd by prolonged boiling of c.p. grade 93.5% ethanol with anhydr CuSO ₄ followed by distn. Ethanol concn detd refractometrically and pycnometrically. ESTIMATED ERROR: Soly: results apparently precise to within \pm 0.9 % (compilers). Temp: nothing specified. REFERENCES:				
	<u> </u>						

COMPONENTS: (1) Ytterbium chloride; YbCl3; [10361-91-8]	ORIGINAL MEASUREMENTS: Merbach, A.; Pitteloud, M.N.; Jaccard, P. Helv. Chim. Acta <u>1972</u> , 55, 44-52.
(2) 2-Propanol; C ₃ H ₈ O; [67-63-0]	Pitteloud, M.N. These. Faculte des Sciences de l'Universite de Lausanne. <u>1971</u> .
VARIABLES:	PREPARED BY:
T/K = 298.2	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	
	mean solubility ^a
t/°C	mol kg ⁻¹
25	3.6
^a Initial salt is the adduct YbCl ₃ .3C ₃ H ₇ OH. to be YbCl ₃ .nC ₃ H ₇ OH where n = 3.5 to 3.6.	Equilibrated solid phase analyzed and found
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	1
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method as in (1,2). Mixtures were equilibrated for at least 4 days. Pro- longed operations were performed in a dry box. Ytterbium determined by titration with (NH ₄) ₃ H(EDTA) using a small amount of uro- tropine buffer and Xylenol Orange indicator.	YbCl3.3C3H80 prepared by dissolving the hydrate in a small excess of o-methlformate followed by distillation and trans-solvation
Chloride was determined by potentiometric titration with $AgNO_3$ solution. Composition of the adduct YbCl ₃ .3C ₃ H ₈ O confirmed by ¹ H NMR and X-ray diffraction.	Iso-propanol (Fluka) was used as received. Purity and absence of water was confirmed by NMR.
The reported solubilities are mean values	
of 2-4 determinations.	ESTIMATED ERROR: Soly: precision ±0.5% as in (1) (compilers).
	Soly: precision $\pm 0.5\%$ as in (1) (completes). Temp: precision probably at least $\pm 0.05K$ as
	in (1) (compilers).
	REFERENCES:
	 Brunisholz, F.; Quinche, J.P.; Kalo, A.M. Helv. Chim. Acta <u>1964</u>, 47, 14. Flatt, R. Chimia <u>1952</u>, 6, 62.

erblum Chlonde 30.
ORIGINAL MEASUREMENTS:
Kirmse, E.M.
Tr. II Vses. Konf. po Teor. Rastvorov <u>1971</u> , 200-6.
PREPARED BY:
T. Mioduski and M. Salomon
YbCl ₃ solubility ^a
mass % mol kg ⁻¹ solid phase
9-86-4] 8.6 0.337 YbCl ₃ .nC ₃ H ₈ O ₂ (n = 2-3)
0-80-5] 9.1 0.358 YbCl ₃ .2C ₄ H ₁₀ O ₂
ILIARY INFORMATION
SOURCE AND PURITY OF MATERIALS:
re Nothing specified, but based on previous the work by the authors, the anhydrous salt his was probably prepared by the method of Taylor and Carter (1).
ESTIMATED ERROR:

COMPONENTS: (1) Ytterbium chloride; YbCl ₃ ; [10361-91-8]	ORIGINAL MEASUREMENTS: Dzhuraev, Kh. Sh.; Mirsaidov, U.; Kurbanbekov, A.; Rakhimova, A.
(2) Diethyl ether; C ₄ H ₁₀ 0; [60-29-7]	Dokl. Akad. Nauk Tadzh. SSR <u>1976</u> , 19, 32-4.
VARIABLES:	PREPARED BY:
T/K = 293	T. Mioduski
EXPERIMENTAL VALUES:	······································
The solubility of YbCl ₃ in diethyl ether at	20°C was reported to be
0.08	5 mass %
The corresponding molality calculated by the	compiler is
3.04 x	$10^{-3} \text{ mol } \text{kg}^{-1}$
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. Equilibrium was attained within 24 h and was verified by constancy in the YbCl ₃ concentration. The	SOURCE AND PURITY OF MATERIALS: Anhydrous YbCl3 prepared by the ethanol solvate method (no details given).
saturated solution and the equilibrated solid phase were analyzed. Yb determined by complexometric titration in presence of urotropine buffer and methyl-thymol indica- tor. Chloride determined by titration with AgNO3. The solid phase corresponded to YbCl ₃ .C ₄ H ₁₀ O (the etherate was dried under vacuum at 40°C prior to analysis).	Ethyl ether was dried with Na and distilled from LiAlH4 before use.
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES :

<pre>COMPONENTS: (1) Ytterbium chloride; YbCl₃; [10361-91-8] (2) 1,2-Diethoxyethane; C₆H₁₄0₂; [629-14-1]</pre>	ORIGINAL MEASUREMENTS: Kirmse, E.M.; Zwietasch, K.J. Z. Chem. <u>1967</u> , 7, 281.
VARIABLES: T/K = 298	PREPARED BY: T. Mioduski
EXPERIMENTAL VALUES:	I,
The solubility of YbCl ₃ in 1,2-diethoxyethan	e at 25°C was reported to be
1.15	maas %
The correspond‡ng molality calculated by the	
	mol kg ⁻¹
The composition of the solid phase was given	in terms of the Yb:Cl:ether ratio as
1:3.03	:0.94
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method used. The anhydrous mix- tures were equilibrated at 25°C for several days with frequent shaking. The solid phase was dried in a vacuum desiccator over P ₂ 0 ₅ . Yb was determined by complexometric titra- tion using Xylenol Orange indicator. Chloride was determined by the Volhard titration method.	SOURCE AND PURITY OF MATERIALS: Sources and purities of materials were not given. The anhydrous chloride was ob- tained by the method of Taylor and Carter (1). The solvent was prepared by the Williamson synthesis: i.e. by reaction of C ₂ H ₅ I with the monoethyleter of ethylene glycol. ESTIMATED ERROR: No estimate possible. REFERENCES: 1. Taylor, M.D.; Carter, C.P. J. Inong. Nucl. Chem. <u>1962</u> , 24, 387.

Ytterbium Chloride

COMPONENTS:	ORIGINAL MEASUREMENTS:	
(1) Ytterbium chloride; YbCl ₃ ; [10361-91-8]	Baganz, E. Staatsexamenarbeit. Koethen Paedag. Institut. <u>1970</u> .	
(2) 1-Methoxyhexane; C ₇ H ₁₆ 0; [4747-07-3]	Original data cited by	
	Kirmse, E.M.; Dressler, H. Z. Chem. <u>1975</u> , 15, 239-40.	
VARIABLES:	PREPARED BY:	
Room temperature; T/K = 293 - 298	T. Mioduski	
EXPERIMENTAL VALUES:	L	
The solubility of YbCl ₃ in 1-metho	kyhexane at 20-25 ⁰ C was reported as	
18.3 mass %.		
The corresponding molality calculat	ted by the compiler is	
$0.802 \text{ mol kg}^{-1}$.		
The nature of the solid phase was r	not specified.	
AUXILIARY	INFORMATION	
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:	
The solute-solvent mixtures were isothermally	Nothing specified.	
agitated until equilibrium was attained.	Nothing specified.	
The anhydrous reagents were handled in a dry box containing P ₄ 0 ₁₀ .		
Ytterbium was determined by complexometric titration using Xylenol Orange indicator.		
The reported solubility is a mean value based on four determinations.		
	ESTIMATED ERROR:	
	Nothing specified.	
	REFERENCES :	

COMPONENTS: (1) Ytterbium chloride; YbCl [10361-91-8] (2) Ethers VARIABLES: Room temperature: T/K around EXPERIMENTAL VALUES:		Kirmse, E. J.; Oelsne Z. Chem. <u>1</u> Kirmse, E. Rastvorov.	er, L.; Nied <u>1968</u> , 8, 472 M. Tr. II <u>1971</u> , 200- K: ki and M. Sa	Vses. Konf. po Teor. 6.
solvent			mass %	mol kg ⁻¹
1-ethoxy-2-methoxyethane;	C ₅ H ₁₂ O ₂ ;	[5137-45-1]	1.45	0.053
di-n-propyl ether;	c ₆ H ₁₄ 0;	[111-43-3]	13.7	0.568
l-ethoxybutane;	C6H140;	[628-81-9]	12.0	0.488
1-methoxypentane;	C ₆ H ₁₄ 0;	[628-80-8]	43.5	2.756
1,4-dioxane;	С4H802;	[123-91-1]	0.8	0.029
	AUXILIA	RY INFORMATION	,	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures w mally agitated at 25°C or at ture. Authors state that the found for the solubility was mental error limits. Yb was determined by complexo titration. No other details given.	room tempera- difference within experi-	The anhyd method of		as prepared by the Carter (1).
		REFERENCES 1. Taylor,	specified. : M.D.; Carte	er, C.P. 2m. <u>1962</u> , 24, 387.

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COMPONENTS:	
 Ytterbium chloride; YbCl₃; 	ORIGINAL MEASUREMENTS: Rossmanith, K.; Auer-Welsbach, C.
[10361-91-8]	
(2) Tetrahydrofuran; C ₄ H ₈ 0; [109-99-9]	Monatsh. Chem. <u>1965</u> , 96, 602-5.
VARIABLES:	PREPARED BY:
Room Temperature: T/K about 293	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of $YbCl_3$ in tetrahydrofuran a	t 20°C (room temperature) was reported to be
1.98 g per 1	00 ml of solution
(0.0709 mo	1 dm ⁻³ , compiler).
AUXILIARY	INFORMATION
METHOD /APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution	SOURCE AND PURITY OF MATERIALS: Sources and purities of initial materials not specified. YbCl3 was prepared by
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution was equilibrated in an extractor with agitation for 60-80 hours at room tempera-	SOURCE AND PURITY OF MATERIALS: Sources and purities of initial materials not specified. YbCl3 was prepared by conversion of the oxide by high temperature
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution was equilibrated in an extractor with	SOURCE AND PURITY OF MATERIALS: Sources and purities of initial materials not specified. YbCl3 was prepared by conversion of the oxide by high temperature conversion with an excess of NH4Cl followed
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution was equilibrated in an extractor with agitation for 60-80 hours at room tempera- ture. Ytterbium was determined by the oxalate	SOURCE AND PURITY OF MATERIALS: Sources and purities of initial materials not specified. YbCl3 was prepared by conversion of the oxide by high temperature conversion with an excess of NH4Cl followed by heating the product in a stream of dry nitrogen, and then in vacuum to remove
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution was equilibrated in an extractor with agitation for 60-80 hours at room tempera- ture. Ytterbium was determined by the oxalate method, and by titration with EDTA using	SOURCE AND PURITY OF MATERIALS: Sources and purities of initial materials not specified. YbCl3 was prepared by conversion of the oxide by high temperature conversion with an excess of NH4Cl followed by heating the product in a stream of dry
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution was equilibrated in an extractor with agitation for 60-80 hours at room tempera- ture. Ytterbium was determined by the oxalate	SOURCE AND PURITY OF MATERIALS: Sources and purities of initial materials not specified. YbCl3 was prepared by conversion of the oxide by high temperature conversion with an excess of NH4Cl followed by heating the product in a stream of dry nitrogen, and then in vacuum to remove
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution was equilibrated in an extractor with agitation for 60-80 hours at room tempera- ture. Ytterbium was determined by the oxalate method, and by titration with EDTA using Xylenol Orange indicator. The solvent was determined by difference.	SOURCE AND PURITY OF MATERIALS: Sources and purities of initial materials not specified. YbCl3 was prepared by conversion of the oxide by high temperature conversion with an excess of NH4Cl followed by heating the product in a stream of dry nitrogen, and then in vacuum to remove unreacted NH4Cl.
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution was equilibrated in an extractor with agitation for 60-80 hours at room tempera- ture. Ytterbium was determined by the oxalate method, and by titration with EDTA using Xylenol Orange indicator. The solvent was determined by difference. Anhydrous materials were handled in a dry box through which was passed a stream of	SOURCE AND PURITY OF MATERIALS: Sources and purities of initial materials not specified. YbCl3 was prepared by conversion of the oxide by high temperature conversion with an excess of NH4Cl followed by heating the product in a stream of dry nitrogen, and then in vacuum to remove unreacted NH4Cl.
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution was equilibrated in an extractor with agitation for 60-80 hours at room tempera- ture. Ytterbium was determined by the oxalate method, and by titration with EDTA using Xylenol Orange indicator. The solvent was determined by difference. Anhydrous materials were handled in a dry	SOURCE AND PURITY OF MATERIALS: Sources and purities of initial materials not specified. YbCl3 was prepared by conversion of the oxide by high temperature conversion with an excess of NH4Cl followed by heating the product in a stream of dry nitrogen, and then in vacuum to remove unreacted NH4Cl.
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution was equilibrated in an extractor with agitation for 60-80 hours at room tempera- ture. Ytterbium was determined by the oxalate method, and by titration with EDTA using Xylenol Orange indicator. The solvent was determined by difference. Anhydrous materials were handled in a dry box through which was passed a stream of	SOURCE AND PURITY OF MATERIALS: Sources and purities of initial materials not specified. YbCl3 was prepared by conversion of the oxide by high temperature conversion with an excess of NH4Cl followed by heating the product in a stream of dry nitrogen, and then in vacuum to remove unreacted NH4Cl. Tetrahydrofuran was distilled from LiAlH4.
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution was equilibrated in an extractor with agitation for 60-80 hours at room tempera- ture. Ytterbium was determined by the oxalate method, and by titration with EDTA using Xylenol Orange indicator. The solvent was determined by difference. Anhydrous materials were handled in a dry box through which was passed a stream of nitrogen free of carbon dioxide.	SOURCE AND PURITY OF MATERIALS: Sources and purities of initial materials not specified. YbCl3 was prepared by conversion of the oxide by high temperature conversion with an excess of NH4Cl followed by heating the product in a stream of dry nitrogen, and then in vacuum to remove unreacted NH4Cl. Tetrahydrofuran was distilled from LiAlH4. ESTIMATED ERROR:
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution was equilibrated in an extractor with agitation for 60-80 hours at room tempera- ture. Ytterbium was determined by the oxalate method, and by titration with EDTA using Xylenol Orange indicator. The solvent was determined by difference. Anhydrous materials were handled in a dry box through which was passed a stream of nitrogen free of carbon dioxide.	SOURCE AND PURITY OF MATERIALS: Sources and purities of initial materials not specified. YbCl3 was prepared by conversion of the oxide by high temperature conversion with an excess of NH4Cl followed by heating the product in a stream of dry nitrogen, and then in vacuum to remove unreacted NH4Cl. Tetrahydrofuran was distilled from LiAlH4. ESTIMATED ERROR: Nothing specified.
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution was equilibrated in an extractor with agitation for 60-80 hours at room tempera- ture. Ytterbium was determined by the oxalate method, and by titration with EDTA using Xylenol Orange indicator. The solvent was determined by difference. Anhydrous materials were handled in a dry box through which was passed a stream of nitrogen free of carbon dioxide.	SOURCE AND PURITY OF MATERIALS: Sources and purities of initial materials not specified. YbCl3 was prepared by conversion of the oxide by high temperature conversion with an excess of NH4Cl followed by heating the product in a stream of dry nitrogen, and then in vacuum to remove unreacted NH4Cl. Tetrahydrofuran was distilled from LiAlH4. ESTIMATED ERROR:
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution was equilibrated in an extractor with agitation for 60-80 hours at room tempera- ture. Ytterbium was determined by the oxalate method, and by titration with EDTA using Xylenol Orange indicator. The solvent was determined by difference. Anhydrous materials were handled in a dry box through which was passed a stream of nitrogen free of carbon dioxide.	SOURCE AND PURITY OF MATERIALS: Sources and purities of initial materials not specified. YbCl3 was prepared by conversion of the oxide by high temperature conversion with an excess of NH4Cl followed by heating the product in a stream of dry nitrogen, and then in vacuum to remove unreacted NH4Cl. Tetrahydrofuran was distilled from LiAlH4. ESTIMATED ERROR: Nothing specified.
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution was equilibrated in an extractor with agitation for 60-80 hours at room tempera- ture. Ytterbium was determined by the oxalate method, and by titration with EDTA using Xylenol Orange indicator. The solvent was determined by difference. Anhydrous materials were handled in a dry box through which was passed a stream of nitrogen free of carbon dioxide.	SOURCE AND PURITY OF MATERIALS: Sources and purities of initial materials not specified. YbCl3 was prepared by conversion of the oxide by high temperature conversion with an excess of NH4Cl followed by heating the product in a stream of dry nitrogen, and then in vacuum to remove unreacted NH4Cl. Tetrahydrofuran was distilled from LiAlH4. ESTIMATED ERROR: Nothing specified.
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution was equilibrated in an extractor with agitation for 60-80 hours at room tempera- ture. Ytterbium was determined by the oxalate method, and by titration with EDTA using Xylenol Orange indicator. The solvent was determined by difference. Anhydrous materials were handled in a dry box through which was passed a stream of nitrogen free of carbon dioxide.	SOURCE AND PURITY OF MATERIALS: Sources and purities of initial materials not specified. YbCl3 was prepared by conversion of the oxide by high temperature conversion with an excess of NH4Cl followed by heating the product in a stream of dry nitrogen, and then in vacuum to remove unreacted NH4Cl. Tetrahydrofuran was distilled from LiAlH4. ESTIMATED ERROR: Nothing specified.
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution was equilibrated in an extractor with agitation for 60-80 hours at room tempera- ture. Ytterbium was determined by the oxalate method, and by titration with EDTA using Xylenol Orange indicator. The solvent was determined by difference. Anhydrous materials were handled in a dry box through which was passed a stream of nitrogen free of carbon dioxide.	SOURCE AND PURITY OF MATERIALS: Sources and purities of initial materials not specified. YbCl3 was prepared by conversion of the oxide by high temperature conversion with an excess of NH4Cl followed by heating the product in a stream of dry nitrogen, and then in vacuum to remove unreacted NH4Cl. Tetrahydrofuran was distilled from LiAlH4. ESTIMATED ERROR: Nothing specified.

Ytterbium Chloride 3			50			
		ORIGINA Kirmse	L MEASUREMENT	S:		
<pre>(1) Ytterbium chloride; YbCl₃; [10361-91-8]</pre>				no Took Baltuckou		
(2) Amines		<u>1971</u> ,		po Teor. Rastvorov		
VARIABLES:		PREPARE				
Т/К = 298		T. Mio	duski and M.	Salomon		
EXPERIMENTAL VALUES			1			<u> </u>
				YbCl ₃ s	olubility ^a	
solvent				mass %	mol kg ⁻¹	
ethanamine;	с _{2^н7^N;}	[75-04-	-7]	37.8	2.175	
diethylamine;	(C ₂ H ₅) ₂ NH;	[109-89	9-7]	2.0	0.073	
1-propanamine;	С ₃ Н9N;	[107-10)-8]	35.5	1.970	
2-propanamine;	iso-C3H9N;	[75-31-	-0]	8.1	0.315	
2-propen-1-amine; ^b	с ₃ н ₇ N;	[107-11	-9]	34.2	1.860	
1-butanamine;	$n-C_{4}H_{11}N;$	[109-73	9]	38.7	2.260	
2-butanamine;	iso-C4H ₁₁ N;	[13952-	84-6]	20.2	0.906	
di-2-butylamine;	(sec-C ₄ H ₉) ₂ NH;	[626-23	-3]	3.9	0.145	
^a Molalities calculated by the compilers.						
b The original paper simply specifies the solvent as $C_{3}H_{5}NH_{2}$, and upon request, the author kindly identified the solvent as allylamine.						
AUXILIARY INFORMATION						
METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume. Nature of solid phases not specified.		Nothin work 1 probal	by the author	F MATERIALS: but based on previous the anhydrous salt was by the method of Taylor	5	
			ESTIMA	TED ERROR:		

REFERENCES:

 Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u>, 24, 387.

COMPONENTS:	ORIGINAL MEASUREMENTS: Mikheev, N.B.; Kamenskaya, A.N.;	
(1) Ytterbium chloride; YbCl ₃ ; [10361-91-8]	Konovalova, N.A.; Zhilina, T.A.	
(2) Hexamethylphosphorotriamide; ^C 6 ^H 18N3OP; [680-31-9]	Zh. Neorg. Khim. <u>1977</u> , 22, 1961–6; Russ. J. Inorg. Chem. (Engl. Transl.) <u>1977</u> , 22, 955–8.	
VARIABLES:	PREPARED BY:	
Room temperature: $T/K = 298 \pm 3$	T. Mioduski and M. Salomon	
Nom temperature. T/K = 200 ± 3		
EXPERIMENTAL VALUES:		
Starting with the solvate $YBC1_3.3C((CH_3)_2N)_3P$	O, the solubility at 25 \pm 3°C ^a was given as	
0.085 mol dm^{-3}		
^a Table 3 in the English translation of the source paper states the temperature to be $23 \pm 3^{\circ}$ C. This is probably a typographical error as the text clearly states that all measurements were carried out at $25 \pm 3^{\circ}$ C.		
AUXILIARY	INFORMATION	
METHOD/APPARATUS/PROCEDURE: Isothermal method. Salt and solvent were placed in a test-tube in a dry box, and the tube agitated at room temperature until equil- ibrium was reached. Aliquots were withdrawn periodically and analyzed for the metal con- tent. Rare earth concentration was deter- mined by complexometric titration, and by the radiometric method using the isotope Tm-170 (t_{1_2} = 169 d). Authors state that results for both methods agreed. Although not clear- ly stated, it appears that equilibrium was reached in several weeks to several months.	of NH4Cl in a stream of inert gas at 200-400°C. The product contained less than 3% of Yb0Cl. The solvent was purified as in (2).	
Solid phase samples washed three times with benzene or ether and dried on a steam bath in an argon atmosphere. The solid phase was	ESTIMATED ERROR: Soly: precision \pm 0.01 mol dm ⁻³ at a 95% level of confidence (authors).	
analyzed and found to be $YbCl_3.3C_6H_{18}N_3OP$.	Temp: precision \pm 3 K.	
The solvate was analyzed for metal content by complexometric titration, for chloride by the Volhard method, and the solvent was obtained by difference. IR spectra confirmed the absence of water. Structural studies of the solvate were also carried out by X-ray analysis.		

COMPONENTS:	
COM ONEMIS.	ORIGINAL MEASUREMENTS:
(1) Ytterbium chloride; YbCl ₃ ;	Lyubimov, E.I.; Batyaev, I.M.
[10361-91-8]	
	Zh. Prikl. Khim. <u>1972</u> , 45, 1176–8.
(2) Tetrachlorostannate; SnCl ₄ ;	,,,,
[7646-78-8]	
(2) Phoenhamun arrichlarida; POClat	
(3) Phosphorus oxychloride; POCl ₃ ;	
[10025-87-3]	1
VARIABLES:	PREPARED BY:
T/K = 293	T. Mioduski
Concentration of SnCl ₄	
EXPERIMENTAL VALUES:	
SnCl ₄ :POCl ₃ ratio SnCl ₄ c	oncentration Yb ₂ 0 ₃ solubility ^{a,b}
	-3 -3
(by volume) mo	1 dm ⁻³ moles Yb dm ⁻³
1:100 0.4	0.4
1:50 0.	
1:25 0.	
1:15 0.	
1:10 0.	
1.10 0.	0.0
^a Solutions preheated to 220°C. Value in pare	enthesis corresponds to preheating at 120°C.
b	
^b This is also the solubility of YbCl ₃ in the	SnC14-POC13 mixture because the oxide is
quantitatively converted to the chloride ac	cording to
$X h_0 h_0 + 6 P h_0$	$C1_3 = 2YbC1_3 + 3P_2O_3C1_4$
15203 1 010	513 - 216613 + 51263614
Thus the equilibrated solutions should actua	ally be considered to be a four component
system containing SnCl4, YbCl3, $P_2O_3Cl_4$ and	POC1 ₃ (the compiler assumes P ₂ 0 ₃ Cl ₄ is
soluble).	
Authors state that the solubility of YbCl3 is	s enhanced by complex formation according to
2YbCl ₃ + 3Si	$nCl_4 = Yb_2(SnCl_6)_3$
1	
AUXILIARY	INFORMATION
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
METHOD/APPARATUS/PROCEDURE: Isothermal method used. POCl ₃ + SnCl ₄	SOURCE AND FURITY OF MATERIALS: Yb203 of "the first sort" was ignited at
METHOD/APPARATUS/PROCEDURE: Isothermal method used. POCl ₃ + SnCl ₄ solutions were prepared by volume in a dry	SOURCE AND PURITY OF MATERIALS:
METHOD/APPARATUS/PROCEDURE: Isothermal method used. POCl ₃ + SnCl ₄ solutions were prepared by volume in a dry box. The SnCl ₄ content was verified by	SOURCE AND FURITY OF MATERIALS: Yb ₂ O ₃ of "the first sort" was ignited at 950°C for 2 hours.
METHOD/APPARATUS/PROCEDURE: Isothermal method used. POCl ₃ + SnCl ₄ solutions were prepared by volume in a dry box. The SnCl ₄ content was verified by chemical analysis for Sn. This solution and	SOURCE AND PURITY OF MATERIALS: Yb ₂ O ₃ of "the first sort" was ignited at 950°C for 2 hours. "Pure" grade SnCl ₄ and POCl ₃ were dehydrated
METHOD/APPARATUS/PROCEDURE: Isothermal method used. POCl ₃ + SnCl ₄ solutions were prepared by volume in a dry box. The SnCl ₄ content was verified by chemical analysis for Sn. This solution and Yb ₂ O ₃ were placed in sealed ampoules, heated	SOURCE AND PURITY OF MATERIALS: Yb ₂ O ₃ of "the first sort" was ignited at 950°C for 2 hours. "Pure" grade SnCl ₄ and POCl ₃ were dehydrated with P ₂ O ₅ and distilled under vacuum.
METHOD/APPARATUS/PROCEDURE: Isothermal method used. POCl ₃ + SnCl ₄ solutions were prepared by volume in a dry box. The SnCl ₄ content was verified by chemical analysis for Sn. This solution and Yb ₂ O ₃ were placed in sealed ampoules, heated to 20-250°C to increase the rate of solution	SOURCE AND PURITY OF MATERIALS: Yb_2O_3 of "the first sort" was ignited at $950^{\circ}C$ for 2 hours. "Pure" grade SnCl ₄ and POCl ₃ were dehydrated with P_2O_5 and distilled under vacuum.
METHOD/APPARATUS/PROCEDURE: Isothermal method used. POCl ₃ + SnCl ₄ solutions were prepared by volume in a dry box. The SnCl ₄ content was verified by chemical analysis for Sn. This solution and Yb ₂ O ₃ were placed in sealed ampoules, heated to 20-250°C to increase the rate of solution and then rotated in an air thermostat at 20°C	SOURCE AND PURITY OF MATERIALS: Yb ₂ O ₃ of "the first sort" was ignited at 950°C for 2 hours. "Pure" grade SnCl ₄ and POCl ₃ were dehydrated with P_2O_5 and distilled under vacuum.
METHOD/APPARATUS/PROCEDURE: Isothermal method used. POCl ₃ + SnCl ₄ solutions were prepared by volume in a dry box. The SnCl ₄ content was verified by chemical analysis for Sn. This solution and Yb ₂ O ₃ were placed in sealed ampoules, heated to 20-250°C to increase the rate of solution and then rotated in an air thermostat at 20°C for 2-200 hours. Without preheating, equili-	SOURCE AND PURITY OF MATERIALS: Yb ₂ O ₃ of "the first sort" was ignited at 950°C for 2 hours. "Pure" grade SnCl ₄ and POCl ₃ were dehydrated with P_2O_5 and distilled under vacuum.
METHOD/APPARATUS/PROCEDURE: Isothermal method used. POCl ₃ + SnCl ₄ solutions were prepared by volume in a dry box. The SnCl ₄ content was verified by chemical analysis for Sn. This solution and Yb ₂ O ₃ were placed in sealed ampoules, heated to 20-250°C to increase the rate of solution and then rotated in an air thermostat at 20°C for 2-200 hours. Without preheating, equili- brium was established after 200 hours. Pre-	SOURCE AND PURITY OF MATERIALS: Yb ₂ O ₃ of "the first sort" was ignited at 950°C for 2 hours. "Pure" grade SnCl ₄ and POCl ₃ were dehydrated with P_2O_5 and distilled under vacuum.
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METHOD/APPARATUS/PROCEDURE: Isothermal method used. POCl ₃ + SnCl ₄ solutions were prepared by volume in a dry box. The SnCl ₄ content was verified by chemical analysis for Sn. This solution and Yb ₂ O ₃ were placed in sealed ampoules, heated to 20-250°C to increase the rate of solution and then rotated in an air thermostat at 20°C for 2-200 hours. Without preheating, equili- brium was established after 200 hours. Pre-	SOURCE AND PURITY OF MATERIALS: Yb ₂ O ₃ of "the first sort" was ignited at 950°C for 2 hours. "Pure" grade SnCl ₄ and POCl ₃ were dehydrated with P_2O_5 and distilled under vacuum.
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COMPONENTS:	ORIGINAL MEASUREMENTS:	
 (1) Ytterbium bromide; YbBr₃; 	Kirmse, E.M.	
<pre>[13759-89-2] (2) 1,2-Diethoxyethane; C₆H₁₄0₂; [629-14-1]</pre>	Tr. II Vses. Konf. po Teor. Rastvorov <u>1971</u> , 200-6.	
VARIABLES:	PREPARED BY:	
T/K = 298	T. Mioduski	
EXPERIMENTAL VALUES:		
The solubility of YbBr ₃ in 1,2-dimethoxyethane at 25°C was reported as 0.9 mass %.		
The corresponding molality calculated by the	compiler is	
	$2 \text{ mol } \text{kg}^{-1}$	
0.02	2 mor kg	
The nature of the solid phase was not specif	ied.	
AUXILIARY	INFORMATION	
METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume.	SOURCE AND PURITY OF MATERIALS: Nothing specified, but based on previous work by the author the anhydrous salt was probably prepared by the method of Taylor and Carter (1).	
Nature of solid phase not specified.		
	ESTIMATED ERROR:	
	Nothing specified.	
	REFERENCES: 1. Taylor, M.D. Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.	

Allerbium Bromide 373		
COMPONENTS: (1) Ytterbium bromide; YbBr3; [13759-89-2] (2) Tetrahydrofuran; C4H80; [109-99-9] VARIABLES: Room Temperature: T/K = 294-296 EXPERIMENTAL VALUES: The solubility of YbBr3 in tetrahydrofuran a	ORIGINAL MEASUREMENTS: Rossmanith, K. Monatsh. Chem. <u>1966</u> , 97, 1357-64. PREPARED BY: T. Mioduski	
0.2 7 g	per TOD WT OL SOTATION	
	or	
6.05 x 10	-3 mol dm ⁻³ (compiler)	
AUXILIARY	INFORMATION	
METHOD /APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:	
Isothermal method employed. The solution was equilibrated in an extractor with agita- tion for 60-80 hours at room temperature. Ytterbium was determined by the oxalate method and by titration with EDTA using Xylenol Orange indicator. The solvent was determined by difference. Anhydrous materials were handled in a dry box through which was passed a stream of nitrogen free of carbon dioxide.	Sources and purities of initial materials not specified. YbBr3 was prepared by con- version of the oxide by high temperature reaction with an excess of NH4Br followed by heating the product in a stream of dry nitrogen, and then in vacuum to remove un- reacted NH4Br. Tetrahydrofuran was distilled from LiAlH4.	
The solid phase is YbBr3.3C4H80.	ESTIMATED ERROR:	
	Nothing specified.	
	REFERENCES :	

COMPONENTS:	ORIGINAL MEASUREMENTS:	
 (1) Ytterbium bromide; YbBr₃; [13759-89-2] (2) 1,4-Dioxane; C₄H₈0₂; 	Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J.; Oelsner, L.; Niedergesaess. U. Z. Chem. <u>1968</u> , <i>8</i> , 472-3.	
[123-81-1]	Kirmse, E.M. Tr. II. Vses . Konf. po Teor. Rastvorov. <u>1971</u> , 200-6.	
VARIABLES:	PREPARED BY:	
Room Temperature: T/K around 298	T. Mioduski	
EXPERIMENTAL VALUES:		
The solubility of YbBr ₃ in p-dioxane at around 25°C was given as		
1.7 mass %		
The corresponding molality calculated by the	compiler is	
0.042	mol kg ⁻¹	
The nature of the solid phase was not specifi	ed.	
AUXILIARY	INFORMATION	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were isother- mally agitated at 25°C or at room tempera- ture. Authors state that the difference	SOURCE AND PURITY OF MATERIALS: The anhydrous salt was prepared by the method of Taylor and Carter (1).	
found for the solubility was within experi- mental error limits.	No other information given.	
Yb was determined by complexometric titration.		
No other details given.		
	ESTIMATED ERROR:	
	Nothing specified.	
	REFERENCES:	
	1. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.	

COMPONENTS: (1) Ytterbium bromide; YbBr3; [13759-89-2] (2) Alkyl amines	ORIGINAL MEASUREMENTS: Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov 1971, 200-6.
VARIABLES:	PREPARED BY:
T/K = 298	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	

			YbBr ₃ solubility ^a	
solvent			mass %	mol kg ⁻¹
1-propanamine;	n-C3H9N;	[107-10-8]	34.5	1.276
2-propanamine;	iso-C3H9N;	[75-31-0]	22.75	0.713
1-butanamine;	$n-C_{4}H_{11}N;$	[109-73-9]	24.5	0.786
2-butanamine;	<pre>sec-C4H11N;</pre>	[13952-84-6]	33.9	1.243
di-2-butylamine;	(sec-C4H9)2NH;	[626-23-3]	0.4	0.0097

^aMolalities calculated by the compilers.

AUXILIARY INFORMATION				
METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume. Nature of solid phases not specified.	SOURCE AND PURITY OF MATERIALS: Nothing specified, but based on previous work by the author, the anhydrous salt was probably prepared by the method of Taylor and Carter (1).			
	ESTIMATED ERROR: Nothing specified.			
	REFERENCES: 1. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.			

COMPONENTS:	ORIGINAL MEASUREMENTS:		
<pre>(1) Ytterbium iodide; YbI₃; [13813-44-0]</pre>	Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J.; Oelsner, L.; Niedergesaess, U. Z. Chem. 1968, 8, 472-3.		
(2) 1,4-Dioxane; C ₄ H ₈ O ₂ ; [123-81-1]	Kirmse, E.M. Tr. II Vses. Konf. po Teor. Rastvorov. <u>1971</u> , 200-6.		
VARIABLES:	PREPARED BY:		
Room Temperature: T/K around 298	T. Mioduski		

EXPERIMENTAL VALUES:

The solubility of YbI3 in p-dioxane at around 25°C was given as

0.15 mass %

The corresponding molality calculated by the compiler is

 $0.0027 \text{ mol } \text{kg}^{-1}$

The nature of the solid phase was not specified.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The solute-solvent mixtures were isother-	The anhydrous salt was prepared by the
mally agitated at 25°C or at room tempera-	method of Taylor and Carter (1).
ture. Authors state that the difference	
found for the solubility was within experi- mental error limits.	No other information given.
Yb was determined by complexometric titra-	
tion.	
No other details given.	
No other decails given.	
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES:
	1. Taylor, M.D.; Carter, C.P.
	J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.
COMPONENTS:	ORIGINAL MEASUREMENTS:
--	---------------------------------------
(1) Ytterbium iodide; YbI ₃ ;	Kirmse, E.M.
[13813-44-0]	Tr. II Vses. Konf. po Teor. Rastvorov
(2) Alkyl amines	<u>1971</u> , 200-6.
VARIABLES:	PREPARED BY:
T/K = 298	T. Mioduski and M. Salomon
EXPERIMENTAL VALUES:	<u></u>

			YbI ₃ sol	ubility ^a
solvent			mass %	mol kg ⁻¹
1-propanamine;	с ₃ н9 ^N ;	[107-10-8]	1.7	0.031
2-propanamine;	iso-C3H9N;	[75-31-0]	1.2	0.022
1-butanamine;	$n-C_{4}H_{11}N;$	[109-73-9]	0.4	0.007
2-butanamine;	iso-C4H ₁₁ N;	[13952-84-6]	8.9	0.176

^aMolalities calculated by the compilers.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Experimental details not given, but were	Nothing specified, but based on previous
probably similar to previous works of the	work by the author, the anhydrous salt was
author which are compiled throughout this	probably prepared by the method of Taylor
volume.	and Carter (1).
Nature of solid phases not specified.	
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES:
	1. Taylor, M.D.; Carter, C.P.
	J. Inorg. Nucl. Chem. <u>1962</u> , 24, 387.
	J. Mony. Nacc. Chem. <u>1902</u> , 24, 307.

3/8		L	utetium.	Chiona	3		
COMPONENTS (1) Lutet		LuCl ₃ ; [10099	9-66-81		MEASUREMEN	TS: Ezhova, T.A.	
	101; C ₂ H ₆ 0; [6	•	-	Zh. Neorg. Khim. <u>1976</u> , 21, 551–4; Russ. J. Inorg. Chem. (Engl. Transl.) <u>1976</u> , 21,			
(3) Water	; H ₂ 0; [7732-	-18-5]		J. Inorg. Chem. (Engl. Transl.) <u>1976</u> , 21, 296–8.			<u>1976</u> , 27,
VARIABLES:				PREPAREI	BY:		
Temperatur	e			T. Miod	uski and M.	Salomon	
EXPERIMENT	AL VALUES:]				
	solubility o	of LuCl ₃ .6H ₂ 0 d	in 96.8 3	% с ₂ н ₅ он	a		
	sample 1	sample 2	samp1	e 3	sample 4	mean solub	oilities
t/°C	g/100 g ^b	g/100 g	g/100	g	g/100 g	g/100 g	mol kg ^{-lc}
20	53.30	53.20	53.28		53.26	53.26	2.926
30	54.86	54.70	54.75		54.80	54.78	3.111
40	57.10	56.90	56.95		57.05	57.00	3.404
50	61.60	61.48	61.52		61.45	61.51	4.104
60	68.35	68.20	68.39		68.18	68.28	5.528
		y the compiler					
		AU	XILIARY	INFORMAT	ION		
Isothermal reached af obtained b above and the table bration, a obtained a The metal analysis w titration Analyses o 40°C and 6 the hexahy	ter 3-4 h. Id y approaching below. Two of obtained after nd the remaini fter 4 h of eq content in eac vas determined with Trilon B. f the solids w 0°C showed the	Equilibrium we entical result equilibrium fr the data point 3 hours of equilibration. The aliquot take by complexometer withdrawn at 20 e solid phase to hanol was not	ts form nts in quili- bints en for tric D°C, to be	LuCl _{3.6} oxide i crystn. cator o crystal with Tr method. 150.5°C boiling anhydr concn d pycnome ESTIMAT Soly: r ±	H20 prepd by n dil (1:3) The cryst: ver CaCl ₂ , F s analyzed f ilon B, and The hexahy . 96.8% ett of c.p. gra CuSO4 follow etd refracto trically. ED ERROR: esults appar 0.9% (compsion	als were drie 205 and NaOH For the metal for Cl by the vdrate melted anol prepd be ade 93.5% ethen were by distn. ometrically a rently precise liers).	d by evapn and ed in a desic- I. The by titrn he Volhard I at 148.0 - by prolonged hanol with Ethanol and

COMPO	NENTS:	ORIGINAL MEASUREMENTS:
(1)	Lutetium chloride; LuCl3; [10099 66-8]	Mikheev, N.B.; Kamenskaya, A.N. Konovalova, N.A.; Zhilina, T.A.
(2)	Hexamethylphosphorotriamide; C ₆ H ₁₈ N ₃ OP; [680-31-9]	Zh. Neorg. Khim. <u>1977</u> , 22, 1761–6; Russ. J. Inorg. Chem. (Engl. Transl.) <u>1977</u> , 22, 955–8.
VARIA	ABLES:	PREPARED BY:
Room	temperature: $T/K = 298 \pm 3$	T. Mioduski and M. Salomon
EXPER	RIMENTAL VALUES:	
Star	ting with the solvate LuCl ₃ .3C((CH ₃) ₂ N) ₃	PO, the solubility at 25 \pm 3°C ^a was given as

 $0.073 \text{ mol } \text{dm}^{-3}$

^aTable 3 in the English translation of the source paper states the temperature to be $23 \pm 3^{\circ}$ C. This is probably a typographical error as the text clearly states that all measurements were carried out at $25 \pm 3^{\circ}$ C.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method. Salt and solvent were placed in a test-tube in a dry box, and the tube agitated at room temperature until equilibrium was reached. Aliquots were with drawn periodically and analyzed for the metal content. Rare earth concentration was deter- mined by complexometric titration, and by the radiometric method using the isotope Tm-170 (t_{1_2} = 169 d). Authors state that results for both methods agreed. Although not clearly stated, it appears that equili- brium was reached in several weeks to	at 200-400°C. The product contained less
several months. Solid phase samples washed three times with benzene or ether and dried on a steam bath in an argon atmosphere. The solid phase was analyzed and found to be	ESTIMATED ERROR: Soly: precision \pm 0.001 mol dm ⁻³ at a 95% level of confidence (authors). Temp: precision \pm 3 K.
LuC13.3C6H18N3OP.	REFERENCES:
The solvate was analyzed for metal content by complexometric titration, for chloride by the Volhard method, and the solvent was ob- tained by difference. IR spectra confirm- ed the absence of water. Structural stud- ies of the solvate were also carried out by X-ray analysis.	 Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u>, 24, 387. Fomicheva, M.G.; Kessler, Yu.M.; Zabusova, S.E.; Alpatova, N.M. Elektrokhimiya <u>1975</u>, 11, 163.

	ODTOTINAT 1712	IDENCINES -
COMPONENTS: (1) Lutetium chloride; LuCl ₃ ;	ORIGINAL MEASU Lyubimov, E.I	J REMENTS: [.; Batyaev, I.M.
[10099-66-8](2) Tetrachlorostannate; SnCl4;	Zh. Prikl. Kl	<i>im.</i> <u>1972</u> , 45, 1176–8.
[7646-78-8]		
(3) Phosphorus oxychloride; POCl ₃ ; [10025-87-3]		
VARIABLES:	PREPARED BY:	
T/K = 293 Concentration of SnCl ₄	T. Mioduski	
EXPERIMENTAL VALUES:		
SnCl ₄ :POCl ₃ ratio (by volume)	$SnCl_4$ concentration mol dm ⁻³	Lu ₂ 0 ₃ solubility ^{a,b} moles Lu dm ⁻³
0	0	0.1
1:100	0.085	0.3
1:50	0.17	0.7 (0.1)
1:25	0.33	0.9
1:15	0.59	0.7
1:10	0.78	0.8
^a Solutions preheated to 220°C. Valu ^b This is also the solubility of LuC quantitatively converted to the chi	lg in the SnCl4-POCl3 mi	
$Lu_20_3 + 6I_1$	$20C1_3 = 2LuC1_3 + 3P_2$	2 ⁰ 3 ^{c1} 4
Authors state the the solubility of	LuCl ₃ is enhanced by co	omplex formation according to
2LuC13 -	+ $3SnCl_4 = Lu_2(SnCl_6)$	3
-		-
	AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE: Isothermal method used. POC1 ₃ + Sn(solutions were prepared by volume in box. The SnC1 ₄ content was verified chemical analysis for Sn. This solu Lu ₂ O ₃ were placed in sealed ampoules to 20-250°C to increase the rate of and then rotated in an air thermosta C for 2-200 hours. Without preheat: equilibrium was established after 20 Preheating to 220°C lowered the equi tion time at 20°C to 2 hours. Lu was determined by colorimetric an or by the oxalate method. The repor solubilities are mean values based of parallel determinations.	Cl4 Lu203 of "the n a dry 950°C for 2 h i by "Pure" grade i by "Pure" grade solution, "the P205 and at at 20° "ing, D0 hours. ESTIMATED ERF Soly: authors Soly: authors	SnCl ₄ and POCl ₃ were dehydrated d distilled under vacuum.

CONDONENTE	OPICINAL MEACUPENENTS
COMPONENTS:	ORIGINAL MEASUREMENTS: Rossmanith, K.
(1) Lutetium bromide; LuBr ₃ ; [14456-53-2]	Rossmani un, K.
[14450 55 2]	Monatsh. Chem. <u>1966</u> , 97, 1357-64.
(2) Tetrahydrofuran; C ₄ H ₈ O;	,
[109-99-9]	
VARIABLES:	PREPARED BY:
Room Temperature: $T/K = 294-296$	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of LuBr3 in tetrahydrofuran a	t 21-23°C was reported to be
0.30 a par	100 ml of solution
0.50 g per	
	or
_3	_3
7.2×10^{-3} mo	1 dm ⁻³ (compiler)
AUXTLTARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method employed. The solution	Sources and purities of initial materials
was equilibrated in an extractor with	not specified. LuBr3 was prepared by con-
agitation for 60-80 hours at room tempera-	version of the oxide by high temperature
ture.	reaction with an excess of NH ₄ Br followed by heating the product in a stream of dry
Lutetium was determined by the oxalate	nitrogen, and then in vacuum to remove un-
method and by titration with EDTA using	reacted NH ₄ Br.
Xylenol Orange indicator. The solvent was	
determined by difference.	Tetrahydrofuran was distilled from LiAlH ₄ .
Anhydrous materials were handled in a dry	
box through which was passed a stream of	
nitrogen free of carbon dioxide.	ESTIMATED ERROR:
The solid phase is LuBr3.3C4H80.	Nothing specified.
	- · ·
	PETERENCEC .
1	REFERENCES:

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SYSTEM INDEX

Page numbers preceded by E refer to evaluation texts whereas those which are not refer to compiled tables. Substances are listed by their Chemical Abstracts name, for example 2-ethoxyethanol appears as ethanol, 2-ethoxy- ; systems are indexed under the solid not under solvent. С Cerium bromide + furan, tetrahydro-109 + pyridine 110-111 Cerium chloride + 1,3-butadiene, hexachloro-98 + 1.3-dioxolane 103 + ethane, 1,1'-oxybis-+ ethanol (aqueous) 101 99 + ethanol, 2-methoxy-100 104 + furan, tetrahydro-+ heptane, 1-methoxy-102 + hydrazine 107 + nonane, 1-methoxy-102 + octane, 1-methoxy-102 + phosphoric triamide, hexamethyl-106 + pyridine 105 + water (ternary) 99 Cerium (IV) chloride + phosphoryl chloride (ternary) 108 + stannane, tetrachloro- (ternary) 108 Cerium fluoride + acidic nitrosyl fluoride (nitrosyl fluoride compound with hydrofluoric acid) 97 Cerium iodide + 1-butanol (aqueous) 113 + ethanol (aqueous) 112 + furan, tetrahydro-+ water (ternary) 114 112, 113 D Dysprosium bromide + 1,4-dioxane 302 + ethane, 1,2-diethyoxy-+ furan, tetrahydro-300 301 + 2-propanamine 303 Dysprosium chloride 297 + 1-butanamine + 2-butanamine 297 + 1,4-dioxane 294 293 + ethane, 1,2-diethoxy-294 + ethane, 1-ethoxy-2-methoxy-+ ethane, 1,1-oxybis-292 + ethanol (aqueous) 290 + ethanol, 2-ethoxy-+ ethanol, 2-methoxy-291 291 + furan, tetrahydro-295 + pentane, 1-methoxy-294 + phosphoric acid, tributyl ester 296 + phosphoric triamide, hexamethyl-+ phosphoryl chloride (ternary) 298 299 + 2-propanamine 297 + 2-propen-l-amine 297 299 + stannane tetrachloro- (ternary) + water (ternary) 290 Dysprosium fluoride + butane, 1-(chloromethoxy)-286 + decane, 1-methoxy-286 285 + ethanol + methane, 1,1'-sulfinylbis-288 + phosphoric acid, tribuyl ester 287 + pyridine 289

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+ furan, tetrahydro-			345
+ 1-propanamine			347 347
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	+ butane, 1-ethoxy-			315	
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	+ 1-propanamine			318	
	+ propane, l,l'-oxybis-			315	
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Lanthan	um bromide + 1,4-dioxane + 1,4-dioxane (ternary) + methanol (ternary)				
	um bromide + 1,4-dioxane + 1,4-dioxane (ternary)			95 95	
	um bromide + 1,4-dioxane + 1,4-dioxane (ternary) + methanol (ternary) + 1-propanol (ternary) um chloride + benzene (ternary)			95 95 95 75, 76	
	um bromide + 1,4-dioxane + 1,4-dioxane (ternary) + methanol (ternary) + 1-propanol (ternary) um chloride + benzene (ternary) + 1,3-butadiene, hexachloro-			95 95 95 75, 76 74	
	um bromide + 1,4-dioxane + 1,4-dioxane (ternary) + methanol (ternary) + 1-propanol (ternary) um chloride + benzene (ternary) + 1,3-butadiene, hexachloro- + 1,4-dioxane			95 95 95 95 75, 76 74 89	
	um bromide + 1,4-dioxane + 1,4-dioxane (ternary) + methanol (ternary) + 1-propanol (ternary) um chloride + benzene (ternary) + 1,3-butadiene, hexachloro-			95 95 95 75, 76 74	
	<pre>um bromide + 1,4-dioxane + 1,4-dioxane (ternary) + methanol (ternary) + 1-propanol (ternary) um chloride + benzene (ternary) + 1,3-butadiene, hexachloro- + 1,4-dioxane + 1,4-dioxane (ternary) + 1,3-dioxolane + 1,2-ethanediol</pre>			95 95 95 75, 76 74 89 90, 91 88-89 81	
	<pre>um bromide + 1,4-dioxane + 1,4-dioxane (ternary) + methanol (ternary) + 1-propanol (ternary) um chloride + benzene (ternary) + 1,3-butadiene, hexachloro- + 1,4-dioxane + 1,4-dioxane + 1,4-dioxane (ternary) + 1,3-dioxolane + 1,2-ethanediol + ethane, 1-ethoxy-2-methoxy-</pre>			95 95 95 75, 76 74 90, 91 88-89 81 88-89	
	<pre>um bromide + 1,4-dioxane + 1,4-dioxane (ternary) + methanol (ternary) + 1-propanol (ternary) um chloride + benzene (ternary) + 1,3-butadiene, hexachloro- + 1,4-dioxane + 1,4-dioxane + 1,4-dioxane (ternary) + 1,3-dioxolane + 1,2-ethanediol + ethane, 1-ethoxy-2-methoxy- + ethanol</pre>			95 95 95 75, 76 74 89 90, 91 88-89 81 88-89 78, 79	
	<pre>um bromide + 1,4-dioxane + 1,4-dioxane (ternary) + methanol (ternary) + 1-propanol (ternary) um chloride + benzene (ternary) + 1,3-butadiene, hexachloro- + 1,4-dioxane + 1,4-dioxane + 1,4-dioxane (ternary) + 1,3-dioxolane + 1,2-ethanediol + ethane, 1-ethoxy-2-methoxy-</pre>			95 95 95 75, 76 74 90, 91 88-89 81 88-89	
	<pre>um bromide + 1,4-dioxane + 1,4-dioxane (ternary) + methanol (ternary) + 1-propanol (ternary) um chloride + benzene (ternary) + 1,3-butadiene, hexachloro- + 1,4-dioxane + 1,4-dioxane (ternary) + 1,3-dioxolane + 1,2-ethanediol + ethane, 1-ethoxy-2-methoxy- + ethanol + ethanol (aqueous) + ethanol (ternary) + ethanol, 2-methoxy-</pre>			95 95 95 75, 76 74 89 90, 91 88-89 88-89 78, 79 88-89 78, 79 80 76, 91 86	
	<pre>um bromide + 1,4-dioxane + 1,4-dioxane (ternary) + methanol (ternary) + 1-propanol (ternary) um chloride + benzene (ternary) + 1,3-butadiene, hexachloro- + 1,4-dioxane + 1,4-dioxane + 1,4-dioxane (ternary) + 1,3-dioxolane + 1,2-ethanediol + ethane, 1-ethoxy-2-methoxy- + ethanol + ethanol (aqueous) + ethanol (ternary) + ethanol, 2-methoxy- + ethanol, 2-methoxy-</pre>			95 95 95 75, 76 74 89 90, 91 88-89 81 88-89 78, 79 88, 79 76, 91 86 87	
	<pre>um bromide + 1,4-dioxane + 1,4-dioxane (ternary) + methanol (ternary) + 1-propanol (ternary) um chloride + benzene (ternary) + 1,3-butadiene, hexachloro- + 1,4-dioxane + 1,4-dioxane (ternary) + 1,3-dioxolane + 1,2-ethanediol + ethane, 1-ethoxy-2-methoxy- + ethanol + ethanol (aqueous) + ethanol (ternary) + ethanol, 2-methoxy-</pre>			95 95 95 75, 76 74 89 90, 91 88-89 81 88-89 78, 79 60 76, 91 86 87 88	
	<pre>um bromide + 1,4-dioxane + 1,4-dioxane (ternary) + methanol (ternary) + 1-propanol (ternary) um chloride + benzene (ternary) + 1,3-butadiene, hexachloro- + 1,4-dioxane + 1,4-dioxane (ternary) + 1,3-dioxolane + 1,2-ethanediol + ethane, 1-ethoxy-2-methoxy- + ethanol + ethanol (aqueous) + ethanol (ternary) + ethanol, 2-methoxy- + ethanol, 2-ethoxy- + heptane, 1-methoxy- + methanol + methanol (ternary)</pre>	75,	76,	95 95 95 75, 76 74 89 90, 91 88-89 81 88-89 78, 79 88, 79 76, 91 86 87	
	<pre>um bromide + 1,4-dioxane + 1,4-dioxane (ternary) + methanol (ternary) + 1-propanol (ternary) um chloride + benzene (ternary) + 1,3-butadiene, hexachloro- + 1,4-dioxane (ternary) + 1,3-dioxolane + 1,2-ethanediol + thane, 1-ethoxy-2-methoxy- + ethanol + ethanol (aqueous) + ethanol (ternary) + ethanol, 2-methoxy- + ethanol, 2-methoxy- + heptane, 1-methoxy- + methanol + methanol (ternary) + octane, 1-methoxy-</pre>	75,	76,	95 95 95 75, 76 74 89 90, 91 88-89 81 88-89 78, 79 86 87 86 87 86 87 88 87 90, 91 88	
	<pre>um bromide + 1,4-dioxane + 1,4-dioxane (ternary) + methanol (ternary) + 1-propanol (ternary) um chloride + benzene (ternary) + 1,3-butadiene, hexachloro- + 1,4-dioxane + 1,4-dioxane (ternary) + 1,3-dioxolane + 1,2-ethanediol + ethane, 1-ethoxy-2-methoxy- + ethanol + ethanol (aqueous) + ethanol (ternary) + ethanol, 2-methoxy- + ethanol, 2-methoxy- + heptane, 1-methoxy- + methanol + methanol + octane, 1-methoxy- + phosphoric triamide, hexamethy1-</pre>	75,	76,	95 95 95 75, 76 74 89 90, 91 88-89 81 88-89 78, 79 78, 60 76, 91 86 87 88 87 88 87 88 90, 91 88 92	
	<pre>um bromide + 1,4-dioxane + 1,4-dioxane (ternary) + methanol (ternary) + 1-propanol (ternary) um chloride + benzene (ternary) + 1,3-butadiene, hexachloro- + 1,4-dioxane + 1,4-dioxane (ternary) + 1,3-dioxolane + 1,2-ethanediol + ethane, 1-ethoxy-2-methoxy- + ethanol + ethanol (aqueous) + ethanol (ternary) + ethanol, 2-methoxy- + ethanol, 2-methoxy- + heptane, 1-methoxy- + methanol + methanol (ternary) + octane, 1-methoxy- + phosphoric triamide, hexamethyl- + phosphoryl chloride</pre>	75,	76,	95 95 95 75, 76 74 89 90, 91 88-89 81 88-89 78, 80 76, 91 86 87 88 77 90, 91 88 87 88 77 90, 91	
	<pre>um bromide + 1,4-dioxane + 1,4-dioxane (ternary) + methanol (ternary) + 1-propanol (ternary) um chloride + benzene (ternary) + 1,3-butadiene, hexachloro- + 1,4-dioxane + 1,4-dioxane (ternary) + 1,3-dioxolane + 1,2-ethanediol + ethane, 1-ethoxy-2-methoxy- + ethanol + ethanol (aqueous) + ethanol (ternary) + ethanol, 2-methoxy- + ethanol, 2-methoxy- + heptane, 1-methoxy- + methanol + methanol + octane, 1-methoxy- + phosphoric triamide, hexamethy1-</pre>	75,	76,	95 95 95 75, 76 74 89 90, 91 88-89 81 88-89 78, 79 78, 60 76, 91 86 87 88 87 88 87 88 90, 91 88 92	
	<pre>um bromide + 1,4-dioxane + 1,4-dioxane (ternary) + methanol (ternary) + l-propanol (ternary) um chloride + benzene (ternary) + 1,3-butadiene, hexachloro- + 1,4-dioxane + 1,4-dioxane (ternary) + 1,3-dioxolane + 1,2-ethanediol + ethanol (ternary) + ethanol (aqueous) + ethanol (dernary) + ethanol (ternary) + ethanol, 2-methoxy- + ethanol, 2-methoxy- + heptane, 1-methoxy- + methanol + methanol + methanol + methanol + methanol + methanol + methanol + methanol + methanol + phosphoric triamide, hexamethyl- + phosphoryl chloride + phosphoryl chloride (ternary) + 1,2,3-propanetriol + 1-propanol</pre>	75,	76,	95 95 95 75, 76 74 89 90, 91 88-89 78, 79 88 80 76, 91 86 87 88 87 88 90, 91 88 92 93 93 93 85 82	
	<pre>um bromide + 1,4-dioxane + 1,4-dioxane (ternary) + methanol (ternary) + l-propanol (ternary) um chloride + benzene (ternary) + 1,3-butadiene, hexachloro- + 1,4-dioxane + 1,4-dioxane (ternary) + 1,3-dioxolane + 1,2-ethanediol + ethane, 1-ethoxy-2-methoxy- + ethanol + ethanol (aqueous) + ethanol (ternary) + ethanol, 2-methoxy- + ethanol, 2-methoxy- + heptane, 1-methoxy- + methanol + methanol + methanol + methanol + methanol (ternary) + octane, 1-methoxy- + phosphoric triamide, hexamethyl- + phosphoryl chloride + phosphoryl chloride (ternary) + 1,2,3-propanetriol + 1-propanol (ternary)</pre>	75,	76,	95 95 95 75, 76 74 89 90, 91 88-89 78, 79 88 80 76, 91 88 87 87 88 90, 91 88 92 93 85 82 76, 91	
	<pre>um bromide + 1,4-dioxane + 1,4-dioxane (ternary) + methanol (ternary) + 1-propanol (ternary) um chloride + benzene (ternary) + 1,3-butadiene, hexachloro- + 1,4-dioxane + 1,4-dioxane (ternary) + 1,3-dioxolane + 1,2-ethanediol + ethane, 1-ethoxy-2-methoxy- + ethanol + ethanol (aqueous) + ethanol (ternary) + ethanol, 2-methoxy- + ethanol, 2-methoxy- + heptane, 1-methoxy- + heptane, 1-methoxy- + methanol + methanol (ternary) + octane, 1-methoxy- + phosphoric triamide, hexamethyl- + phosphoryl chloride + phosphoryl chloride (ternary) + 1,2,3-propanetriol + 1-propanol (ternary) + 2-propanol</pre>	75,	76,	95 95 95 75, 76 74 90, 91 88-89 78, 79 76, 91 86 76, 91 88 92 93 85 82 76, 91 83-84	
	<pre>um bromide + 1,4-dioxane + 1,4-dioxane (ternary) + methanol (ternary) + l-propanol (ternary) um chloride + benzene (ternary) + 1,3-butadiene, hexachloro- + 1,4-dioxane + 1,4-dioxane (ternary) + 1,3-dioxolane + 1,2-ethanediol + ethane, 1-ethoxy-2-methoxy- + ethanol + ethanol (aqueous) + ethanol (ternary) + ethanol, 2-methoxy- + ethanol, 2-methoxy- + heptane, 1-methoxy- + methanol + methanol + methanol + methanol + methanol (ternary) + octane, 1-methoxy- + phosphoric triamide, hexamethyl- + phosphoryl chloride + phosphoryl chloride (ternary) + 1,2,3-propanetriol + 1-propanol (ternary)</pre>	75,	76,	95 95 95 75, 76 74 89 90, 91 88-89 78, 79 88 80 76, 91 88 87 87 88 90, 91 88 92 93 85 82 76, 91	

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L
Lanthanum fluoride
           + acetic acid, ethyl ester
                                                                                   62
           + acidic nitrosyl fluoride ( nitrosyl fluoride compound
             with hydrofluoric acid )
                                                                                   72
           + benzenamine (aniline)
                                                                                   52
           + benzene (ternary)
                                                                                   51
           + benzene, l-chloro-2,4-dinitro-
+ benzene, l,3-dinitro-
                                                                                   51
                                                                                   51
           + benzene, 1-fluoro-2,4-dinitro-
                                                                                   51
           + butane, 1-(bromomethory)-
                                                                                   50
          + butane, l-(chloromethoxy)-
+ butane, l-methoxy-
+ l-butanesulfonyl fluoride,
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                  1,1,2,2,3,3,4,4,4-nonafluoro-
                                                                                   50
           + 2-butanol
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           + 2-butanol, 2-methyl-
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           + decane, 2-methoxy-
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           + ethanamine, N,N-diethyl-
                                                                                   65
           + 1,2-ethanediol (ethylene glycol)
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           + ethane, 1,2-dimethoxy-
+ ethane, 1-ethoxy-2-methoxy-
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           + ethanol
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           + ethanol (ternary)
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          + ethanol, 2-amino-
+ heptane, 2-methoxy-
+ octane, 2-methoxy-
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           + 1-octanesulfonyl fluoride,
                  1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-
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           + pentane, 1-(bromomethory)-
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           + pentane, 1-(chloromethoxy)-
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           + pentane, 2-methoxy-
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           + petroleum ether (ternary)
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           + phosphoric acid, bis-(2-ethylhexyl) ester (ternary)
+ phosphoric acid, tributyl ester
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           +
             2-propanamine
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           + 1-propanamine, 2-methyl-N-(2-methylpropyl)-
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          + propane, l-(chloromethoxy)-
+ propane, l-methoxy-2-methyl-
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           + 1-propanol, 2-methyl-
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          + methane, 1,1 -sulfinylbis-
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           + methanol (ternary)
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          + pyrialne
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           + pyridine (ternary)
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          + urea (ternary)
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           + urea (aqueous)
                                                                                  73
           + water (ternary)
                                                                                  73
Lanthanum iodide
                                                                                  96
           + formamide, N,N-dimethyl-
Lutetium bromide
           + furan, tetrahydro-
                                                                                 381
Lutetium chloride
          + ethanol (aqueous)
                                                                                 378
          + phosphoric triamide, hexamethyl-
+ phosphoryl chloride (ternary)
                                                                                 379
                                                                                 380
           + stannane tetrachloro- (ternary)
                                                                                 380
          + water (ternary)
                                                                                 378
          N
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          + 1-butanamine
                                                                                 193
          + 2-butanamine
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          + 2-butanamine, N-(1-methylpropyl)-
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          + butane, 1-methoxy-
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          + decane, 1-methoxy-
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N		
Neodymium bromide		
+ 1,2-ethanediamine		192
+ ethane, 1,2-diethoxy-		188
+ ethanol, 2-amino-		194 190
+ furan, tetrahydro- + heptane, l-methoxy-		189
+ morpholine		195
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+ octane, 1-methoxy-		189
+ pentane, 1-methoxy-		189 193
+ 2-propanamıne Neodymıum chlorıde		195
+ 1,3-butadiene, hexachloro-		151
+ 1-butanol		169-170
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+ 1,2-ethanediol		161, 165
+ ethanol	E156	157 <mark>-</mark> 159
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+ 2-butanamine		142

P		
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+ 1,4-dioxane		141
+ ethane, 1,2-diethoxy-		140
+ 1-propanamine		142
+ 2-propanamine		142
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+ 1,3-dioxolane		132
+ 1,2-ethanediol		128
+ ethane, 1-ethoxy-2-methoxy-		132
+ ethanol		125
+ ethanol (aqueous)		126
+ ethanol, 2-methoxy-		133
+ ethanol, 2-ethoxy-		133
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+ 2-propen-1-amine		137
+ 2-propen-1-ol		128
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<pre>with hydrofluoric acid) + butane, l-(chloromethoxy)- + decane, l-methoxy- + furan, tetrahydro-</pre>	-	116
<pre>with hydrofluoric acid) + butane, l-(chloromethoxy)- + decane, l-methoxy-</pre>	-	116 117 118
<pre>with hydrofluoric acid) + butane, l-(chloromethoxy)- + decane, l-methoxy- + furan, tetrahydro- + methane, l,l sulfinylbis-</pre>	-	116 117 118 120
<pre>with hydrofluoric acid) + butane, l-(chloromethoxy)- + decane, l-methoxy- + furan, tetrahydro- + methane, l,l'sulfinylbis- + methanol + phosphoric acid, tributyl ester + pyridine</pre>	-	116 117 118 120 115
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