

INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY

ANALYTICAL CHEMISTRY DIVISION
COMMISSION ON SOLUBILITY DATA

SOLUBILITY DATA SERIES

Volume 8

OXIDES OF NITROGEN

SOLUBILITY DATA SERIES

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Volume 2 H. L. Clever, *Krypton, Xenon and Radon*
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SOLUBILITY DATA SERIES

Volume 8

OXIDES OF NITROGEN

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INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY

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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, thus obviously are superficial in treatment. Since they command a wide market, we believe that their service to 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* has 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 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:

(i) 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;

(ii) 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;

(iii) 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.

The typical data sheet carries the following information:

(i) components - definition of the system - their names, formulas and Chemical Abstracts registry numbers;

(ii) 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;

(iii) experimental variables;

(iv) 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:

- (vi) experimental method used for the generation of data;
- (vii) type of apparatus and procedure employed;
- (viii) source and purity of materials;
- (ix) estimated error;
- (x) references relevant to the generation of experimental data as cited in the primary source.

This new approach to numerical data presentation, developed during our four years of existence, 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 15 years ago to refrain from unnecessary publication has not achieved much. The literature is still, in 1981, cluttered with poor-quality articles. The Weinberg report (in "Reader in Science Information", Eds. 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

Users of this volume will find (1) the experimental solubility data of gaseous nitrous oxide and nitric oxide in liquids as reported in the scientific literature (2) tables of smoothed mole fraction solubility values for a limited number of systems which have been studied over a temperature range (3) critical evaluations of the experimental data and a limited number of tables of either tentative or recommended solubility data when two or more laboratories reported data over the same range of temperature and pressure for a system. The number of smoothed data values given is considerably less than in previous volumes on gas solubility (*i.e.*, Volumes 1, 2 and 4) since the number of systems for which two or more groups of workers have reported solubility data is very limited.

The present volume covers the literature up the end of 1979. Some 1980 papers are cited.

Some words of explanation are required with respect to units, corrections, smoothing equations, auxiliary data and data sources, nomenclature and other points. The experimental data are presented in the units found in the original paper. In addition, the original data are often converted to other units, especially mole fraction. Temperatures have been converted to Kelvin. In evaluations of solubility data, SI units are used where practical.

Only in the past 10 to 15 years have experimental methods for the determination of the solubility of gases in liquids developed to the point where 0.5 per cent or better accuracy is attained. Only a small fraction of the literature's gas solubility data is accurate to 0.5 per cent. The corrections for non-ideal gas behaviour and for expansion of the liquid phase on dissolution of the gas are small and usually well within the normal experimental error. Thus such corrections were not made for gas solubility data of the oxides of nitrogen at low pressure unless stated otherwise. In general, measurements of the solubility of the oxides of nitrogen are not of very high accuracy. Many of the measurements were undertaken over forty years ago and by present day standards are of low accuracy.

Indeed, the compilation, evaluation and editing of this volume was made particularly difficult by the fact that although fairly extensive data are available for the nitrous oxide and nitric oxide solubilities particularly in aqueous solution, the data have been presented in a manner which makes it difficult (a) to compare with other workers and (b) in some cases to be sure what the author intended. It must be appreciated that the compilers and to some slightly lesser extent the evaluators, are almost completely limited by the authors' presentation.

Most gas solubility measurements carried out near atmospheric conditions are measured at a total pressure near one atmosphere with the gas saturated with the solvent vapor. Usually the actual partial

pressure of the gas is not known. In such experiments the Ostwald coefficient is the directly measured unit. The Bunsen coefficient and the mole fraction gas solubility at one atmosphere gas partial pressure are calculated from the Ostwald coefficient assuming that the Ostwald coefficient is independent of pressure.

Solvent density data were often required in making solubility unit conversions. The density data were not directly referenced. The main sources of density data are

Circular 461 of the U.S. National Bureau of Standards

American Petroleum Research Project 44 Publications

The International Critical Tables, Volume III (E. W. Washburn, Editor), McGraw-Hill Co., 1931

Smow Table, *Pure and Applied Chemistry*, 1976, 45, 1-9

Thermodynamic Properties of Aliphatic Alcohols, R. C. Wilhoit and B. J. Zwolinski, *J. Phys. Chem. Ref. Data*, 1973, 2, Supplement No. 1

Organic Solvents, J. A. Riddick and W. B. Bunger (Technique of Chemistry, Volume II, A. Weissberger, Editor), Wiley-Interscience, New York, 1970, 3rd Ed.

Chemical Abstracts registry numbers were used throughout. Common names are cross referenced to Chemical Abstract recommended names in the Index. There is a Registry Number Index.

The Editor would appreciate users calling errors and omissions to his attention.

The Editor gratefully acknowledges the advice and comments of the IUPAC Commission on Solubility Data, the cooperation and hard work of the Evaluators and Compilers, the work of typists Joy Wall and Lesley Flanagan and the help of Kerri Hubbard in obtaining photocopies of papers. Acknowledgement is also made to the University of Melbourne for a travel grant which facilitated consultation with the evaluators.

Colin L. Young

Melbourne, Victoria
January 1981

THE SOLUBILITY OF GASES IN LIQUIDS

R. Battino, H. L. Clever and C. L. Young

INTRODUCTION

The Solubility Data Project aims to make a comprehensive search of the literature for data on the solubility of gases, liquids and solids in liquids. Data of suitable accuracy are compiled into data sheets set out in a uniform format. The data for each system are evaluated and where data of sufficient accuracy are available values recommended and in some cases a smoothing equation suggested to represent the variation of solubility with pressure and/or temperature. A text giving an evaluation and recommended values and the compiled data sheets are published on consecutive pages.

DEFINITION OF GAS SOLUBILITY

The distinction between vapor-liquid equilibria and the solubility of gases in liquids is arbitrary. It is generally accepted that the equilibrium set up at 300K between a typical gas such as argon and a liquid such as water is gas liquid solubility whereas the equilibrium set up between hexane and cyclohexane at 350K is an example of vapor-liquid equilibrium. However, the distinction between gas-liquid solubility and vapor-liquid equilibrium is often not so clear. The equilibria set up between methane and propane above the critical temperature of methane and below the critical temperature of propane may be classed as vapor-liquid equilibrium or as gas-liquid solubility depending on the particular range of pressure considered and the particular worker concerned.

The difficulty partly stems from our inability to rigorously distinguish between a gas, a vapor, and a liquid, which has been discussed in numerous textbooks. We have taken a fairly liberal view in these volumes and have included systems which may be regarded, by some workers, as vapor-liquid equilibria.

UNITS AND QUANTITIES

The solubility of gases in liquids is of interest to a wide range of scientific and technological disciplines and not solely to chemistry. Therefore a variety of ways for reporting gas solubility have been used in the primary literature and inevitably sometimes, because of insufficient available information, it has been necessary to use several quantities in the compiled tables. Where possible, the gas solubility has been quoted as a mole fraction of the gaseous component in the liquid phase. The units of pressure used are bar, pascal, millimeters of mercury and atmosphere. Temperatures are reported in Kelvin.

EVALUATION AND COMPILATION

The solubility of comparatively few systems is known with sufficient accuracy to enable a set of recommended values to be presented. This is true both of the measurement near atmospheric pressure and at high pressures. Although a considerable number of systems have been studied by at least two workers, the range of pressures and/or temperatures is often sufficiently different to make meaningful comparison impossible.

Occasionally, it is not clear why two groups of workers obtained very different sets of results at the same temperature and pressure, although both sets of results were obtained by reliable methods and are internally consistent. In such cases, sometimes an incorrect assessment has been given. There are several examples where two or more sets of data have been classified as tentative although the sets are mutually inconsistent.

Many high pressure solubility data have been published in a smoothed form. Such data are particularly difficult to evaluate, and unless specifically discussed by the authors, the estimated error on such values can only be regarded as an "informed guess".

Many of the high pressure solubility data have been obtained in a more general study of high pressure vapor-liquid equilibrium. In such cases a note is included to indicate that additional vapor-liquid equilibrium data are given in the source. Since the evaluation is for the compiled data, it is possible that the solubility data are given a classification which is better than that which would be given for the complete vapor-liquid data (or vice versa). For example, it is difficult to determine coexisting liquid and vapor compositions near the critical point of a mixture using some widely used experimental techniques which yield accurate high pressure solubility data. For example, conventional methods of analysis may give results with an expected error which would be regarded as sufficiently small for vapor-liquid equilibrium data but an order of magnitude too large for acceptable high pressure gas-liquid solubility.

It is occasionally possible to evaluate data on mixtures of a given substance with a member of a homologous series by considering all the available data for the given substance with other members of the homologous series. In this study the use of such a technique has been very limited.

The estimated error is often omitted in the original article and sometimes the errors quoted do not cover all the variables. In order to increase the usefulness of the compiled tables estimated errors have been included even when absent from the original article. If the error on a variable has been inserted by the compiler this has been noted.

PURITY OF MATERIALS

The purity of materials has been quoted in the compiled tables where given in the original publication. The solubility is usually more sensitive to impurities in the gaseous component than to liquid impurities in the liquid component. However, the most important impurities are traces of a gas dissolved in the liquid. Inadequate degassing of the absorbing liquid is probably the most often overlooked serious source of error in gas solubility measurements.

APPARATUS AND PROCEDURES

In the compiled tables brief mention is made of the apparatus and procedure. There are several reviews on experimental methods of determining gas solubilities and these are given in References 1-7.

METHODS OF EXPRESSING GAS SOLUBILITIES

Because gas solubilities are important for many different scientific and engineering problems, they have been expressed in a great many ways:

The Mole Fraction, $x(g)$

The mole fraction solubility for a binary system is given by:

$$\begin{aligned} x(g) &= \frac{n(g)}{n(g) + n(l)} \\ &= \frac{W(g)/M(g)}{[W(g)/M(g)] + [W(l)/M(l)]} \end{aligned}$$

here n is the number of moles of a substance (an amount of substance), W is the mass of a substance, and M is the molecular mass. To be unambiguous, the partial pressure of the gas (or the total pressure) and the temperature of measurement must be specified.

The Weight Per Cent Solubility, wt%

For a binary system this is given by

$$\text{wt\%} = 100 W(g)/[W(g) + W(l)]$$

where W is the weight of substance. As in the case of mole fraction, the pressure (partial or total) and the temperature must be specified. The weight per cent solubility is related to the mole fraction solubility by

$$x(g) = \frac{[\text{wt}\%/M(g)]}{[\text{wt}\%/M(g)] + [(100 - \text{wt}\%)/M(l)]}$$

The Weight Solubility, C_w

The weight solubility is the number of moles of dissolved gas per gram of solvent when the partial pressure of gas is 1 atmosphere. The weight solubility is related to the mole fraction solubility at one atmosphere partial pressure by

$$x(g) \text{ (partial pressure 1 atm)} = \frac{C_w M(l)}{1 + C_w M(l)}$$

where $M(l)$ is the molecular weight of the solvent.

The Moles Per Unit Volume Solubility, n

Often for multicomponent systems the density of the liquid mixture is not known and the solubility is quoted as moles of gas per unit volume of liquid mixture. This is related to the mole fraction solubility by

$$x = \frac{n v^{\circ}(l)}{1 + n v^{\circ}(l)}$$

where $v^{\circ}(l)$ is the molar volume of the liquid component.

The Bunsen Coefficient, α

The Bunsen coefficient is defined as the volume of gas reduced to 273.15K and 1 atmosphere pressure which is absorbed by unit volume of solvent (at the temperature of measurement) under a partial pressure of 1 atmosphere. If ideal gas behavior and Henry's law is assumed to be obeyed,

$$\alpha = \frac{V(g)}{V(l)} \frac{273.15}{T}$$

where $V(g)$ is the volume of gas absorbed and $V(l)$ is the original (starting) volume of absorbing solvent. The mole fraction solubility x is related to the Bunsen coefficient by

$$x(1 \text{ atm}) = \frac{\alpha}{\alpha + \frac{273.15}{T} \frac{v^{\circ}(g)}{v^{\circ}(l)}}$$

where $v^{\circ}(g)$ and $v^{\circ}(l)$ are the molar volumes of gas and solvent at a pressure of one atmosphere. If the gas is ideal,

$$s = \frac{\alpha}{\alpha + \frac{273.15R}{v^{\circ}(l)}}$$

Real gases do not follow the ideal gas law and it is important to establish the real gas law used for calculating α in the original publication and to make the necessary adjustments when calculating the mole fraction solubility.

The Kuenen Coefficient, S

This is the volume of gas, reduced to 273.15K and 1 atmosphere pressure, dissolved at a partial pressure of gas of 1 atmosphere by 1 gram of solvent.

The Ostwald Coefficient, L

The Ostwald coefficient, L , is defined as the ratio of the volume of gas absorbed to the volume of the absorbing liquid, all measured at the same temperature:

$$L = \frac{V(g)}{V(l)}$$

If the gas is ideal and Henry's Law is applicable, the Ostwald coefficient is independent of the partial pressure of the gas. It is necessary, in practice, to state the temperature and total pressure for which the Ostwald coefficient is measured. The mole fraction solubility, α , is related to the Ostwald coefficient by

$$\alpha = \left[\frac{RT}{P(g) L v^O(l)} + 1 \right]^{-1}$$

where P is the partial pressure of gas. The mole fraction solubility will be at a partial pressure of $P(g)$.

The Absorption Coefficient, β

There are several 'absorption coefficients', the most commonly used one being defined as the volume of gas, reduced to 273.15K and 1 atmosphere, absorbed per unit volume of liquid when the total pressure is 1 atmosphere. β is related to the Bunsen coefficient by

$$\beta = \alpha(1 - P(l))$$

where $P(l)$ is the partial pressure of the liquid in atmosphere.

The Henry's Law Constant

A generally used formulation of Henry's Law may be expressed as

$$P(g) = K_H \alpha$$

where K_H is the Henry's Law constant and α the mole fraction solubility. Other formulations are

$$P(g) = K_2 C(l)$$

or

$$C(g) = K_C C(l)$$

where K_2 and K_C are constants, C the concentration, and (l) and (g) refer to the liquid and gas phases. Unfortunately, K_H , K_2 and K_C are all sometimes referred to as Henry's Law constants. Henry's Law is a limiting law but can sometimes be used for converting solubility data from the experimental pressure to a partial gas pressure of 1 atmosphere, provided the mole fraction of the gas in the liquid is small, and that the difference in pressures is small. Great caution must be exercised in using Henry's Law.

The Mole Ratio, N

The mole ratio, N , is defined by

$$N = n(g) / n(l)$$

Table 1 contains a presentation of the most commonly used inter-conversions not already discussed.

For gas solubilities greater than about 0.01 mole fraction at a partial pressure of 1 atmosphere there are several additional factors which must be taken into account to unambiguously report gas solubilities. Solution densities or the partial molar volume of gases must be known. Corrections should be made for the possible non-ideality of the gas or the non-applicability of Henry's Law.

TABLE 1 Interconversion of parameters used for reporting solubility

$$L = \alpha(T/273.15)$$

$$C_w = \alpha/v_o \rho$$

$$K_H = \frac{17.033 \times 10^6 \rho(\text{soln})}{M(1)} - 760$$

$$L = C_w v_{t,\text{gas}}^0$$

where v_o is the molal volume of the gas in $\text{cm}^3 \text{mol}^{-1}$ at 0°C , ρ the density of the solvent at the temperature of the measurement, $\rho(\text{soln})$ the density of the solution at the temperature of the measurement, and $v_{t,\text{gas}}^0$ the molal volume of the gas ($\text{cm}^3 \text{mol}^{-1}$) at the temperature of the measurement.

SALT EFFECTS

The effect of a dissolved salt in the solvent on the solubility of a gas is often studied. The activity coefficient of a dissolved gas is a function of the concentration of all solute species (see ref. 8). At a given temperature and pressure the logarithm of the dissolved gas activity coefficient can be represented by a power series in C_s , the electrolyte concentration, and C_i , the nonelectrolyte solute gas concentration

$$\log f_i = \sum_{m,n} k_{mn} C_s^n C_i^m$$

It is usually assumed that only the linear terms are important for low C_s and C_i values when there is negligible chemical interaction between solute species.

$$\log f_i = k_s C_s + k_i C_i$$

where k_s is the salt effect parameter and k_i is the solute-solute gas interaction parameter. The dissolved gas activity is the same in the pure solvent and a salt solution in that solvent for a given partial pressure and temperature

$$a_i = f_i S_i = f_i^0 S_i^0 \quad \text{and} \quad f_i = f_i^0 \frac{S_i^0}{S_i}$$

where S_i and S_i^0 are the gas solubility in the salt solution and in the pure solvent, respectively, and the f 's are the corresponding activity coefficients. It follows that $\log f_i/f_i^0 = \log S_i^0/S_i = k_s C_s + k_i (S_i - S_i^0)$. When the

quantity $(S_i - S_i^0)$ is small the second term is negligible even though k_s and k_i may be of similar magnitude. This is generally the case for gas solubilities and the equation reduces to

$$\log \frac{f_i}{f_i^0} = \log \frac{S_i^0}{S_i} = k_s C_s$$

which is the form of the empirical Setschenow equation in use since the 1880's. A salt that increases the activity coefficient of the dissolved gas is said to salt-out and a salt that decreases the activity coefficient of the dissolved gas is said to salt-in.

Although salt effect studies have been carried out for many years, there appears to be no common agreement of the units for either the gas solubility or the salt concentration. Both molar (mol dm^{-3}) and molal (mol kg^{-1}) are used for the salt concentration. The gas solubility ratio S_i/S_i^0 is given as Bunsen coefficient ratio and Ostwald coefficient ratio,

which would be the same as a molar ratio; Kueunen coefficient ratio, volume dissolved in 1 g or 1 kg of solvent which would be a molal ratio; and mole fraction ratio. Recent theoretical treatments use salt concentration in mol dm^{-3} and S_i^0/S_i ratio as mole fraction ratio with each salt ion acting as a mole. Evaluations which compare the results of several workers are made in the units most compatible with present theory.

TEMPERATURE DEPENDENCE OF GAS SOLUBILITY

In a few cases it has been found possible to fit the mole fraction solubility at various temperatures using an equation of the form.

$$\ln x = A + B / (T/100K) + C \ln (T/100K)$$

It is then possible to write the thermodynamic functions $\Delta\bar{G}_1^0, \Delta\bar{H}_1^0, \Delta\bar{S}_1^0$ and $\Delta\bar{C}_{p1}^0$ for the transfer of the gas from the vapor phase at 101.325 Pa partial pressure to the (hypothetical) solution phase of unit mole fraction as :

$$\Delta\bar{G}_1^0 = -RT - 100 RB - RCT \ln (T/100)$$

$$\Delta\bar{S}_1^0 = RA + RC \ln (T/100) + RC$$

$$\Delta\bar{H}_1^0 = -100 RB + RCT$$

$$\Delta\bar{C}_{p1}^0 = RC$$

In cases where there are solubilities at only a few temperatures it is convenient to use the simpler equations.

$$\Delta\bar{G}_1^0 = -RT \ln x = A + BT$$

in which case $A = \Delta\bar{H}_1^0$ and $-B = \Delta\bar{S}_1^0$.

REFERENCES

1. Battino, R.; Clever, H.L. *Chem. Rev.* 1966, 66, 395.
2. Clever, H.L.; Battino, R. in *Solutions and Solubilities*, Ed. M.R.J. Dack, J. Wiley & Sons, New York, 1975, Chapter 7.
3. Hildebrand, J. H.; Prausnitz, J.M.; Scott, R.L. *Regular and Related Solutions*, Van Nostrand Reinhold, New York, 1970, Chapter 8.
4. Markham, A.E.; Kobe, K.A. *Chem. Rev.* 1941, 63, 449.
5. Wilhelm, E.; Battino, R. *Chem. Rev.* 1973, 73, 1.
6. Wilhelm, E.; Battino, R.; Wilcock, R.J. *Chem. Rev.* 1977, 77, 219.
7. Kertes, A.S.; Levy, O.; Markovits, G.Y. in *Experimental Thermochemistry* Vol. II, Ed. B. Vodar and B. LeNaindre, Butterworth, London, 1974, Chapter 15.
8. Long, F.A.; McDevit, W.F. *Chem. Rev.* 1952, 51, 119.

COMPONENTS:

1. Nitrous oxide; N_2O ; [10024-97-2]
2. Water; H_2O ; [7732-18-5]

EVALUATOR:

Rubin Battino,
Department of Chemistry,
Wright State University,
Dayton, Ohio 45431,
U.S.A.

CRITICAL EVALUATION:

The data used by eleven workers was considered to be of sufficient accuracy to use for the smoothing equation. In fitting the data, those points which were about two standard deviations greater than the smoothed data were rejected. In the data sheets which follow the points which were used are marked with asterisks. Twenty-three data points were used as follows (reference - number of data points used from that reference): 1-5, 2-1, 3-1, 4-1, 5-8, 6-1, 7-2, 8-1, 9-1, 10-1, 11-1. The fitting equation used was

$$\ln x_1 = A + B/(T/100K) + C \ln (T/100K) \quad (1)$$

Using $T/100K$ as the variable gave coefficients of comparable magnitude. The best fit for the 23 points was

$$\ln x_1 = -60.7467 + 88.8280/(T/100K) + 21.2531 \ln (T/100K) \quad (2)$$

where x_1 is the mole fraction solubility of nitrous oxide at 101.325 kPa (1 atm) partial pressure of gas. The smoothing equation gave a fit in the mole fraction (one standard deviation) of 1.2%. Table 1 gives smoothed values of the mole fraction solubility at 101.325 kPa and the Ostwald coefficient at 5K intervals.

Table 1 also gives values of the thermodynamics functions ΔG_1° , ΔH_1° , ΔS_1° , and ΔC_{P1}° for the transfer of the gas from the vapor phase at 101.325 kPa partial pressure to the (hypothetical) solution phase of unit mole fraction. These were calculated from the smoothing equation according to the following equations:

$$\Delta G_1^\circ = -RAT - 100RB - RCT \ln (T/100) \quad (3)$$

$$\Delta S_1^\circ = RA + RC \ln (T/100) + RC \quad (4)$$

$$\Delta H_1^\circ = -100RB + RCT \quad (5)$$

$$\Delta C_{P1}^\circ = RC \quad (6)$$

The heat capacity turns out to be independent of temperature since the three-constant fit was all that was needed for these data.

Several sets of data were rejected for purposes of fitting the smoothing equation. Roth's older data were consistently high by 6 to 8% (12). The chromatographically determined values of Jay *et al.*, (13) were 7% high. The two values determined by the Van Slyke method by Christoforides and Hedley-White (14) were 4 to 6% high. Hikita *et al.*'s single value was about 3% low (15). The Orcutt and SeEVERS value was 10% high (16).

Schwab and Berninger (17) reported data at 10K intervals from 293 to 353K, but their results for this gas and others are highly erratic and are rejected. Schröder (18) determined the solubility from 20 to 178 °C at a pressure of 40 atm. The results are given in graphical form and the author gives the equation

$$\ln \alpha = 3.925 - 5251/(T/K) + 1.109 \times 10^6/(T/K)$$

where α is the Bunsen coefficient.

NOTE added by editor: Additional data are given on pages 12-14, 21, 22. The recent data of Weiss and Price (19) are believed to be accurate and are classified as tentative.

<p>COMPONENTS:</p> <p>1. Nitrous oxide; N₂O; [10024-97-2]</p> <p>2. Water; H₂O; [7732-18-5]</p>	<p>EVALUATOR:</p> <p>Rubin Battino, Department of Chemistry, Wright State University, Dayton, Ohio 45431, U.S.A.</p>
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CRITICAL EVALUATION:

References

1. Geffcken, G. *Z. Physik. Chem.* 1904, *49*, 257-302.
2. Knopp, W. *Z. Physik. Chem.* 1904, *48*, 97-108.
3. Findlay, A.; Creighton, H. *J. M. J. Chem. Soc.* 1910, *97*, 536-61.
4. Findlay, A.; Howell, O. R. *J. Chem. Soc.* 1914, *705*, 291-8.
5. Kunerth, W. *Phys. Rev.* 1922, *19*, 512-24.
6. Manchot, W.; Jahrstorfer, M.; Zepter, H. *Z. Anorg. Allgem. Chem.* 1924, *141*, 45-81.
7. Markham, A. E.; Kobe, K. A. *J. Amer. Chem. Soc.* 1941, *63*, 449-54.
8. Joosten, G. E. H.; Danckwerts, P. V. *J. Chem. Eng. Data* 1972, *17*, 452-4.
9. Sada, E.; Kito, S.; Ito, Y. *J. Chem. Eng. Japan* 1974, *7*, 57-9.
10. Sada, E.; Kito, S.; Ito, Y. *Ind. Eng. Chem. Fundam.* 1975, *14*, 232-7.
11. Sada, E.; Kumazawa, H.; Butt, M. A. *J. Chem. Eng. Data* 1977, *22*, 277-9.
12. Roth, W. *Z. Physik. Chem.* 1897, *24*, 114-51.
13. Jay, B. E.; Wilson, R. H.; Doty, V.; Pingree, H.; Hargis, B. *Anal. Chem.* 1962, *34*, 414-8.
14. Christoforides, C.; Hedley-White, J. *Federation Proceedings* 1970, *29*:A330.
15. Hikita, H.; Asai, S.; Ishikawa, H.; Esaka, N. *J. Chem. Eng. Data* 1974, *19*, 89-92.
16. Orcutt, F. S.; Seevers, M. H. *J. Biol. Chem.* 1937, *117*, 501-7.
17. Schwab, G. M.; Berninger, E. *Z. Physik. Chem.* 1928, *A138*, 55.
18. Schröder, W. *Chem. Ing. Tech.* 1973, *45*, 603.
19. Weiss, R. F.; Price, B. A. *Marine Chem.* 1980, *8*, 347.

TABLE 1. Smoothed values of nitrous oxide solubility in water and thermodynamic functions using equation^a (2) at 101.325 kPa (1 atm) partial pressure of gas.

T/K	$x_1 \times 10^4$ ^b	L ^c	$\Delta\bar{G}_1^\circ$ ^d	$\Delta\bar{H}_1^\circ$ ^d	$\Delta\bar{S}_1^\circ$ ^e
273.15	10.378	1.292	15.60	-25.59	-150.8
278.15	8.505	1.078	16.35	-24.70	-147.6
283.15	7.067	0.912	17.08	-23.80	-144.4
288.15	5.948	0.780	17.79	-22.94	-141.4
293.15	5.068	0.676	18.49	-22.05	-138.3
298.15	4.367	0.592	19.18	-21.17	-135.3
303.15	3.805	0.523	19.85	-20.29	-132.4
308.15	3.348	0.467	20.50	-19.40	-129.5
313.15	2.975	0.421	21.14	-18.52	-126.7

- a. $\bar{C}_{p,1}^\circ$ was independent of temperature and has the value 178 J K⁻¹ mol⁻¹.
- b. Mole fraction solubility at 101.325 kPa partial pressure of gas.
- c. Ostwald coefficient.
- d. Units are K J mol⁻¹, cal_{th} = 4.184 J.
- e. Units are J K⁻¹ mol⁻¹.

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]	ORIGINAL MEASUREMENTS: Roth, W. <i>Z. Physik. Chem.</i> , <u>1897</u> , <i>24</i> , 114-51.																								
VARIABLES: T/K: 278-298	PREPARED BY: R. Battino																								
EXPERIMENTAL VALUES: <table border="1" data-bbox="240 556 864 805"> <thead> <tr> <th>T/K^a</th> <th>$x_1 \times 10^4$^b</th> <th>L^c</th> <th>α^d</th> </tr> </thead> <tbody> <tr> <td>278.15</td> <td>9.157</td> <td>1.1612</td> <td>1.1403</td> </tr> <tr> <td>283.15</td> <td>7.615</td> <td>0.9826</td> <td>0.9479</td> </tr> <tr> <td>288.15</td> <td>6.348</td> <td>0.8330</td> <td>0.7896</td> </tr> <tr> <td>293.15</td> <td>5.355</td> <td>0.7141</td> <td>0.6654</td> </tr> <tr> <td>298.15</td> <td>4.635</td> <td>0.6279</td> <td>0.5752</td> </tr> </tbody> </table> <p data-bbox="89 844 1152 1103"> a. Temperature reported to 0.01°C. b. Mole fraction solubility at 101,325 Pa (1 atm) partial pressure of gas. Calculated by compiler. c. Ostwald coefficient. Calculated by compiler. d. Bunsen coefficient. Smoothed best values given by author calculated from $\alpha = 1.3668 - 0.04870 t + 0.00068145 t^2$ from measurements in the temperature range 3.5 to 24.7°C. </p>		T/K ^a	$x_1 \times 10^4$ ^b	L ^c	α ^d	278.15	9.157	1.1612	1.1403	283.15	7.615	0.9826	0.9479	288.15	6.348	0.8330	0.7896	293.15	5.355	0.7141	0.6654	298.15	4.635	0.6279	0.5752
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AUXILIARY INFORMATION																									
METHOD APPARATUS/PROCEDURE: The Ostwald apparatus as described by Timofejew (1) was used.	SOURCE AND PURITY OF MATERIALS: 1. Nitrous oxide - prepared from pure ammonium nitrate. 2. Water - no comment by author. <hr/> ESTIMATED ERROR: $\delta\alpha/\alpha = 0.01$ (compiler's estimate) <hr/> REFERENCES: 1. Timofejew, W., <i>Z. Physik. chem.</i> , <u>1890</u> , <i>6</i> , 141.																								

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]	ORIGINAL MEASUREMENTS: Geffcken, G. <i>Z. Physik. Chem.</i> , <u>1904</u> , 49, 257-302.																														
VARIABLES: T/K: 278-298	PREPARED BY: R. Battino																														
EXPERIMENTAL VALUES: <table border="1" data-bbox="229 542 1105 781"> <thead> <tr> <th>T/K^a</th> <th>$x_1 \times 10^4$^b</th> <th>L^c</th> <th>No. Detns.</th> <th>σ</th> </tr> </thead> <tbody> <tr> <td>* 278.15</td> <td>8.415</td> <td>1.067</td> <td>3</td> <td>.0027</td> </tr> <tr> <td>* 283.15</td> <td>7.054</td> <td>0.9101</td> <td>2</td> <td>.0002</td> </tr> <tr> <td>* 288.15</td> <td>5.932</td> <td>0.7784</td> <td>4</td> <td>.0008</td> </tr> <tr> <td>* 293.15</td> <td>5.066</td> <td>0.6756</td> <td>5</td> <td>.0008</td> </tr> <tr> <td>* 298.15</td> <td>4.386</td> <td>0.5942</td> <td>6</td> <td>.0013</td> </tr> </tbody> </table> <p data-bbox="126 830 1191 1029"> a. Temperature reported to 1°C, but values are not interpolated, i.e., measured at even temperatures - 5, 10, 15, 20, 25°C. b. Mole fraction solubility at 101.325 kPa (1 atm) partial pressure of gas. Calculated by compiler. c. Ostwald coefficient. These are averages of the number of determinations listed in column 4 with standard deviations listed in column 5. </p>		T/K ^a	$x_1 \times 10^4$ ^b	L ^c	No. Detns.	σ	* 278.15	8.415	1.067	3	.0027	* 283.15	7.054	0.9101	2	.0002	* 288.15	5.932	0.7784	4	.0008	* 293.15	5.066	0.6756	5	.0008	* 298.15	4.386	0.5942	6	.0013
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* 298.15	4.386	0.5942	6	.0013																											
AUXILIARY INFORMATION																															
METHOD APPARATUS/PROCEDURE: Used the basic Ostwald method. Solvent is degassed by boiling. Details and a drawing given in the paper.	SOURCE AND PURITY OF MATERIALS: 1. Nitrous oxide - prepared from pure ammonium nitrate. Details in paper. 2. Water - distilled.																														
ESTIMATED ERROR: $\delta L/L = 0.01$ (compiler's estimate)																															
REFERENCES:																															

COMPONENTS: 1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5]	ORIGINAL MEASUREMENTS: Knopp, W. <i>Z. Physik. Chem.</i> , <u>1904</u> , 48, 97-108.										
VARIABLES:	PREPARED BY: R. Battino										
EXPERIMENTAL VALUES: <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"></th> <th style="text-align: center;">T/K^a</th> <th style="text-align: center;">$x_1 \times 10^4^b$</th> <th style="text-align: center;">L^c</th> <th style="text-align: center;">α^d</th> </tr> </thead> <tbody> <tr> <td style="text-align: left;">*</td> <td style="text-align: center;">293.15</td> <td style="text-align: center;">5.046</td> <td style="text-align: center;">0.6729</td> <td style="text-align: center;">0.6270</td> </tr> </tbody> </table> a. Temperature reported to 1°C. b. Mole fraction solubility of 101,325 kPa (1 atm) partial pressure of gas. Calculated by compiler. c. Ostwald coefficient. Calculated by compiler. d. Bunsen coefficient.			T/K^a	$x_1 \times 10^4^b$	L^c	α^d	*	293.15	5.046	0.6729	0.6270
	T/K^a	$x_1 \times 10^4^b$	L^c	α^d							
*	293.15	5.046	0.6729	0.6270							
AUXILIARY INFORMATION											
METHOD APPARATUS/PROCEDURE: Used the Ostwald apparatus as modified by Braun (1).	SOURCE AND PURITY OF MATERIALS: 1. Nitrous oxide - prepared from pure ammonium nitrate. 2. Water - no comment by author. ESTIMATED ERROR: $\delta\alpha/\alpha = 0.01$ (compiler's estimate) REFERENCES: 1. Braun, L., <i>A. Physick. Chem.</i> , <u>1900</u> , 33, 721.										

Nitrous Oxide

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]		ORIGINAL MEASUREMENTS: Findlay, A.; Creighton, H.J.M., <i>J. Chem. Soc.</i> , <u>1910</u> , <i>97</i> , 536-61			
VARIABLES:		PREPARED BY: R. Battino			
EXPERIMENTAL VALUES:					
P/mmHg ^a	L ^b	P/mmHg	L	P/mmHg	L
758	0.592	758	0.592	758	0.591
842	0.593	831	0.593	888	0.592
967	0.592	997	0.592	971	0.591
1041	0.593	1082	0.593	1091	0.592
1185	0.592	1214	0.594	1190	0.593
1362	0.592	1351	0.592	1281	0.593
	T/K ^c	$x_1 \times 10^4$ ^d	L ^e		
	* 298.15	4.370	0.592		
<p>a. Partial pressure of nitrous oxide. All measurements at 298.15 K. b. Ostwald coefficient. c. Temperatures reported to 0.1°C. d. Mole fraction solubility at 101.325 kPa (1 atm) partial pressure of gas. Calculated by compiler. e. Ostwald coefficient - mean of values at varying pressures cited above.</p>					
AUXILIARY INFORMATION					
METHOD APPARATUS/PROCEDURE: Used the Geffcken (1) apparatus. Liquids degassed by boiling.		SOURCE AND PURITY OF MATERIALS: 1. Nitrous oxide - prepared by heating pure ammonium nitrate. 2. Water - distilled.			
		ESTIMATED ERROR: $\delta L/L = 0.01$ (compiler's estimate) (Authors' estimate is 0.0025).			
		REFERENCES: 1. Geffcken, G., <i>Z. Physik. Chem.</i> , <u>1904</u> , <i>49</i> , 257-302.			

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]	ORIGINAL MEASUREMENTS: Findlay, A.; Howell, O.R., <i>J. Chem. Soc.</i> , <u>1914</u> , 105, 291-8.																																		
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EXPERIMENTAL VALUES: <table border="1" data-bbox="180 509 856 793" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>P/mmHg^a</th> <th>L^b</th> <th>P/mmHg</th> <th>L</th> </tr> </thead> <tbody> <tr><td>282.5</td><td>0.585</td><td>272.8</td><td>0.585</td></tr> <tr><td>396.1</td><td>0.585</td><td>393.2</td><td>0.585</td></tr> <tr><td>562.9</td><td>0.584</td><td>548.6</td><td>0.585</td></tr> <tr><td>664.5</td><td>0.585</td><td>652.4</td><td>0.585</td></tr> <tr><td>789.3</td><td>0.585</td><td>751.0</td><td>0.585</td></tr> <tr><td>1027.5</td><td>0.585</td><td>1021.7</td><td>0.586</td></tr> </tbody> </table> <p data-bbox="57 813 1062 891"> a. Partial pressure of nitrous oxide. All measurements at 298.15 K. b. Ostwald coefficient. </p> <table border="1" data-bbox="296 891 817 989" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>T/K^a</th> <th>$x_1 \times 10^4$^b</th> <th>L^c</th> </tr> </thead> <tbody> <tr> <td>* 298.15</td> <td>4.319</td> <td>0.585</td> </tr> </tbody> </table> <p data-bbox="57 999 1107 1136"> a. Temperatures reported to 0.1°C. b. Mole fraction solubility at 101.325 kPa (1 atm) partial pressure of gas. Calculated by compiler. c. Ostwald coefficient. Average of 12 values in previous table. </p>		P/mmHg ^a	L ^b	P/mmHg	L	282.5	0.585	272.8	0.585	396.1	0.585	393.2	0.585	562.9	0.584	548.6	0.585	664.5	0.585	652.4	0.585	789.3	0.585	751.0	0.585	1027.5	0.585	1021.7	0.586	T/K ^a	$x_1 \times 10^4$ ^b	L ^c	* 298.15	4.319	0.585
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METHOD APPARATUS/PROCEDURE: The apparatus used was that described earlier (1).	SOURCE AND PURITY OF MATERIALS: 1. Nitrous oxide - prepared by heating carefully purified ammonium nitrate. 2. Water - distilled.																																		
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REFERENCES: 1. Findlay, A; Williams, T. <i>J. Chem. Soc.</i> , <u>1913</u> , 103, 636.																																			

<p>COMPONENTS:</p> <p>1. Nitrous oxide; N₂O; [10024-97-2]</p> <p>2. Water; H₂O; [7732-18-5]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Kunerth, W.</p> <p><i>Phys. Rev.</i>, <u>1922</u>, 19, 512-24.</p>																																	
<p>VARIABLES:</p> <p>T/K: 291-309</p>	<p>PREPARED BY:</p> <p>R. Battino</p>																																	
<p>EXPERIMENTAL VALUES:</p> <table border="1" data-bbox="322 512 850 944"> <thead> <tr> <th>T/K^a</th> <th>$x_1 \times 10^4$^b</th> <th>L^c</th> </tr> </thead> <tbody> <tr><td>* 291.15</td><td>5.306</td><td>0.703</td></tr> <tr><td>* 293.15</td><td>5.062</td><td>0.675</td></tr> <tr><td>* 295.15</td><td>4.754</td><td>0.638</td></tr> <tr><td>* 297.15</td><td>4.569</td><td>0.617</td></tr> <tr><td>* 299.15</td><td>4.320</td><td>0.587</td></tr> <tr><td>301.15</td><td>4.104</td><td>0.561</td></tr> <tr><td>* 303.15</td><td>3.854</td><td>0.530</td></tr> <tr><td>305.15</td><td>3.708</td><td>0.513</td></tr> <tr><td>* 307.15</td><td>3.435</td><td>0.478</td></tr> <tr><td>* 309.15</td><td>3.208</td><td>0.449</td></tr> </tbody> </table> <p>a. Temperatures reported to 0.1^oC.</p> <p>b. Mole fraction solubility at 101,325 Pa (1 atm) partial pressure of gas. Calculated by compiler.</p> <p>c. Ostwald coefficient.</p>		T/K ^a	$x_1 \times 10^4$ ^b	L ^c	* 291.15	5.306	0.703	* 293.15	5.062	0.675	* 295.15	4.754	0.638	* 297.15	4.569	0.617	* 299.15	4.320	0.587	301.15	4.104	0.561	* 303.15	3.854	0.530	305.15	3.708	0.513	* 307.15	3.435	0.478	* 309.15	3.208	0.449
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<p>AUXILIARY INFORMATION</p>																																		
<p>METHOD APPARATUS/PROCEDURE:</p> <p>Apparatus is similar to that of McDaniel (1). It uses a 120 cm³ thermostatted gas buret. The absorption pipet is 31.3 cm³ and connected to the gas buret via a glass capillary. The solvent is degassed by boiling under vacuum. When gas is allowed into the absorption pipet the entire apparatus is mechanically shaken. Details and a drawing in the original paper.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>1. Nitrous oxide - from S.S. White Dental Company. 99.7% pure.</p> <p>2. Water - no comment by author.</p> <p>ESTIMATED ERROR:</p> <p>$\delta L/L = 0.01$ (compiler's estimate)</p> <p>REFERENCES:</p> <p>1. McDaniel, A.S., <i>J. Phys. Chem.</i>, <u>1911</u>, 15, 587.</p>																																	

<p>COMPONENTS:</p> <p>1. Nitrous oxide; N₂O; [10024-97-2] 2. Water; H₂O; [7732-18-5]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Manchot, W.; Jahrstorter, M.; Zepter, H. <i>Z. Anorg. Allgem. Chem.</i>, <u>1924</u>, <i>141</i>, 45-81.</p>										
<p>VARIABLES:</p>	<p>PREPARED BY:</p> <p>R. Battino</p>										
<p>EXPERIMENTAL VALUES:</p> <table border="1" data-bbox="280 544 1007 665"> <thead> <tr> <th></th> <th>T/K^a</th> <th>$x_1 \times 10^4$^b</th> <th>L^c</th> <th>S^d</th> </tr> </thead> <tbody> <tr> <td>*</td> <td>298.15</td> <td>4.281</td> <td>0.5800</td> <td>53.3</td> </tr> </tbody> </table> <p>a. Temperature reported to $\pm 1^\circ\text{C}$. b. Mole fraction solubility at 101,325 Pa (1 atm) partial pressure of gas. Calculated by compiler. c. Ostwald coefficient calculated by compiler. d. Solubility in units of cm³ at 273.15 K and 1 atm dissolved in 100 g of water.</p>			T/K ^a	$x_1 \times 10^4$ ^b	L ^c	S ^d	*	298.15	4.281	0.5800	53.3
	T/K ^a	$x_1 \times 10^4$ ^b	L ^c	S ^d							
*	298.15	4.281	0.5800	53.3							
<p>AUXILIARY INFORMATION</p>											
<p>METHOD APPARATUS/PROCEDURE:</p> <p>Determined in a gasometer. Details given in reference (1).</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>1. Nitrous oxide - chemically prepared and purified. 2. Water - no comment by authors.</p> <p>ESTIMATED ERROR:</p> <p>$\delta S/S = 0.03$ (estimated by compiler)</p> <p>REFERENCES:</p> <p>1. Manchot, W., <i>Z. Anorg. Allgem. Chem.</i>, <u>1924</u>, <i>141</i>, 38-44.</p>										

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]	ORIGINAL MEASUREMENTS: Markham, A.E.; Kobe, K.A., <i>J. Amer. Chem. Soc.</i> , <u>1941</u> , <i>63</i> , 449-54.																								
VARIABLES: T/K: 273-313	PREPARED BY: R. Battino																								
EXPERIMENTAL VALUES: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">T/K ^a</th> <th style="text-align: left;">$x_1 \times 10^4$ ^b</th> <th style="text-align: left;">L ^c</th> <th style="text-align: left;">α ^d</th> <th style="text-align: left;">No. Detns.</th> <th style="text-align: left;">Avg. Devn.</th> </tr> </thead> <tbody> <tr> <td>* 273.35</td> <td>10.415</td> <td>1.2980</td> <td>1.2970</td> <td>3</td> <td>0.0001</td> </tr> <tr> <td>* 298.15</td> <td>4.345</td> <td>0.5886</td> <td>0.5392</td> <td>11</td> <td>0.0012</td> </tr> <tr> <td>313.15</td> <td>2.898</td> <td>0.4103</td> <td>0.3579</td> <td>7</td> <td>0.0010</td> </tr> </tbody> </table> <p>a. Temperature reported to $\pm 0.1^\circ\text{C}$.</p> <p>b. Mole fraction solubility at 101, 325 Pa (1 atm) partial pressure of gas. Calculated by compiler.</p> <p>c. Ostwald coefficient. Calculated by compiler.</p> <p>d. Bunsen coefficient. Average of number of determinations listed in column 5. The average deviation is listed in column 6.</p>		T/K ^a	$x_1 \times 10^4$ ^b	L ^c	α ^d	No. Detns.	Avg. Devn.	* 273.35	10.415	1.2980	1.2970	3	0.0001	* 298.15	4.345	0.5886	0.5392	11	0.0012	313.15	2.898	0.4103	0.3579	7	0.0010
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AUXILIARY INFORMATION																									
METHOD APPARATUS/PROCEDURE: Used the Ostwald method with modifications. Absorption flask consists of two bulbs connected at top and bottom via three-way stop-cocks. One bulb is double the volume of the other. Critical parts including the manometer and gas buret are thermostatted in a water bath. The gas is saturated before exposure to the degassed liquid. The bulks are mechanically agitated. Volumes are calibrated with mercury weighings. Details and a drawing are given in the original paper.	SOURCE AND PURITY OF MATERIALS: 1. Nitrous oxide - from commercial cylinders. 99.7% pure. 2. Water - distilled.																								
ESTIMATED ERROR: $\delta\alpha/\alpha = 0.01$ (compiler's estimate)																									
REFERENCES:																									

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]	ORIGINAL MEASUREMENTS: Jay, B.E.; Wilson, R.H.; Doty, V.; Pingree, H.; Hargis, B. <i>Anal. Chem.</i> , <u>1962</u> , <i>34</i> , 414-8.						
VARIABLES:	PREPARED BY: R. Battino						
EXPERIMENTAL VALUES: <table border="1" data-bbox="355 568 815 705"> <thead> <tr> <th data-bbox="381 578 434 617">T/K^a</th> <th data-bbox="526 578 631 617">$x_1 \times 10^4$^b</th> <th data-bbox="736 578 763 617">L^c</th> </tr> </thead> <tbody> <tr> <td data-bbox="368 666 447 695">309.15</td> <td data-bbox="552 666 631 695">3.036</td> <td data-bbox="710 666 789 695">0.425</td> </tr> </tbody> </table> <p data-bbox="105 754 1039 931"> a. Temperature reported to 1^oC. b. Mole fraction solubility at 101.325 kPa (1 atm) partial pressure of gas. Calculated by compiler. c. Ostwald coefficient. Average of 11 values with a standard deviation of 1.1%. </p>		T/K ^a	$x_1 \times 10^4$ ^b	L ^c	309.15	3.036	0.425
T/K ^a	$x_1 \times 10^4$ ^b	L ^c					
309.15	3.036	0.425					
AUXILIARY INFORMATION							
METHOD APPARATUS/PROCEDURE: A gas chromatographic method for determining solubility is described in the paper with illustrations.	SOURCE AND PURITY OF MATERIALS: 1. Nitrous oxide - from Matheson Gas Co. Stated to be "100% N ₂ O" - but not as a measure of purity (compiler). 2. Water - no comment by authors. ESTIMATED ERROR: $\delta L/L = 0.02$ (estimated by compiler) REFERENCES:						

COMPONENTS:		ORIGINAL MEASUREMENTS:
1. Nitrous oxide; N ₂ O; [10024-97-2]		Sy, W.P.; Hasbrouck, J.D.
2. Water; H ₂ O; [7732-18-5]		<i>Anesthesiology</i> , <u>1964</u> , <i>25</i> , 59.
VARIABLES:		PREPARED BY:
		C.L. Young
EXPERIMENTAL VALUES:		
T/K	Partial pressure ⁺ of nitrous oxide P/mmHg	Ostwald coefficient, L
37	699.8	0.367
	699.2	0.370
	699.2	0.367
	694.7	0.372
	694.9	0.365
	695.2	0.366
	695.5	0.369
	695.8	0.361
	695.8	0.367
Mean Ostwald coefficient = 0.367		
Standard deviation = 0.003		
+ Calculated by subtracting vapor pressure of water from total pressure.		
AUXILIARY INFORMATION		
METHOD APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS.
Nitrous oxide bubbled through water - allowed to stand for 15 minutes. Samples analysed in Van Slyke - Neill apparatus (1).		Water distilled, no other details given.
		ESTIMATED ERROR:
		$\delta T/K = +0.1$; $\delta P/mmHg = +0.1$
		REFERENCES:
		1. Van Slyke, D.D.; Neill, J.M. <i>J. Biol. Chem.</i> <u>1924</u> , <i>82</i> , 523.

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous Oxide; N ₂ O; [10024-97-2]		Borgstedt, H.H.; Gillies, A.J.	
2. Water; H ₂ O; [7732-18-5]		Anesthesiology, <u>1965</u> , 26, 675-8	
VARIABLES:		PREPARED BY:	
Temperature, pressure		C.L. Young	
EXPERIMENTAL VALUES:			
T/K	Bunsen coefficient, α	Number of Observations	10 ⁴ Mole fraction ⁺ 10 ⁴ x _{N₂O}
303	0.485 ± 0.0026	20	3.91
305.5	0.469 ± 0.0024	20	3.78
310	0.429 ± 0.0028	40	3.46
313	0.403 ± 0.0025	20	3.25
318	0.365 ± 0.0017	20	2.94
323	0.338 ± 0.0026	20	2.73
+ calculated by compiler			
AUXILIARY INFORMATION			
METHOD APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
A gas chromatographic method in which a sample of water saturated with gas was injected directly into the chromatograph. Water in sample was absorbed by molecular sieve type 3A and nitrous oxide detected with a thermal conductivity detector. Detector response compared with that of samples of known amount. Details in source.		Water stated to be pure. No other details given.	
		ESTIMATED ERROR:	
		$\delta T/K = \pm 0.1$	
		REFERENCES:	

Nitrous Oxide

COMPONENTS:			ORIGINAL MEASUREMENTS:		
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]			Saidman, L.J.; Eger, E.I.; Munson, E.S.; Severinghaus, J.W. <i>Anesthesiology</i> , <u>1966</u> , <i>27</i> , 180-184.		
VARIABLES: Temperature			PREPARED BY: C.L. Young		
EXPERIMENTAL VALUES:			Ostwald coefficient, <i>L</i>		
T/°C	T/K	No of samples	Mean	Standard deviation	
37	310.2	6	0.444	0.010	
25	298.2	6	0.594	0.008	
20	293.2	6	0.657	0.017	
AUXILIARY INFORMATION					
METHOD APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
Modified Scholander apparatus used. Known amount of water equilibrated with a known volume of gas and change in volume used to estimate Ostwald coefficient. Details in source and ref. (1).			1. No details given. 2. Degassed		
			ESTIMATED ERROR: $\delta T/K = \pm 0.1$ (estimated by compiler).		
			REFERENCES: 1. Douglas, E. <i>J. Phys. Chem.</i> <u>1964</u> , <i>68</i> , 169.		

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]	ORIGINAL MEASUREMENTS: Christoforides, C.; Hedley-White, J. <i>J. Federation Proceedings</i> , <u>1970</u> , 29: A330.												
VARIABLES: T/K: 298-310	PREPARED BY: R. Battino												
EXPERIMENTAL VALUES: <table border="1" data-bbox="280 564 937 725"> <thead> <tr> <th>T/K^a</th> <th>$x_1 \times 10^4$^b</th> <th>L^c</th> <th>α^d</th> </tr> </thead> <tbody> <tr> <td>298.15</td> <td>4.520</td> <td>0.6123</td> <td>0.561</td> </tr> <tr> <td>310.15</td> <td>3.405</td> <td>0.4780</td> <td>0.421</td> </tr> </tbody> </table> a. Temperatures reported as 25° and 37°C. b. Mole fraction solubility at 101,325 kPa (1 atm) partial pressure of gas. Calculated by compiler. c. Ostwald coefficient. Calculated by compiler. d. Bunsen coefficient.		T/K ^a	$x_1 \times 10^4$ ^b	L ^c	α ^d	298.15	4.520	0.6123	0.561	310.15	3.405	0.4780	0.421
T/K ^a	$x_1 \times 10^4$ ^b	L ^c	α ^d										
298.15	4.520	0.6123	0.561										
310.15	3.405	0.4780	0.421										
AUXILIARY INFORMATION													
METHOD APPARATUS/PROCEDURE: Determined by Van Slyke manometry.	SOURCE AND PURITY OF MATERIALS: 1. Nitrous oxide - no comment by authors. 2. Water - no comment by authors.												
ESTIMATED ERROR: $\delta\alpha/\alpha = 0.02$ (compiler's estimate)													
REFERENCES:													

<p>COMPONENTS:</p> <p>1. Nitrous oxide; N₂O; [10024-97-2]</p> <p>2. Water; H₂O; [7732-18-5]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Joosten, G.E.H.; Danckwerts, P.V., <i>J. Chem. Eng. Data</i>, <u>1972</u>, <i>17</i>, 452-4.</p>								
<p>VARIABLES:</p>	<p>PREPARED BY:</p> <p>R. Battino</p>								
<p>EXPERIMENTAL VALUES:</p> <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">T/K^a</th> <th style="text-align: center;">$x_1 \times 10^4$^b</th> <th style="text-align: center;">L^c</th> <th style="text-align: center;">$1/K_H \times 10^5$^d</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">* 298.15</td> <td style="text-align: center;">4.409</td> <td style="text-align: center;">0.5973</td> <td style="text-align: center;">2.44</td> </tr> </tbody> </table> <p>a. Temperature reported as 25°C.</p> <p>b. Mole fraction solubility at 101,325 kPa (1 atm) partial pressure of gas. Calculated by compiler.</p> <p>c. Ostwald coefficient. Calculated by compiler.</p> <p>d. Henry's law constant in units of cm³ atm mol⁻¹.</p>		T/K ^a	$x_1 \times 10^4$ ^b	L ^c	$1/K_H \times 10^5$ ^d	* 298.15	4.409	0.5973	2.44
T/K ^a	$x_1 \times 10^4$ ^b	L ^c	$1/K_H \times 10^5$ ^d						
* 298.15	4.409	0.5973	2.44						
<p>AUXILIARY INFORMATION</p>									
<p>METHOD APPARATUS/PROCEDURE:</p> <p>Used the apparatus and procedures of Markham and Kobe (1).</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>1. Nitrous oxide - no comment by authors.</p> <p>2. Water - no comment by authors.</p>								
	<p>ESTIMATED ERROR:</p> <p>$\delta K_H/K_H = 0.01$ (compiler's estimate)</p>								
	<p>REFERENCES:</p> <p>1. Markham, A.E.; Kobe, K.A., <i>J. Amer. Chem. Soc.</i>, <u>1941</u>, <i>63</i>, 449-54.</p>								

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]	ORIGINAL MEASUREMENTS: Hikita, H.; Asai, S.; Ishikawa, H.; Esaka, N., <i>J. Chem. Eng. Data</i> , <u>1974</u> , <i>19</i> , 89-92.								
VARIABLES:	PREPARED BY: R. Battino								
EXPERIMENTAL VALUES: <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="border-bottom: 1px solid black; padding: 5px;">T/K ^a</th> <th style="border-bottom: 1px solid black; padding: 5px;">$x_1 \times 10^4$ ^b</th> <th style="border-bottom: 1px solid black; padding: 5px;">L ^c</th> <th style="border-bottom: 1px solid black; padding: 5px;">M ^d</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">298.15</td> <td style="padding: 5px;">4.255</td> <td style="padding: 5px;">0.5764</td> <td style="padding: 5px;">0.02356</td> </tr> </tbody> </table> <p>a. Temperature reported as 25°C. b. Mole fraction solubility at 101,325 kPa (1 atm) partial pressure of gas. Calculated by compiler. c. Ostwald coefficient. Calculated by compiler. d. Molarity in mol l⁻¹ at 1 atm partial gas pressure.</p>		T/K ^a	$x_1 \times 10^4$ ^b	L ^c	M ^d	298.15	4.255	0.5764	0.02356
T/K ^a	$x_1 \times 10^4$ ^b	L ^c	M ^d						
298.15	4.255	0.5764	0.02356						
AUXILIARY INFORMATION									
METHOD APPARATUS/PROCEDURE: Used the gas volumetric method of Markham and Kobe (1) in an apparatus similar to that used by Onda <i>et al.</i> (2).	SOURCE AND PURITY OF MATERIALS. 1. Nitrous oxide - from a commercial cylinder. 99.8% purity. 2. Water - distilled. ESTIMATED ERROR: $\delta M/M = 0.01$ (compiler's estimate) REFERENCES. 1. Markham, A.E.; Kobe, K.A., <i>J. Amer. Chem. Soc.</i> , <u>1941</u> , <i>63</i> , 449. 2. Onda, K.; Sada, E.; Kobayashi, T.; Kito, S.; Ito, K., <i>J. chem. Eng. Japan</i> , <u>1970</u> , <i>3</i> , 18.								

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]	ORIGINAL MEASUREMENTS: Sada, E.; Kito, S.; Ito, Y., <i>J. Chem. Eng. Japan</i> , <u>1974</u> , <i>7</i> , 57-9.								
VARIABLES:	PREPARED BY: <p style="text-align: center;">R. Battino</p>								
EXPERIMENTAL VALUES: <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; border-bottom: 1px solid black;">T/K ^a</th> <th style="text-align: center; border-bottom: 1px solid black;">$x_1 \times 10^4$ ^b</th> <th style="text-align: center; border-bottom: 1px solid black;">L ^c</th> <th style="text-align: center; border-bottom: 1px solid black;">α ^d</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">* 298.15</td> <td style="text-align: center;">4.441</td> <td style="text-align: center;">0.6016</td> <td style="text-align: center;">0.5512</td> </tr> </tbody> </table> <p>a. Temperature reported as 25°C.</p> <p>b. Mole fraction solubility at 101.325 kPa (1 atm) partial pressure of gas. Calculated by compiler.</p> <p>c. Ostwald coefficient. Calculated by compiler.</p> <p>d. Bunsen coefficient.</p>		T/K ^a	$x_1 \times 10^4$ ^b	L ^c	α ^d	* 298.15	4.441	0.6016	0.5512
T/K ^a	$x_1 \times 10^4$ ^b	L ^c	α ^d						
* 298.15	4.441	0.6016	0.5512						
AUXILIARY INFORMATION									
METHOD APPARATUS/PROCEDURE: Details are given in (1). A measured volume of gas is brought into contact with a quantity of degassed liquid. Agitation is via a magnetic stirrer. The gas volumes are determined on a gas buret. All critical components are thermostatted in a water bath to $\pm 0.01^\circ\text{C}$.	SOURCE AND PURITY OF MATERIALS: 1. Nitrous oxide - Showa Denko Co. Ltd., Tokyo. 99.8% pure. 2. Water - distilled.								
	ESTIMATED ERROR: $\delta\alpha/\alpha = 0.01$ (compiler's estimate)								
	REFERENCES: 1. Onda, K.; Sada, E.; Kobayashi, T.; Kito, S.; Ito, K., <i>J. Chem. Eng. Japan</i> , <u>1970</u> , <i>3</i> , 18-24.								

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]	ORIGINAL MEASUREMENTS: Sada, E.; Kito, S.; Ito, Y., <i>Ind. Eng. Chem. Fundam.</i> , <u>1975</u> , 14, 232-7.										
VARIABLES:	PREPARED BY: R. Battino										
EXPERIMENTAL VALUES: <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th style="text-align: center;">T/K^a</th> <th style="text-align: center;">$x_1 \times 10^4$^b</th> <th style="text-align: center;">L^c</th> <th style="text-align: center;">H^d</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">*</td> <td style="text-align: center;">298.15</td> <td style="text-align: center;">4.310</td> <td style="text-align: center;">0.5839</td> <td style="text-align: center;">2320.1</td> </tr> </tbody> </table> a. Temperature reported to $\pm 0.01^\circ\text{C}$. b. Mole fraction solubility at 101,325 Pa (1 atm) partial pressure of gas. Calculated by compiler. c. Ostwald coefficient calculated by compiler. d. Henry's law coefficient in atm.			T/K ^a	$x_1 \times 10^4$ ^b	L ^c	H ^d	*	298.15	4.310	0.5839	2320.1
	T/K ^a	$x_1 \times 10^4$ ^b	L ^c	H ^d							
*	298.15	4.310	0.5839	2320.1							
AUXILIARY INFORMATION											
METHOD APPARATUS/PROCEDURE: Details are given in reference (1) with a drawing. A measured volume of gas is brought into contact with a quantity of degassed liquid. Agitation is via a magnetic stirrer. The gas volumes are determined with a gas buret. All critical components are in a water bath controlled to $\pm 0.01^\circ\text{C}$.	SOURCE AND PURITY OF MATERIALS: 1. Nitrous oxide - prepared by Showa Denka Co. Ltd. (Tokyo) and 99.8% pure. 2. Water - "carefully distilled". ESTIMATED ERROR: $\delta H/H = 0.01$ (compiler's estimate) REFERENCES: 1. Onda, K.; Sada, E.; Kobayashi, T.; Kito, S.; Ito, K., <i>J. Chem. Eng. Japan</i> , <u>1970</u> , 3, 18-24.										

<p>COMPONENTS:</p> <p>1. Nitrous oxide; N₂O; [10024-97-2]</p> <p>2. Water; H₂O; [7732-18-5]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Sada, E.; Kumazawa, H.; Butt, M.A., <i>J. Chem. Eng. Data</i>, <u>1977</u>, <i>22</i>, 277-9.</p>								
<p>VARIABLES:</p>	<p>PREPARED BY:</p> <p>R. Battino</p>								
<p>EXPERIMENTAL VALUES:</p> <table border="1" data-bbox="270 592 959 695"> <thead> <tr> <th>T/K ^a</th> <th>$x_1 \times 10^4$ ^b</th> <th>L ^c</th> <th>α ^d</th> </tr> </thead> <tbody> <tr> <td>* 298.15</td> <td>4.441</td> <td>0.6016</td> <td>0.5512</td> </tr> </tbody> </table> <p>a. Temperature reported to $\pm 0.01^\circ\text{C}$.</p> <p>b. Mole fraction solubility of gas at 101,325 Pa (1 atm) partial pressure of gas. Calculated by compiler.</p> <p>c. Ostwald coefficient calculated by compiler.</p> <p>d. Bunsen coefficient.</p>		T/K ^a	$x_1 \times 10^4$ ^b	L ^c	α ^d	* 298.15	4.441	0.6016	0.5512
T/K ^a	$x_1 \times 10^4$ ^b	L ^c	α ^d						
* 298.15	4.441	0.6016	0.5512						
<p>AUXILIARY INFORMATION</p>									
<p>METHOD APPARATUS/PROCEDURE:</p> <p>Details are given in reference (1). A measured volume of gas is brought into contact with a quantity of degassed liquid. Agitation is via a magnetic stirrer. The gas volumes are determined on a gas buret. All critical components are thermostatted in a water bath to $\pm 0.01^\circ\text{C}$.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>1. Nitrous oxide - from commercial cylinder with minimum purity of 99.8%.</p> <p>2. Water - "carefully distilled".</p> <p>ESTIMATED ERROR:</p> <p>$\delta\alpha/\alpha = 0.01$ (compiler's estimate)</p> <p>REFERENCES:</p> <p>1. Onda, K.; Sada, E.; Kobayashi, T.; Kito, S.; Ito, K., <i>J. Chem. Eng. Japan</i>, <u>1970</u>, <i>3</i>, 18-24.</p>								

EXPERIMENTAL VALUES:		
T/K	Solubility, $^+ K_0$ /mol dm ⁻³ atm ⁻¹	Bunsen coefficient, α
273.44	0.05870	1.3054
273.44	0.05858	1.3028
273.44	0.05870	1.3054
273.44	0.05870	1.3054
273.44	0.05858	1.3028
283.16	0.04016	0.8931
283.15	0.04017	0.8933
283.15	0.04007	0.8911
283.15	0.04010	0.8918
283.16	0.04013	0.8925
283.15	0.04019	0.8938
293.11	0.02882	0.6409
293.13	0.02880	0.6405
293.13	0.02873	0.6389
293.12	0.02878	0.6400
293.12	0.02879	0.6403
293.13	0.02875	0.6394
303.35	0.02156	0.4795
303.34	0.02153	0.4788
303.36	0.02155	0.4793
303.36	0.02149	0.4779

AUXILIARY INFORMATION

METHOD APPARATUS/PROCEDURE:

The Scholander microgasometric technique as adapted by Douglas (1), (2) was used. The equilibrium chamber was enlarged to contain approximately 10 ml of solvent. The procedures for degassing the water and transferring the gas were checked for air contamination by gas chromatography. All volumes were read on a micrometer which displaced mercury.

SOURCE AND PURITY OF MATERIALS:

1. Matheson Ultra High purity sample, purity better than 99.99 mole per cent.
2. Distilled.

ESTIMATED ERROR:

$$\delta T/K = \pm 0.01; \delta K_0 = \pm 0.3\%$$

REFERENCES:

1. Douglas, E.
J. Phys. Chem. 1964, *68*, 169 and 1965, *69*, 2608.
2. Weiss, R.F. *Marine Chem.* 1974, *2*, 203.

COMPONENTS:

1. Nitrous oxide; N₂O; [10024-97-2]
2. Water; H₂O; [7732-18-5]

ORIGINAL MEASUREMENTS:

Weiss, R.F.; Price, B.A.
Marine Chemistry, 1980, *8*, 347-359.

VARIABLES:

Temperature

PREPARED BY:

C.L. Young

COMPONENTS:		ORIGINAL MEASUREMENTS:
1. Nitrous oxide; N ₂ O; [10024-97-2]		Weiss, R.F.; Price, B.A.
2. Water; H ₂ O; [7732-18-5]		<i>Marine, Chemistry, 1980, 8,</i> 347-359.
EXPERIMENTAL VALUES:		
T/K	Solubility, ⁺ K ₀ /mol dm ⁻³ atm ⁻¹	Bunsen coefficient, α
303.37	0.02151	0.4784
313.23	0.01693	0.3765
313.23	0.01692	0.3763
313.24	0.01691	0.3761
313.23	0.01696	0.3772
313.24	0.01694	0.3767
+ defined as α/V where V is the molar volume at 273.15K and 101.325kPa (22239 cm ³ mol ⁻¹)		

COMPONENTS:

1. Nitrous oxide; N₂O; [10024-97-2]

2. Seawater

EVALUATOR:

Colin L. Young,
School of Chemistry,
University of Melbourne,
Parkville, Victoria 3052,
Australia.

August 1980

CRITICAL EVALUATION:

The only measurements of the solubility of nitrous oxide in seawater are those of Weiss and Price (1), who used the microgasometric technique as refined by Weiss (2), (3) in previous work. The method is of high precision and these workers made corrections for the deviations from ideality of nitrous oxide. The work of Weiss and coworkers on other gases, e.g., argon (4) has been compared in detail (5) with that of other workers and is thought to be reliable. Therefore in the absence of any evidence to the contrary, their data are classified as tentative. Weiss and Price reported various smoothing equations including one giving the volumetric solubility coefficient $K_0/\text{mol dm}^{-3} \text{ atm}^{-1}$ as a function of temperature and salinity, S , in parts per thousand ‰. K_0 is equal to the Bunsen coefficient/(molar volume of nitrous oxide at 273.15 K and 101.325 kPa).

$$\ln (K_0/\text{mol dm}^{-3} \text{ atm}^{-1}) = -62.7062 + 97.3066 (100 T/K) \\ + 24.1406 \ln (T/100 \text{ K}) + S[-0.058420 \\ + 0.033193 (T/100 \text{ K}) - 0.0051313 (T/100 \text{ K})^2]$$

Values calculated from this equation are given below.

The volumetric solubility coefficient ($10^2 K_0/\text{mol dm}^{-3} \text{ atm}^{-1}$) for nitrous oxide at various temperatures and salinities.

T/K	Salinity (‰)						
	0	10	20	30	35	38	40
272.15	---	---	5.480	5.156	5.001	4.911	4.851
273.15	5.933	5.585	5.258	4.950	4.803	4.717	4.660
274.15	5.691	5.360	5.048	4.755	4.615	4.533	4.479
275.15	5.461	5.147	4.850	4.570	4.437	4.358	4.307
276.15	5.245	4.945	4.662	4.396	4.268	4.193	4.144
277.15	5.040	4.754	4.484	4.230	4.108	4.037	3.990
278.15	4.846	4.573	4.315	4.073	3.956	3.888	3.843
279.15	4.662	4.401	4.156	3.923	3.812	3.747	3.704
281.15	4.322	4.084	3.860	3.647	3.546	3.486	3.447
283.15	4.016	3.799	3.593	3.398	3.305	3.250	3.214
285.15	3.741	3.541	3.352	3.172	3.086	3.036	3.003
287.15	3.492	3.307	3.133	2.968	2.889	2.842	2.811
289.15	3.266	3.096	2.935	2.782	2.709	2.666	2.637
291.15	3.061	2.904	2.754	2.613	2.545	2.505	2.479
293.15	2.875	2.729	2.590	2.459	2.395	2.358	2.334
295.15	2.705	2.569	2.440	2.318	2.259	2.224	2.201
296.15	2.551	2.424	2.303	2.189	2.134	2.102	2.080
298.15	2.409	2.291	2.171	2.071	2.019	1.989	1.969
301.15	2.280	2.169	2.063	1.963	1.914	1.886	1.867
303.15	2.161	2.057	1.958	1.863	1.818	1.791	1.773
305.15	2.053	1.954	1.861	1.771	1.728	1.703	1.686
307.15	1.953	1.860	1.771	1.687	1.646	1.622	1.607
309.15	1.861	1.773	1.689	1.609	1.570	1.548	1.533
311.15	1.776	1.692	1.613	1.537	1.500	1.479	1.465
313.15	1.698	1.618	1.542	1.470	1.435	1.415	1.401

(cont.)

<p>COMPONENTS:</p> <ol style="list-style-type: none">1. Nitrous oxide; N₂O; [10024-97-2]2. Seawater	<p>EVALUATOR:</p> <p>Colin L. Young, School of Chemistry, University of Melbourne, Parkville, Victoria 3052, Australia. August 1980</p>
<p>CRITICAL EVALUATION:</p> <p>References:</p> <ol style="list-style-type: none">1. Weiss, R. F.; Price, B. A. <i>Marine Chem.</i> <u>1980</u>, <i>8</i>, 347.2. Weiss, R. F. <i>J. Chem. Eng. Data</i> <u>1971</u>, <i>16</i>, 235.3. Weiss, R. F. <i>Marine Chem.</i> <u>1974</u>, <i>2</i>, 203.4. Weiss, R. F. <i>Deep-Sea Res.</i> <u>1971</u>, <i>18</i>, 225.5. Chen, C. T. in "Argon" <i>Solubility Data Series</i> Vol. 4, p.27. H. L. Clever, Ed. Pergamon <u>1980</u>.	

COMPONENTS:		ORIGINAL MEASUREMENTS:		
1. Nitrous oxide; N ₂ O; [10024-97-2]		Weiss, R.F.; Price, B.A.		
2. Seawater		Marine Chemistry, <u>1980</u> , 8, 347-359		
VARIABLES:		PREPARED BY:		
Temperature		C.L. Young		
EXPERIMENTAL VALUES:				
T/K	Salinity/‰	Solubility, ⁺ K ₀ / mol dm ⁻³ atm ⁻¹	Bunsen coefficient, α	
283.24	18.060	0.03629	0.8071	
283.24		0.03610	0.8028	
283.25		0.03614	0.8037	
283.25		0.03615	0.8039	
283.25		0.03612	0.8033	
283.25		0.03606	0.8019	
303.00		0.01985	0.4414	
303.00		0.01987	0.4419	
303.00		0.01982	0.4408	
303.00		0.01984	0.4412	
303.01	36.130	0.01983	0.4410	
273.45		0.04716	1.0488	
273.44		0.04714	1.0483	
273.44		0.04728	1.0515	
273.45		0.04706	1.0466	
273.44		0.04716	1.0488	
278.08		0.03943	0.8769	
278.08		0.03938	0.8758	
278.08		0.03940	0.8762	
278.09		0.03947	0.8778	
278.08		0.03941	0.8764	
287.19		0.03273	0.7279	
287.19		0.03282	0.7299	
287.19		0.03280	0.7294	
AUXILIARY INFORMATION				
METHOD APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:		
The Scholander microgasometric technique as adapted by Douglas (1), (2) was used. The equilibrium chamber was enlarged to contain approximately 10 ml of solvent. The procedures for degassing the water and transferring the gas were checked for air contamination by gas chromatography. All volumes were read on a micrometer which displaced mercury.		1. Matheson Ultra high purity sample, purity better than 99.99 mole per cent.		
		2. Surface seawater, poisoned with HgCl ₂ , filtered.		
		ESTIMATED ERROR:		
		δT/K = ±0.01; δK ₀ = ±0.3% δ salinity = ±0.004.		
		REFERENCES:		
		1. Douglas, E. <i>J. Phys. Chem.</i> <u>1964</u> , 68, 169 and <u>1965</u> , 69, 2608.		
		2. Weiss, R.F. <i>Marine Chem.</i> <u>1974</u> , 2, 203.		

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2]		Weiss, R.F.; Price, B.A.	
2. Seawater.		<i>Marine Chemistry</i> , 1980, 8, 347-359	
EXPERIMENTAL VALUES:			
T/K	Salinity/‰	Solubility, ⁺ K ₀ /mol dm ⁻³ atm ⁻¹	Bunsen coefficient, α
287.19	36.130	0.03281	0.7297
287.19		0.03276	0.7285
293.30		0.02372	0.5275
293.30		0.02372	0.5275
293.29		0.02369	0.5268
293.30		0.02366	0.5262
293.30		0.02373	0.5277
293.29		0.02374	0.5280
303.10		0.01812	0.4030
303.11		0.01813	0.4032
303.11		0.01810	0.4025
303.11		0.01811	0.4027
303.10		0.01810	0.4025
313.23		0.01428	0.3176
313.24		0.01425	0.3169
313.24		0.01421	0.3160
313.24		0.01422	0.3162
313.24		0.01425	0.3169
+ defined as α/V where V is the molar volume at 273.15K and 101.325 kPa (22239 cm ³ mol ⁻¹).			

COMPONENTS:

1. Nitrous oxide; N_2O ; [10024-97-2]
2. Water; H_2O ; [7732-18-5]
3. Electrolyte

EVALUATOR:

Colin L. Young,
School of Chemistry,
University of Melbourne,
Parkville, Victoria 3052,
Australia.

February 1981

CRITICAL EVALUATION:

An Evaluation of the Solubility of Nitrous Oxide
in Aqueous Electrolyte Solutions at a Nitrous oxide
Partial Pressure of 101.325 kPa

There are few measurements of the solubility of nitrous oxide in any one aqueous electrolyte system over common ranges of concentration and temperature. Consequently it is not possible to recommend solubility values. Most of the available data are classified as tentative.

In order to have a common basis for comparison, the solubility data have been converted to Sechenow salt effect parameters in the form

$$k_{CS\alpha}/\text{dm}^3 \text{ mol}^{-1} = (1/(c/\text{mol dm}^{-3})) \log(\alpha^0/\alpha)$$

where c is the electrolyte concentration in units of mol dm^{-3} and α^0 and α are the Bunsen coefficients in pure water and electrolyte solution, respectively. The Ostwald coefficient ratio, L^0/L , will give the same value, but the salt effect parameter is symbolized, k_{sCL} . Both ratios are equivalent to a molar gas solubility ratio.

Another form of the salt effect parameter which will be found in the subsequent discussion is

$$k_{sm\alpha}/\text{kg mol}^{-1} = (1/(m/\text{mol kg}^{-1})) \log(\alpha^0/\alpha)$$

where m is the electrolyte molality.

The salt effect parameter, k_{sca} , is often assumed to be independent of electrolyte concentration. This is only approximately true for most solutions. There are indications throughout the literature that the salt effect parameter values are larger in dilute solutions than at higher concentrations but there are no definitive studies on this point.

The effect of the electrolyte concentration on the salt effect parameter was checked by one of two ways. A graph was prepared either of $\log(\alpha^0/\alpha)$ vs. c or of k_{sca} vs. c . A linear $\log(\alpha^0/\alpha)$ vs. c plot shows no concentration dependence to the salt effect parameter and the slope is k_{sca} . A linear k_{sca} vs. c plot of zero slope shows no concentration dependence of the salt effect parameter.

The solubility of nitrous oxide in water has been taken from the paper under evaluation for the calculation of the salt effect parameter. The reason for using the water solubility of the author, instead of the recommended solubility of nitrous oxide in water, is that systematic errors in a given author's work may cancel in the ratio α^0/α . The use of a salt effect parameter of the Sechenow type should not be taken to mean that it is necessarily the best way to represent salt effect results. It is used here as a convenient parameter for the comparison of data from several authors.

The largest group of electrolyte solutions has been studied by Manchot *et al.* (1). In many cases only two concentrations of electrolyte were studied and the work was restricted to 298.15 K. Seidell attributes some work to Manchot *et al.* (1) which is not in numerical form in the original. The data are evaluated separately as the status of these results is not clear.

Nitrous oxide measurements have been reported for over forty aqueous electrolyte systems. Each system is discussed briefly on the following pages. Unless otherwise stated, the salt effect parameters are

COMPONENTS:	EVALUATOR:
1. Nitrous oxide; N ₂ O; [10024-97-2]	Colin L. Young,
2. Water; H ₂ O; [7732-18-5]	School of Chemistry,
3. Electrolyte	University of Melbourne,
	Parkville, Victoria 3052,
	Australia.
	February 1981

CRITICAL EVALUATION:

for a concentration of one mol dm⁻³ solution at a nitrous oxide partial pressure of 0.101325 MPa. Tentative values of the salt effect parameters are given as calculated from the various papers. The systems are given in the order of the standard arrangement for electrolytes used in U.S. National Bureau of Standards publications.

1. Nitrous oxide + water + Hydrochloric Acid [7647-01-0]

This system has been studied by Geffcken (2) at 288.16 K and 298.16 K and the salt effect parameters, k_{scL} , are

$$k_{scL}/\text{dm}^3 \text{ mol}^{-1} = 0.0281 - 0.0052 (c/\text{mol dm}^{-3})$$

$$k_{scL}/\text{dm}^3 \text{ mol}^{-1} = 0.0272 - 0.0060 (c/\text{mol dm}^{-3}),$$

respectively. See also, the evaluation of Seidell's values following this evaluation.

2. Nitrous oxide + water + Sulfuric Acid [7664-93-9]

This system has also been studied by Geffcken (2) at 288.16 K and 298.16 K. The salt effect parameters, k_{scL} are not linear with concentration and are as given below.

		T/K = 288.16				
$k_{scL}/\text{dm}^3 \text{ mol}^{-1}$	0.1003	0.0970	0.0882	0.0897	0.0806	
conc/mol dm ⁻³	0.2615	0.2630	0.5250	0.5252	1.0210	
$k_{scL}/\text{dm}^3 \text{ mol}^{-1}$	0.0812	0.0749	0.0749	0.0715	0.0704	
conc/mol dm ⁻³	1.0235	1.4855	1.4815	1.9485	1.9865	
		T/K = 298.16				
$k_{scL}/\text{dm}^3 \text{ mol}^{-1}$	0.0843	0.0812	0.0715	0.0762	0.0664	
conc/mol dm ⁻³	0.2615	0.2630	0.5250	0.5252	1.0210	
$k_{scL}/\text{dm}^3 \text{ mol}^{-1}$	0.0659	0.0612	0.0614	0.0586	0.0571	
conc/mol dm ⁻³	1.0235	1.4855	1.4815	1.9485	1.9865	

See also the evaluation of Seidell's values following this evaluation.

3. Nitrous oxide + water + Nitric acid [7697-37-2]

Geffcken (2) studied this system at 288.16 K and 298.16 K at six concentrations. The salt effect parameters, k_{scL} , are small and the average values are

$$k_{scL}/\text{dm}^3 \text{ mol}^{-1} = 0.001$$

$$k_{scL}/\text{dm}^3 \text{ mol}^{-1} = -0.005$$

at 288.16 K and 298.16 K, respectively. See also the evaluation of Seidell's values following this evaluation.

<p>COMPONENTS:</p> <ol style="list-style-type: none"> Nitrous oxide; N_2O; [10024-97-2] Water; H_2O; [7732-18-5] Electrolyte 	<p>EVALUATOR:</p> <p>Colin L. Young, School of Chemistry, University of Melbourne, Parkville, Victoria 3052, Australia.</p> <p>February 1981</p>
<p>CRITICAL EVALUATION:</p> <ol style="list-style-type: none"> Nitrous oxide + water + Phosphoric acid [7664-38-2] <p>This system was studied by Roth (3) at twelve different concentrations over a range of temperature from 277 K to 298 K. The salt effect parameters show very large scatter and the data of Roth (3) are classified as doubtful.</p> Nitrous oxide + water + Ammonium chloride [12125-02-9] <p>This system has been studied by Geffcken (2) at 288.15 K and 298.15 K and by Manchot <i>et al.</i> (1) at 298.15 K. There is reasonable agreement between the salt effect parameters calculated from these data, Geffcken's data give</p> $k_{scL} = 0.052 \text{ dm}^3 \text{ mol}^{-1} \text{ at } 288.15 \text{ K}$ $k_{scL} = 0.050 \text{ dm}^3 \text{ mol}^{-1} \text{ at } 298.15 \text{ K}$ <p>at a salt concentration of one mol dm^{-3} and the value decreases with increasing concentration, whereas the data of Manchot <i>et al.</i> (1) at 298.15 K give</p> $k_{scL} = 0.053 \text{ dm}^3 \text{ mol}^{-1}$ <p>at a salt concentration of one mol dm^{-3} and again the value decreases with increasing concentration.</p> Nitrous oxide + water + Ammonium bromide [12124-97-9] <p>This system has been investigated by Manchot <i>et al.</i> (1) at three concentrations at 298.15 K. The value of k_{scL} decreases with increasing concentration and $k_{scL} = 0.0048 \text{ dm}^3 \text{ mol}^{-1}$ at a concentration of one mol dm^{-3}.</p> Nitrous oxide + water + Ammonium sulfate [7783-20-2] <p>This system has been investigated at 298.15 K at two concentrations by Manchot <i>et al.</i> (1). The values of k_{scL} at concentrations of 1.346 and 2.18 mol dm^{-3} are $0.217 \text{ dm}^3 \text{ mol}^{-1}$ and $0.221 \text{ dm}^3 \text{ mol}^{-1}$, respectively.</p> Nitrous oxide + water + Ammonium nitrate [6484-52-2] <p>This system has been investigated by Manchot <i>et al.</i> (1) and by Sada <i>et al.</i> (4) at 298.15 K. There is a slight variation in $k_{sc\alpha}$ (or k_{scL}) between these two groups of workers. The average value of $k_{sc\alpha}$ (or k_{scL}) is $0.032 \pm 0.001 \text{ dm}^3 \text{ mol}^{-1}$.</p> Nitrous oxide + water + Zinc nitrate [7779-88-6] <ul style="list-style-type: none"> Cadmium nitrate [10325-94-7] Copper(II) nitrate [3251-23-8] Nickel(II) sulfate [7786-81-4] Cobalt(II) sulfate [10124-43-3] Iron(II) sulfate [7720-78-7] Iron(III) sulfate [10028-22-5] Manganese(II) sulfate [7785-87-7] Chromium(III) sulfate [10101-53-8] Aluminium sulfate [10043-01-3] Aluminium nitrate [13473-90-0] 	

COMPONENTS:	EVALUATOR:			
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. Electrolyte	Colin L. Young, School of Chemistry, University of Melbourne, Parkville, Victoria 3052, Australia. February 1981			
CRITICAL EVALUATION:				
These systems have all been investigated at two concentrations at 298.15 K by Manchot <i>et al.</i> (1). Values of $k_{scL}/dm^3 mol^{-1}$ are given below. The numbers in parentheses are concentrations in $mol dm^{-3}$.				
Zinc nitrate Cadmium nitrate Copper(II) nitrate Nickel(II) sulfate Cobalt(II) sulfate Iron(II) sulfate Iron(III) sulfate Manganese(II) sulfate Chromium(III) sulfate Aluminium sulfate Aluminium nitrate	0.151 (0.84) 0.232 (0.781) 0.252 (0.69) 0.357 (0.937) 0.363 (0.788) 0.269 (0.72) 0.473 (0.66) 0.255 (0.94) 0.391 (0.57) 0.726 (0.5166) 0.350 (0.4795)	0.156 (1.68) 0.188 (1.562) 0.204 (1.38) 0.312 (1.874) 0.312 (1.576) 0.272 (1.438) 0.461 (1.32) 0.256 (1.93) 0.408 (1.14) 0.735 (0.8141) 0.270 (0.959)		
10. Nitrous oxide + water + Magnesium chloride [7786-30-3]				
This system has been studied by Sada <i>et al.</i> (4) at four concentrations. The salt effect parameters scatter considerably but appear to decrease with increasing concentration and have an approximate value of $0.19 dm^3 mol^{-1}$ at a salt concentration of one $mol dm^{-3}$.				
11. Nitrous oxide + water + Magnesium sulfate [7487-88-9]				
This system has been investigated by three groups. The two concentrations studied by Manchot <i>et al.</i> (1) lead to an average value of k_{scL} of $0.289 dm^3 mol^{-1}$ at 298.15 K. The data of Markham and Kobe (5) give salt effect parameters which show no definite concentration dependence. The average values are:				
T/K	273.15	298.15	313.15	
$k_{sma}/kg mol^{-1}$	0.336	0.289	0.271	
$k_{sca}/dm^3 mol^{-1}$	0.339	0.292	0.274	
Gordon (6) did not give values of the Bunsen coefficient for pure water at the same temperatures for which he studied the aqueous salt solutions but reported smoothed values for both water and the solutions at 278.15, 283.15, 288.15 and 293.15 K. The values of the salt effect parameters show some scatter but, in the case of magnesium sulfate solutions, exhibit no definite concentration dependence. The average values of k_{sca} are given below.				
T/K	278.15	283.15	288.15	293.15
$k_{sca}/dm^3 mol^{-1}$	0.285	0.277	0.281	0.314
The accuracy of Gordon values is probably no better than 0.02 and Markham and Kobe (5) and Manchot <i>et al.</i> (1) values are to be preferred and are classified as tentative.				
12. Nitrous oxide + water + Magnesium nitrate [10377-60-3]				
This system has been investigated by Markham and Kobe (5) at 273.15, 298.15 and 313.15 K. The salt effect parameter decreases with increasing concentration and increasing temperature. The salt effect parameters are given by:				

COMPONENTS:

1. Nitrous oxide; N₂O; [10024-97-2]
2. Water; H₂O; [7732-18-5]
3. Electrolyte

EVALUATOR:

Colin L. Young,
School of Chemistry,
University of Melbourne,
Parkville, Victoria 3052,
Australia.

February 1981

CRITICAL EVALUATION:

$$k_{\text{sm}\alpha}/\text{kg mol}^{-1} = 0.224 - 0.013 c_3/\text{mol kg}^{-1} \text{ at } 273.15 \text{ K}$$

$$k_{\text{sm}\alpha}/\text{kg mol}^{-1} = 0.158 - 0.0075 c_3/\text{mol kg}^{-1} \text{ at } 298.15 \text{ K}$$

$$k_{\text{sm}\alpha}/\text{kg mol}^{-1} = 0.1405 - 0.0065 c_3/\text{mol kg}^{-1} \text{ at } 313.15 \text{ K}$$

where c_3 is the concentration of salt. When values of $k_{\text{sc}\alpha}$ are calculated from the data of Markham and Kobe (5), it is found that the values are more or less independent of concentrations, the average values being 0.216, 0.157 and 0.140 dm³ mol⁻¹ at 273.15, 298.15 and 313.15 K, respectively.

The salt effect parameters, k_{scL} , calculated from Manchot *et al.* (1) data at 298.15 K are 0.136 and 0.140 dm³ mol⁻¹ at concentrations of 0.97 and 1.93 mol dm⁻³, respectively. The data of Markham and Kobe (5) are classified as tentative and are to be preferred to those of Manchot *et al.* (1).

13. Nitrous oxide + water + Calcium chloride [10043-52-4]

This system has been investigated by Manchot *et al.* (1) at 298.15 K, by Gordon (6) at temperatures between 281.26 K to 295.46 K and by Sada *et al.* (4) at 298.15 K. The data of Manchot *et al.* (1) lead to a value of k_{scL} of 0.210 dm³ mol⁻¹ whereas the data of Sada *et al.* (4) lead to a value of $k_{\text{sc}\alpha}$ of 0.208 dm³ mol⁻¹ at the same temperature.

Gordon (6) did not give values of the Bunsen coefficient for pure water at the same temperatures as he studied the aqueous salt solutions but reported "smoothed" values for both water and the solutions at 278.15, 283.15, 288.15 and 293.15 K. The values of the salt effect parameters show some scatter ($\sim \pm 0.01-0.02$ dm³ mol⁻¹) but, in the case of calcium chloride solutions, exhibit no definite concentration dependence. The average values of $k_{\text{sc}\alpha}$ are given below.

T/K	278.15	283.15	288.15	293.15
$k_{\text{sc}\alpha}/\text{dm}^3 \text{ mol}^{-1}$	0.228	0.216	0.210	0.230

The data of Manchot *et al.* (1) and Sada *et al.* (4) are classified as tentative and are to be preferred to those of Gordon (6).

14. Nitrous oxide + water + Calcium nitrate [10124-37-5]

This system has been investigated at 298.15 K by Manchot *et al.* (1) and the salt effect parameter

$$k_{\text{scL}} = 0.160 \text{ dm}^3 \text{ mol}^{-1}$$

does not show significant concentration dependence.

15. Nitrous oxide + water + Strontium chloride [10476-85-4]

This system has been studied by Gordon (6) who gave "smoothed" values of the Bunsen coefficient of water and aqueous solutions at 278.15, 283.15, 288.15 and 293.15 K. The salt effect parameters appear to decrease with increasing concentration. Values calculated from Gordon's (6) "smoothed" values are given below.

COMPONENTS:		EVALUATOR:			
1. Nitrous oxide; N ₂ O; [10024-97-2]		Colin L. Young,			
2. Water; H ₂ O; [7732-18-5]		School of Chemistry,			
3. Electrolyte		University of Melbourne,			
		Parkville, Victoria 3052,			
		Australia.			
		February 1981			
CRITICAL EVALUATION:					
		Values of $k_{sc\alpha}/\text{dm}^3 \text{ mol}^{-1}$			
T/K		278.15	283.15	288.15	293.15
Concentration /wt-%					
	3.309 (0.22) *	0.334	0.313	0.300	0.357
	5.732 (0.38)	0.291	0.297	0.279	0.259
	13.239 (0.94)	0.245	0.240	0.240	0.263
* approximate concentration/mol dm ⁻³					
16. Nitrous oxide + water + Barium chloride [10361-37-2]					
This system has also been investigated at 298.15 K by Manchot <i>et al.</i> and the value of $k_{scL}/\text{dm}^3 \text{ mol}^{-1}$ at a concentration of one mol dm ⁻³ is 0.24. The value of $k_{scL}/\text{dm}^3 \text{ mol}^{-1}$ appears to decrease with increasing concentration.					
17. Nitrous oxide + water + Lithium chloride [7447-41-8]					
This system has been studied by Gordon (6) and by Geffcken (2). The results of Geffcken (2) give salt effect parameters, $k_{scL}/\text{dm}^3 \text{ mol}^{-1}$ of 0.096 and 0.091 at 288.16 and 298.16 K, respectively. Gordon (6) gave "smoothed" values of the Bunsen coefficient of water and aqueous solutions at four temperatures. The salt effect parameters appear to decrease with increasing concentration. Values of $k_{sc\alpha}/\text{dm}^3 \text{ mol}^{-1}$ are given below.					
T/K		278.15	283.15	288.15	293.15
Concentration /wt-%					
	1.346 (0.32) *	0.142	0.139	0.145	0.203
	3.853 (0.93)	0.103	0.100	0.100	0.118
	11.476 (2.9)	0.089	0.088	0.087	0.127
* approximate concentration/mol dm ⁻³					
18. Nitrous oxide + water + Lithium sulfate [10377-48-7]					
This system has been investigated by Gordon (6) who gave "smoothed" values of the Bunsen coefficient of water and aqueous solutions at four temperatures. The salt effect parameters appear to decrease with increasing concentration. Values of $k_{sc\alpha}/\text{dm}^3 \text{ mol}^{-1}$ are given below.					
T/K		278.15	283.15	288.15	293.15
Concentration /wt-%					
	2.369 (0.22) *	0.314	0.297	0.297	0.381
	5.463 (0.52)	0.266	0.270	0.278	0.313
	8.560 (0.84)	0.273	0.262	0.254	0.264
* approximate concentration/mol dm ⁻³					

COMPONENTS:	EVALUATOR:
1. Nitrous oxide; N ₂ O; [10024-97-2]	Colin L. Young, School of Chemistry, University of Melbourne, Parkville, Victoria 3052, Australia.
2. Water; H ₂ O; [7732-18-5]	February 1981
3. Electrolyte	

CRITICAL EVALUATION:

19. Nitrous oxide + water + Sodium chloride [7647-14-5]

This system has been investigated by four groups. The least satisfactory measurements are those of Roth (3) which give rise to salt effect parameters which show considerable scatter. His data are classified as doubtful. The data of Manchot *et al.* (1) at 298.15 K give a salt effect parameter, $k_{sCL}/\text{dm}^3 \text{ mol}^{-1}$ of 0.117 which decreases to 0.113 at the highest concentration of 4.32 mol dm^{-3} . The data of Markham and Kobe (5) lead to salt effect parameters as given below. The values of $k_{s\alpha}$ decrease with increasing concentration and increasing temperature.

T/K	273.15	298.15	313.15
Conc./mol kg ⁻¹			
1.0	0.150	0.127	0.119
2.0	0.144	0.116	0.108
3.0	0.136	0.111	0.104

When values of $k_{s\alpha}$ are calculated from the data of Markham and Kobe (5) it is found that the salt effect parameters are less dependent on salt concentration and are given by

$$k_{s\alpha}/\text{dm}^3 \text{ mol}^{-1} = 0.157 - 0.0046 c_3/\text{mol dm}^{-3} \text{ at } 273.15 \text{ K}$$

$$k_{s\alpha}/\text{dm}^3 \text{ mol}^{-1} = 0.134 - 0.0054 c_3/\text{mol dm}^{-3} \text{ at } 298.15 \text{ K}$$

$$\text{and } k_{s\alpha}/\text{dm}^3 \text{ mol}^{-1} = 0.121 - 0.0036 c_3/\text{mol dm}^{-3} \text{ at } 313.15 \text{ K.}$$

This system has also been studied by Gordon (6) who gave "smoothed" values of the Bunsen coefficient of water and aqueous solutions at four temperatures. The salt effect parameters appear to decrease with increasing concentration. Values of $k_{s\alpha}/\text{dm}^3 \text{ mol}^{-1}$ are given below.

T/K	278.15	283.15	288.15	293.15
Conc./wt-%				
6.20 (1.1) *	0.123	0.117	0.112	0.119
8.88 (1.6)	0.115	0.113	0.115	0.125
12.78 (2.4)	0.099	0.099	0.100	0.106

* approximate concentration/mol dm⁻³

The concentration of the salt effect parameters is greater for values calculated from Gordon's (6) data than for values from Markham and Kobe's (5) data. The data of Markham and Kobe (5) are probably the most reliable and are classified as tentative.

20. Nitrous oxide + water + Sodium bromide [7647-15-6]

This system has been investigated by Manchot *et al.* (1). The salt effect parameter, k_{sCL} , is $0.109 \text{ dm}^3 \text{ mol}^{-1}$ at a salt concentration of one mol dm⁻³ and 298.15 K. The parameter decreases only marginally with increasing concentration to a value of $0.107 \text{ dm}^3 \text{ mol}^{-1}$ at a salt concentration of 4 mol dm^{-3} .

21. Nitrous oxide + water + Sodium sulfate [7757-82-6]

This system has been investigated by three groups. Gordon (6) gave

COMPONENTS:		EVALUATOR:			
1. Nitrous oxide; N ₂ O; [10024-97-2]		Colin L. Young,			
2. Water; H ₂ O; [7732-18-5]		School of Chemistry,			
3. Electrolyte		University of Melbourne,			
		Parkville, Victoria 3052,			
		Australia.			
		February 1981			
CRITICAL EVALUATION:					
<p>"smoothed" values of the Bunsen coefficient of water and aqueous solutions at four temperatures. Although the scatter is fairly great the salt effect parameters appear to decrease with increasing concentration. Values of $k_{sca}/dm^3 mol^{-1}$ are given below.</p>					
T/K	278.15	283.15	288.15	293.15	
Conc./wt-%					
5.77 (0.43) *	0.307	0.311	0.293	0.339	
8.53 (0.65)	0.306	0.315	0.322	0.341	
12.44 (0.97)	0.299	0.285	0.278	0.297	
* approximate concentration/mol dm ⁻³					
<p>The data of Manchot <i>et al.</i> (1) lead to a value of $k_{sca}/dm^3 mol^{-1}$ at 298.15 K of 0.338 at a concentration of one mol dm⁻³ and the parameter appears to decrease with increasing concentration.</p>					
<p>The salt effect parameters calculated from the data of Markham and Kobe (5) are given below.</p>					
Values of $k_{sma}/kg mol^{-1}$					
T/K	298.15	313.15			
Conc./mol kg ⁻¹					
0.5	0.359	0.338			
1.0	0.338	0.318			
1.5	0.331	0.310			
<p>While these salt effect parameters decrease with increasing concentration the relationship between parameter and concentration is not linear.</p>					
<p>When values of $k_{sca}/dm^3 mol^{-1}$ are calculated from Markham and Kobe's data (5) the salt effect parameters are less concentration-dependent than values of $k_{sma}/dm^3 mol^{-1}$ and are given below.</p>					
Values of $k_{sca}/dm^3 mol^{-1}$					
T/K	298.15	313.15			
Conc./mol kg ⁻¹					
0.5	0.364	0.345			
1.0	0.348	0.331			
1.5	0.346	0.328			
22. Nitrous oxide + water + Sodium sulfate [7757-82-6] + Sulfuric acid [7664-93-9]					
<p>Kobe and Kenton (8) made measurements of the solubility of nitrous oxide in a mixture that contained 1.76 mol kg⁻¹ of Na₂SO₄ and 0.90 mol kg⁻¹ of H₂SO₄. Using the sum of the component molalities gives the salt effect parameter, $k_{sma} = 0.215$. This value is slightly greater than would be expected if</p>					
$k_{sma} m(\text{overall}) = \sum (k_{sma})_i m_i$					
<p>The value appears reasonable and is classified as tentative.</p>					

COMPONENTS:

1. Nitrous oxide; N₂O; [10024-97-2]
2. Water; H₂O; [7732-18-5]
3. Electrolyte

EVALUATOR:

Colin L. Young,
School of Chemistry,
University of Melbourne,
Parkville, Victoria 3052,
Australia.
February 1981

CRITICAL EVALUATION:

23. Nitrous oxide + water + Sodium nitrate [7631-99-4]

This system has been investigated by Knopp (7) at 293.15 K at four concentrations up to 1.12 mol dm⁻³. The salt effect parameter does not show significant concentration dependence and the average value of $k_{sc\alpha}/\text{dm}^3 \text{ mol}^{-1}$ is 0.094. Similarly the salt effect parameter calculated from the data of Manchot *et al.* (1) at 298.15 K show no discernible concentration dependence and has a value of $k_{scL}/\text{dm}^3 \text{ mol}^{-1}$ of 0.093.

24. Nitrous oxide + water + Sodium phosphate [7601-54-9] + Sodium hydrogen phosphate [7558-79-4]

These two systems have only been studied at one concentration at 298.15 K by Manchot *et al.* (1). The salt effect parameters, $k_{scL}/\text{dm}^3 \text{ mol}^{-1}$ are 0.53 and 0.37 for sodium phosphate and sodium hydrogen phosphate, respectively.

25. Nitrous oxide + water + Sodium carbonate [497-19-8] + Sodium bicarbonate [144-55-8]

In order to evaluate the data for this system it is convenient to write

$$\log (\alpha^{\circ}/\alpha) = K_s \sum_i I_i$$

where I_i is the ionic strength of ions of species i and K_s is the overall salt effect parameter. Values of K_s vary with R , the ratio of the concentration of bicarbonate ion to that of the carbonate and are given below.

$$T/K = 298.15$$

R	0	0.2	1.0	2.0	5.0
$K_s/\text{dm}^3 \text{ g-ion}^{-1}$	0.118	0.118	0.129	0.149	0.181

The data of Hikita *et al.* (9) appear to be reliable and were determined with an apparatus of proven design for moderate accuracy and are therefore classified as tentative.

26. Nitrous oxide + water + Potassium hydroxide [1310-58-3]

This system has been studied by Geffcken (2) at 288.16 and 298.15 K. The salt effect parameters increase with increasing concentration and are given by

$$k_{scL}/\text{dm}^3 \text{ mol}^{-1} = 0.120 + 0.024 (c/\text{mol dm}^{-3}) \text{ at } 288.16 \text{ K}$$

$$\text{and } k_{scL}/\text{dm}^3 \text{ mol}^{-1} = 0.112 + 0.0206 (c/\text{mol dm}^{-3}) \text{ at } 298.15 \text{ K.}$$

27. Nitrous oxide + water + Potassium chloride [7447-40-7]

This system has been investigated by four groups of workers. Gordon (6) gave "smoothed" values of the Bunsen coefficient of water and aqueous solutions at four temperatures. The salt effect parameters appear to decrease with increasing concentration but the scatter is too great to allow a meaningful equation to be derived. Values of $k_{sc\alpha}/\text{dm}^3 \text{ mol}^{-1}$ are given below.

COMPONENTS:	EVALUATOR:
1. Nitrous oxide; N ₂ O; [10024-97-2]	Colin L. Young,
2. Water; H ₂ O; [7732-18-5]	School of Chemistry,
3. Electrolyte	University of Melbourne,
	Parkville, Victoria 3052,
	Australia.
	February 1981

CRITICAL EVALUATION:

T/K	278.15	283.15	288.15	293.15
Conc./wt-%				
4.90 (0.68) *	0.139	0.129	0.122	0.140
7.64 (1.04)	0.126	0.114	0.111	0.140
14.58 (2.15)	0.104	0.095	0.090	0.096
22.08 (3.41)	0.089	0.088	0.088	0.091

* approximate concentration/mol dm⁻³

Geffcken's data lead to salt effect parameters of $k_{sCL}/\text{dm}^3 \text{mol}^{-1}$ of 0.102 and 0.098 at 288.16 K and 298.16 K, respectively, at a concentration of one mol dm⁻³. These parameters decrease with increasing concentration but the data are too limited to allow evaluation of the concentration-dependence of k_{sCL} .

Markham and Kobe's data (5) yield values of $k_{s\alpha}$ which decrease with increasing concentration and values of $k_{s\alpha}/\text{kg mol}^{-1}$ are given by

$$k_{s\alpha}/\text{kg mol}^{-1} = 0.125 - 0.0075c_3/\text{mol kg}^{-1} \text{ at } 273.15 \text{ K}$$

$$k_{s\alpha}/\text{kg mol}^{-1} = 0.101 - 0.006c_3/\text{mol kg}^{-1} \text{ at } 298.15 \text{ K}$$

$$k_{s\alpha}/\text{kg mol}^{-1} = 0.101 - 0.0077c_3/\text{mol kg}^{-1} \text{ at } 313.15 \text{ K}$$

where c_3 is the concentration of salt solution.

When values of $k_{s\alpha}/\text{dm}^3 \text{mol}^{-1}$ are calculated from Markham and Kobe's data (5), the salt effect parameters are less concentration-dependent than values of $k_{s\alpha}/\text{kg mol}^{-1}$ and are given by

$$k_{s\alpha}/\text{dm}^3 \text{mol}^{-1} = 0.1253 - 0.0045c_3/\text{mol kg}^{-1} \text{ at } 273.15 \text{ K}$$

$$k_{s\alpha}/\text{dm}^3 \text{mol}^{-1} = 0.1018 - 0.0035c_3/\text{mol kg}^{-1} \text{ at } 298.15 \text{ K}$$

$$\text{and } k_{s\alpha}/\text{dm}^3 \text{mol}^{-1} = 0.1033 - 0.0055c_3/\text{mol kg}^{-1} \text{ at } 313.15 \text{ K.}$$

The data of Manchot *et al.* (1) lead to values of the salt effect parameter as given by

$$k_{s\alpha}/\text{dm}^3 \text{mol}^{-1} = 0.092 - 0.002c_3/\text{mol dm}^{-3}.$$

The salt effect parameters from the work of Geffcken (2), Manchot *et al.* (1) and Markham and Kobe (5) agree fairly well at 298.15 K and at a concentration of one mol dm⁻³. However, the data of Gordon (6) are considerably greater and are classified as doubtful.

28. Nitrous oxide + water + Potassium bromide [7758-02-3]

This system has been studied by Geffcken (2) at 288.16 and 298.16 K. The salt effect parameter appears to decrease with increasing concentration but the scatter is too great for an accurate estimation of the concentration dependence. The values of $k_{sCL}/\text{dm}^3 \text{mol}^{-1}$ at a concentration of one mol dm⁻³ are 0.093 and 0.087 at 288.16 and 298.16 K, respectively. The parameters calculated from the data of Manchot *et al.* (1) also appear to decrease with increasing concentration but the scatter in this case is also too large for an accurate estimation of the concentration dependence. The value of $k_{sCL}/\text{dm}^3 \text{mol}^{-1}$ at 298.15 K is 0.083.

COMPONENTS:		EVALUATOR:			
1. Nitrous oxide; N ₂ O; [10024-97-2]		Colin L. Young,			
2. Water; H ₂ O; [7732-18-5]		School of Chemistry,			
3. Electrolyte		University of Melbourne,			
		Parkville, Victoria 3052,			
		Australia.			
		February 1981			
CRITICAL EVALUATION:					
29. Nitrous oxide + water + Potassium iodide [7681-11-0]					
The salt effect parameter calculated from the data of Sada <i>et al.</i> (4) are given below. They appear to decrease with increasing concentration and then increase at the highest concentration.					
$k_{sca}/dm^3 mol^{-1}$	0.0846	0.0814	0.0787	0.0782	0.0807
conc./mol dm ⁻³	0.644	1.093	1.661	2.196	2.859
The salt effect parameters calculated from Geffcken's data (2) give average values of $k_{scl}/dm^3 mol^{-1}$ of 0.091 and 0.082 at 288.16 and 298.16 K, respectively.					
30. Nitrous oxide + water + Potassium sulfate [7778-80-5]					
This system has been studied by two groups but only to a very limited extent. Manchot <i>et al.</i> (1) studied only one concentration at 298.15 K which gives a salt effect parameter of 0.29 dm ³ mol ⁻¹ . Gordon (6) studied two low concentrations and values of $k_{sca}/dm^3 mol^{-1}$ calculated from his smoothed data are given below.					
T/K	278.15	283.15	288.15	293.15	
Conc./wt-%					
2.623 (0.15) *	0.295	0.287	0.299	0.370	
4.784 (0.29)	0.268	0.285	0.305	0.368	
* approximate concentration/mol dm ⁻³					
Both sets of data are classified as doubtful.					
31. Nitrous oxide + water + Potassium nitrate [7757-79-1]					
Values of the salt effect parameters from the four studies of this system are given below. There is approximate agreement between the values of the parameters from the results of Manchot <i>et al.</i> (1), Sada <i>et al.</i> (4) and Knopp (7) near concentrations of one mol dm ⁻³ but the data of Markham and Kobe (5) give smaller values. The concentration dependence of k_{sca} (or k_{scl}) is moderately large for values calculated from the data of Markham and Kobe (5) and Manchot <i>et al.</i> (1) but insignificant when calculated from the data of Sada <i>et al.</i> (4). The data of Knopp (7) are only over a small range of concentration and the values scatter too greatly to enable any statement to be made of the concentration dependence of k_{sca} .					
Author	T/K	Conc./mol dm ⁻³	$k_{sca}/dm^3 mol^{-1}$	$k_{sma}/kg mol^{-1}$	
Knopp	293.15	0.1061	0.064	-	
		0.2764	0.070	-	
		0.5630	0.072	-	
		1.1683	0.070	-	
Manchot <i>et al.</i>	298.15	1.02	0.073	-	
		2.15	0.066	-	
Sada <i>et al.</i>	298.15	1.381	0.069	-	
		2.645	0.069	-	
(cont.)					

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. Electrolyte	EVALUATOR: Colin L. Young, School of Chemistry, University of Melbourne, Parkville, Victoria 3052, Australia. February 1981
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CRITICAL EVALUATION:

Author	T/K	Conc./mol dm ⁻³	k _{scα} /dm ³ mol ⁻¹	k _{smα} /kg mol ⁻¹
Markham and Kobe	273.35	0.2*	0.122	0.121
		0.5*	0.102	0.100
		1.0*	0.093	0.090
	298.15	1.0*	0.059	0.056
		2.0*	0.054	0.050
		3.0*	0.050	0.045
	323.15	1.0*	0.047	0.045
		2.0*	0.042	0.039
		3.0*	0.041	0.036

* concentration/mol kg⁻¹

32. Nitrous oxide + water + Potassium carbonate [584-08-7]
 + Potassium bicarbonate [298-14-6]

This system has been studied by Joosten and Danckwerts (10). This author analysed their data according to an equation which may be written

$$\log \alpha_o/\alpha = KI$$

where K is the overall salt effect parameter and I is the ionic strength of the solution. The value of K was $0.105 \pm 0.001 \text{ dm}^3 \text{ g-ion}^{-1}$ for equal concentrations of carbonate and bicarbonate.

33. Nitrous oxide + water + Potassium periodate [7790-21-8]

This system has been studied at one concentration ($0.0164 \text{ mol dm}^{-3}$) by Manchot *et al.* (1). The small concentration and consequent slight change in Bunsen coefficient make an accurate estimation of the salt effect parameter impossible.

34. Nitrous oxide + water + Rubidium chloride [7791-11-9]

This system has been studied by Geffcken (2) at 288.16 and 298.16 K. The values of k_{scL} decrease with increase in concentration. The value of k_{scL} at a concentration of approximately one mol dm⁻³ are $0.094 \text{ dm}^3 \text{ mol}^{-1}$ and $0.089 \text{ dm}^3 \text{ mol}^{-1}$ at 288.16 and 298.16 K, respectively.

35. Nitrous oxide + water + Caesium chloride [7647-17-8]

This system has been studied by Geffcken (2) at two concentrations near 0.5 mol dm^{-3} . The values of the salt effect parameter k_{scL}/dm³ mol⁻¹ were 0.081 and 0.076 at 288.16 and 298.16 K, respectively. The data are classified as tentative.

References

- Manchot, von W.; Jahrstorfer, M.; Zepter, H. Z. *Anorg. Allg. Chem.* 1924, *141*, 45.
- Geffcken, G. Z. *Phys. Chem.* 1904, *49*, 257.

COMPONENTS:

1. Nitrous oxide; N₂O; [10024-97-2]
2. Water; H₂O; [7732-18-5]
3. Electrolyte.

EVALUATOR:

Colin L. Young.
 School of Chemistry
 University of Melbourne,
 Parkville, Victoria 3052.
 AUSTRALIA:
 February, 1981

CRITICAL EVALUATION

3. Roth, W. Z. *Phys. Chem.* 1897, 24, 114.
4. Sada, E.; Ando, N.; Kito, S. *J. Appl. Chem. Biotechnol.* 1972, 22, 1185.
5. Markham, A.E.; Kobe, K.A. *J. Amer. Chem. Soc.* 1941, 63, 449.
6. Gordon, V. Z. *Phys. Chem.* 1895, 18, 1.
7. Knopp, W. Z. *Phys. Chem.* 1904, 48, 97.
8. Kobe, K.A.; Kenton, F.H. *Ind. Eng. Chem.* 1938, 10, 76
9. Hikita, H.; Asai, S.; Ishikawa, H.; Esaka, H. *J. Chem. Engng. Data.* 1974, 19, 89.
10. Joosten, G.E.H.; Danckwerts, P.V. *J. Chem. Engng. Data.* 1972, 17, 452.

NOTE:

Kreitus and co-workers (11,12) have recently investigated the solubility of nitrous oxides in concentrated salt solutions. The concentration dependence of the salt effect parameter for potassium chloride is in fair agreement with that of Markham and Kobe (5) whereas the salt effect parameters for lithium chloride is in marked disagreement with those obtained from the data of Gordon (6) and also considerably smaller than that obtained from Geffcken's data (2). The salt effect parameter for cesium chloride is in reasonable agreement with that obtained from the data of Geffcken (2).

The presentation of the data of Kreitus and co-workers (11,12) is such that less approximation is required to calculate k_{sma} rather than k_{sca} . Values of k_{sma} are given below.

LiCl		KCl		KF		CsCl	
Conc./mol kg ⁻¹ (water)	k_{sma}	Conc./mol kg ⁻¹ (water)	k_{sma}	Conc./mol kg ⁻¹ (water)	k_{sma}	Conc./mol kg ⁻¹ (water)	k_{sma}
0.97	0.070	0.51	0.098	1.21	0.136	0.50	0.084
2.66	0.069	1.03	0.094	5.84	0.131	0.93	0.106
5.44	0.077	2.13	0.081	7.78	0.107	2.45	0.093
9.10	0.073	2.70	0.082	12.33	0.118	4.85	0.076
12.2	0.071	3.61	0.077			7.25	0.081
15.5	0.072	4.63	0.076				
18.7	0.068						
19.8	0.067						

These measurements are classified as tentative.

11. Kreitus, I.; Gorbovitskalya, T.I. *Latv. PRS. Zinat. Akad. Vestis. Khim. Ser.* 1979, 664.
12. Kreitus, I.; Abramnikov, A. *Latv. PRS. Zinat. Akad. Vestis. Khim. Ser.* 1980, 238

COMPONENTS:		EVALUATOR:	
Nitrous oxide; N ₂ O; [10024-97-2]		Colin Young	
Water; H ₂ O; [7732-18-5]		School of Chemistry	
Acids		University of Melbourne	
		Parkville,	
		<u>AUSTRALIA</u>	
		March, 1981	
<p>In addition to data discussed in the preceding evaluation Seidell (1) quotes values of Bunsen coefficients for the solubility of nitrous oxide in aqueous solutions of acids at 25°C (298.2K). It is not clear whether the exact source was a private communication or a thesis but the numerical data do not appear in the reference given i.e. "Manchot Jahrstorfer and Zepfer 1924" (2) although graphs in the original indicate the existence of experimental result for these systems. The data are reported below and Setschenow salt effect parameters have been calculated as in the preceding evaluation.</p>			
Conc. of acid /g dm ⁻³	Specific gravity before adsorption d_u^{25}	10 ² x Bunsen coefficient, 10 ² σ	k _{scα} /dm ³ mol ⁻¹
Nitric acid, HNO ₃ ; [7697-37-2]			
69.32	1.0351	54.1	-0.007
142.42	1.0731	55.1	-0.007
229.38	1.1191	56.2	-0.007
Hydrochloric acid; HCl; [7647-01-0]			
39.387	1.0168	51.2	0.018
77.318	1.0335	50.1	0.013
167.03	1.0741	49.9	0.007
237.06	1.1050	52.1	0.001
Periodic acid; HIO ₄ ; [13444-71-8]			
204.21	1.1740	38.7	0.132
470.23	1.4066	23.8	0.143
Sulfuric acid; H ₂ SO ₄ ; [7664-93-9]			
110.84	1.0680	44.2	0.073
269.74	1.1630	38.7	0.051
454.15	1.2687	38.2	0.031
588.53	1.3363	39.9	0.021
Phosphoric acid; H ₃ PO ₄ ; [7664-38-2]			
114.73	1.0593	46.4	0.053
186.31	1.0964	43.8	0.046
495.20	1.2557	35.3	0.036
<p>The values of k_{scα} from the present data agree with those of Geffcken (2) for nitric acid. However values of the salt effect parameter for sulfuric acid and hydrochloric acid do not agree with the values obtained from Geffcken's results. Although the values for both sets of results for both acid show a decrease for an increase in concentration.</p>			
<u>REFERENCES:</u>			
1. Seidell, A. <i>Solubilities of Inorganic and Metal Organic Compounds</i> , 3rd. edn. Vol. 1, 1953, p.1136.			
2. Geffcken, G. Z. <i>Phys. Chem.</i> 1904, 49, 271.			

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]; 3. Hydrogen chloride; HCl; [7647-01-0]	ORIGINAL MEASUREMENTS: Geffcken, G. Z. Phys. Chem. <u>1904</u> , 49, 257-302.																													
VARIABLES: Temperature, concentration	PREPARED BY: W. Gerrard/C. L. Young																													
EXPERIMENTAL VALUES: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">T/K</th> <th style="text-align: left;">Conc. of acid/mol dm⁻³ (soln.)</th> <th style="text-align: left;">Ostwald coefficient, L</th> </tr> </thead> <tbody> <tr> <td rowspan="6" style="vertical-align: top;">288.16</td> <td>0.549</td> <td>0.7550</td> </tr> <tr> <td>0.550</td> <td>0.7528</td> </tr> <tr> <td>1.089</td> <td>0.7360</td> </tr> <tr> <td>1.093</td> <td>0.7347</td> </tr> <tr> <td>2.300</td> <td>0.7103</td> </tr> <tr> <td>2.340</td> <td>0.7122</td> </tr> <tr> <td rowspan="6" style="vertical-align: top;">298.16</td> <td>0.549</td> <td>0.5775</td> </tr> <tr> <td>0.550</td> <td>0.5759</td> </tr> <tr> <td>1.089</td> <td>0.5670</td> </tr> <tr> <td>1.093</td> <td>0.5657</td> </tr> <tr> <td>2.300</td> <td>0.5546</td> </tr> <tr> <td>2.340</td> <td>0.5564</td> </tr> </tbody> </table>		T/K	Conc. of acid/mol dm ⁻³ (soln.)	Ostwald coefficient, L	288.16	0.549	0.7550	0.550	0.7528	1.089	0.7360	1.093	0.7347	2.300	0.7103	2.340	0.7122	298.16	0.549	0.5775	0.550	0.5759	1.089	0.5670	1.093	0.5657	2.300	0.5546	2.340	0.5564
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<p>COMPONENTS:</p> <ol style="list-style-type: none"> Nitrous oxide; N_2O; [10024-97-2] Water; H_2O; [7732-18-5] Sulfuric acid; H_2SO_4; [7664-93-9] 	<p>ORIGINAL MEASUREMENTS:</p> <p>Geffcken, G. <i>Z. Phys. Chem.</i> <u>1904</u>, 49, 257-302.</p>																																													
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<p>EXPERIMENTAL VALUES:</p> <table border="1"> <thead> <tr> <th>T/K</th> <th>Conc of acid / mol dm³</th> <th>Ostwald coefficient, L</th> </tr> </thead> <tbody> <tr> <td rowspan="10">288.16</td> <td>0.2615</td> <td>0.7328</td> </tr> <tr> <td>0.2630</td> <td>0.7340</td> </tr> <tr> <td>0.5250</td> <td>0.6997</td> </tr> <tr> <td>0.5252</td> <td>0.6984</td> </tr> <tr> <td>1.0210</td> <td>0.6440</td> </tr> <tr> <td>1.0235</td> <td>0.6428</td> </tr> <tr> <td>1.4855</td> <td>0.6024</td> </tr> <tr> <td>1.4815</td> <td>0.6030</td> </tr> <tr> <td>1.9485</td> <td>0.5648</td> </tr> <tr> <td>1.9865</td> <td>0.5640</td> </tr> <tr> <td rowspan="10">298.16</td> <td>0.2615</td> <td>0.5648</td> </tr> <tr> <td>0.2630</td> <td>0.5657</td> </tr> <tr> <td>0.5250</td> <td>0.5426</td> </tr> <tr> <td>0.5252</td> <td>0.5419</td> </tr> <tr> <td>1.0210</td> <td>0.5083</td> </tr> <tr> <td>1.0235</td> <td>0.5087</td> </tr> <tr> <td>1.4855</td> <td>0.4819</td> </tr> <tr> <td>1.4815</td> <td>0.4820</td> </tr> <tr> <td>1.9485</td> <td>0.4569</td> </tr> <tr> <td>1.9865</td> <td>0.4577</td> </tr> </tbody> </table>		T/K	Conc of acid / mol dm ³	Ostwald coefficient, L	288.16	0.2615	0.7328	0.2630	0.7340	0.5250	0.6997	0.5252	0.6984	1.0210	0.6440	1.0235	0.6428	1.4855	0.6024	1.4815	0.6030	1.9485	0.5648	1.9865	0.5640	298.16	0.2615	0.5648	0.2630	0.5657	0.5250	0.5426	0.5252	0.5419	1.0210	0.5083	1.0235	0.5087	1.4855	0.4819	1.4815	0.4820	1.9485	0.4569	1.9865	0.4577
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<p>METHOD APPARATUS/PROCEDURE:</p> <p>Measurement of volume of gas absorbed by the aqueous solution. Detailed description and diagram given in source.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <ol style="list-style-type: none"> Self prepared and attested. <p>ESTIMATED ERROR:</p> <p>REFERENCES.</p>																																													

COMPONENTS: 1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5]; 3. Nitric acid; HNO_3 ; [7697-37-2]	ORIGINAL MEASUREMENTS: Geffcken, G. <i>Z. Phys. Chem.</i> <u>1904</u> , 49, 257-302.	
VARIABLES: Temperature, concentration	PREPARED BY: W. Gerrard/C. L. Young	
EXPERIMENTAL VALUES:		
T/K	Conc. of acid/mol dm^{-3} (soln.)	Ostwald coefficient, L
288.16	0.610 0.614 1.253 1.254 2.405 2.435	0.7770 0.7766 0.7767 0.7767 0.7735 0.7737
298.16	0.610 0.614 1.253 1.254 2.405 2.435	0.5969 0.5980 0.6045 0.6061 0.6156 0.6149
AUXILIARY INFORMATION		
METHOD / APPARATUS / PROCEDURE: Measurement of volume of N_2O absorbed by the aqueous solution. Detailed description and diagram given in source.	SOURCE AND PURITY OF MATERIALS: 1. Nitrous oxide self prepared and attested.	
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COMPONENTS: 1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5]; 3. Phosphoric acid; H_3PO_4 ; [7664-38-2]	ORIGINAL MEASUREMENTS: Roth, W. Z. Phys. Chem. <u>1897</u> , 24, 114-151.																																																								
VARIABLES: Temperature, concentration	PREPARED BY: W. Gerrard																																																								
EXPERIMENTAL VALUES: $t = T/K - 273.16$; density = d ; α = Bunsen coefficient. <u>Concn. of phosphoric acid, %: 3.098</u> Change of d with t : $d = 1.01779 - 0.000027696t - 0.0000051374t^2$ Change of α with t : $\alpha = 1.2652 - 0.045826t + 0.00067862t^2$ <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;"></td> <td style="width: 15%;">T/K</td> <td style="width: 15%;">298.24</td> <td style="width: 15%;">293.16</td> <td style="width: 15%;">288.13</td> <td style="width: 15%;">283.14</td> <td style="width: 15%;">278.51</td> </tr> <tr> <td></td> <td>α</td> <td>0.5428</td> <td>0.6188</td> <td>0.7313</td> <td>0.8770</td> <td>1.0395</td> </tr> </table> <u>Concn. of phosphoric acid, %: 3.659</u> Change of d with t : $d = 1.02099 - 0.000028273t - 0.0000052916t^2$ Change of α with t : $\alpha = 1.2587 - 0.042209t + 0.0005399t^2$ <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;"></td> <td style="width: 15%;">T/K</td> <td style="width: 15%;">298.27</td> <td style="width: 15%;">293.31</td> <td style="width: 15%;">288.21</td> <td style="width: 15%;">283.72</td> <td style="width: 15%;">277.80</td> </tr> <tr> <td></td> <td>α</td> <td>0.5392</td> <td>0.6304</td> <td>0.7457</td> <td>0.8725</td> <td>1.0744</td> </tr> </table> <u>Concn. of phosphoric acid, %: 4.465</u> Change of d with t : $d = 1.02570 - 0.000042813t - 0.0000050554t^2$ Change of α with t : $\alpha = 1.2123 - 0.041104t + 0.00055483t^2$ <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;"></td> <td style="width: 15%;">T/K</td> <td style="width: 15%;">298.04</td> <td style="width: 15%;">293.13</td> <td style="width: 15%;">288.25</td> <td style="width: 15%;">283.60</td> <td style="width: 15%;">278.19</td> </tr> <tr> <td></td> <td>α</td> <td>0.5331</td> <td>0.6139</td> <td>0.7184</td> <td>0.8501</td> <td>1.0196</td> </tr> </table> <u>Concn. of phosphoric acid, %: 4.569</u> Change of d with t : $d = 1.02630 - 0.000044265t - 0.0000050466t^2$ Change of α with t : $\alpha = 1.2668 - 0.04376t + 0.00058643t^2$ <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;"></td> <td style="width: 15%;">T/K</td> <td style="width: 15%;">298.31</td> <td style="width: 15%;">292.97</td> <td style="width: 15%;">288.30</td> <td style="width: 15%;">283.17</td> <td style="width: 15%;">277.90</td> </tr> <tr> <td></td> <td>α</td> <td>0.5372</td> <td>0.6294</td> <td>0.7387</td> <td>0.8723</td> <td>1.0726</td> </tr> </table> <div style="text-align: right;">(continued)</div>			T/K	298.24	293.16	288.13	283.14	278.51		α	0.5428	0.6188	0.7313	0.8770	1.0395		T/K	298.27	293.31	288.21	283.72	277.80		α	0.5392	0.6304	0.7457	0.8725	1.0744		T/K	298.04	293.13	288.25	283.60	278.19		α	0.5331	0.6139	0.7184	0.8501	1.0196		T/K	298.31	292.97	288.30	283.17	277.90		α	0.5372	0.6294	0.7387	0.8723	1.0726
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METHOD / APPARATUS / PROCEDURE: Ostwald method, using gas buret and pipet. Measurement of volume of gas before and after absorption. Specific gravity of solution was determined by a Sprengel pyknometer. Vapour pressure of water, adjusted by assuming Raoult's law, was allowed for.	SOURCE AND PURITY OF MATERIALS. 1. N_2O was self prepared and purified. 3. Phosphoric acid was analysed by an appropriate method. ESTIMATED ERROR: REFERENCES:																																																								

COMPONENTS:

1. Nitrous oxide; N_2O ; [10024-97-2]
2. Water; H_2O ; [7732-18-5];
3. Phosphoric acid; H_3PO_4 ; [7664-38-2]

ORIGINAL MEASUREMENTS:

Roth, W.

Z. Phys. Chem. 1897, *24*, 114-151.EXPERIMENTAL VALUES: $t = T/K - 273.16$; density = d ; α = Bunsen coefficient.

Concn. of phosphoric acid, %: 5.137

Change of d with t : $d = 1.02971 - 0.000048262t - 0.000005142t^2$ Change of α with t : $\alpha = 1.2285 - 0.04359t + 0.00062256t^2$

T/K	298.32	293.54	288.08	283.39	277.80
α	0.5259	0.6003	0.7168	0.8417	1.0397

Concn. of phosphoric acid, %: 8.702

Change of d with t : $d = 1.05048 - 0.00009855t - 0.000004480t^2$ Change of α with t : $\alpha = 1.1765 - 0.039698t + 0.00053963t^2$

T/K	298.06	293.15	288.14	283.20	278.22
α	0.5226	0.6012	0.7029	0.8279	0.9894

Concn. of phosphoric acid, %: 8.855

Change of d with t : $d = 1.05139 - 0.00010293t - 0.000004388t^2$ Change of α with t : $\alpha = 1.1836 - 0.040624t + 0.0005469t^2$

T/K	298.05	293.14	288.31	282.90	278.21
α	0.5113	0.5952	0.6937	0.8386	0.9924

Concn. of phosphoric acid, %: 8.963

Change of d with t : $d = 1.05192 - 0.00010204t - 0.0000044433t^2$ Change of α with t : $\alpha = 1.1614 - 0.039037t + 0.0005219t^2$

T/K	298.05	292.97	288.00	283.29	277.61
α	0.5129	0.5961	0.6970	0.8117	0.9980

Concn. of phosphoric acid, %: 9.775

Change of d with t : $d = 1.05707 - 0.00012724t - 0.000003938t^2$ Change of α with t : $\alpha = 1.1601 - 0.039735t + 0.00054612t^2$

T/K	298.12	293.06	288.17	283.42	277.99
α	0.5085	0.5885	0.6867	0.7994	0.9809

Concn. of phosphoric acid, %: 10.001

Change of d with t : $d = 1.05836 - 0.00012525t - 0.0000040003t^2$ Change of α with t : $\alpha = 1.1256 - 0.037196t + 0.0004913t^2$

T/K	298.14	293.14	288.17	283.28	278.11
α	0.5031	0.5780	0.6780	0.7998	0.9535

Concn. of phosphoric acid, %: 13.260

Change of d with t : $d = 1.7852 - 0.00015737t - 0.0000039225t^2$ Change of α with t : $\alpha = 1.0921 - 0.03790t + 0.00054374t^2$

T/K	297.84	293.23	288.03	283.30	278.83
α	0.4879	0.5555	0.6487	0.7647	0.8946

Concn. of phosphoric acid, %: 13.438

Change of d with t : $d = 1.07950 - 0.00016617t - 0.000003869t^2$ Change of α with t : $\alpha = 1.0852 - 0.035824t + 0.00047667t^2$

T/K	298.08	293.06	288.10	283.10	277.97
α	0.4885	0.5632	0.6564	0.7756	0.9239

<p>COMPONENTS:</p> <p>1. Nitrous oxide; N_2O; [10024-97-2] 2. Water; H_2O; [7732-18-5]; 3. Ammonium chloride; NH_4Cl; [12125-02-9]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Geffcken, G. Z. <i>Phys. Chem.</i> <u>1904</u>, 49, 257-302.</p>																					
<p>VARIABLES:</p> <p>Temperature, concentration</p>	<p>PREPARED BY:</p> <p>W. Gerrard/C. L. Young</p>																					
<p>EXPERIMENTAL VALUES:</p> <table border="1"> <thead> <tr> <th>T/K</th> <th>Conc. of salt/mol dm^{-3} (soln.)</th> <th>Ostwald coefficient, L</th> </tr> </thead> <tbody> <tr> <td rowspan="4">288.15</td> <td>0.598</td> <td>0.7203</td> </tr> <tr> <td>0.600</td> <td>0.7185</td> </tr> <tr> <td>1.158</td> <td>0.6800</td> </tr> <tr> <td>1.166</td> <td>0.6775</td> </tr> <tr> <td rowspan="4">298.15</td> <td>0.598</td> <td>0.5532</td> </tr> <tr> <td>0.600</td> <td>0.5504</td> </tr> <tr> <td>1.158</td> <td>0.5223</td> </tr> <tr> <td>1.166</td> <td>0.5200</td> </tr> </tbody> </table>		T/K	Conc. of salt/mol dm^{-3} (soln.)	Ostwald coefficient, L	288.15	0.598	0.7203	0.600	0.7185	1.158	0.6800	1.166	0.6775	298.15	0.598	0.5532	0.600	0.5504	1.158	0.5223	1.166	0.5200
T/K	Conc. of salt/mol dm^{-3} (soln.)	Ostwald coefficient, L																				
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<p style="text-align: center;">AUXILIARY INFORMATION</p>																						
<p>METHOD / APPARATUS / PROCEDURE:</p> <p>Measurement of volume of N_2O absorbed by the aqueous solution. Detailed description and diagram given in source.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>1. Nitrous oxide self prepared and attested.</p> <p>ESTIMATED ERROR:</p> <p>REFERENCES.</p>																					

COMPONENTS:		ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. Ammonium chloride; NH ₄ Cl; [12125-02-9]		Manchot, von W.; Jahrstorfer, M.; Zepter, M. <i>Z. Anorg. Allg. Chem.</i> <u>1924</u> , 141, 45-81.			
VARIABLES:		PREPARED BY:			
Concentration		C. L. Young			
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt /10 ³ mol m ⁻³ (soln.)	Conc. of salt /mol kg ⁻¹ (water)	S ₁ /cm ³	S ₂ /cm ³
298.15	1.0146 1.0312 1.0594	1.07 2.25 4.30	1.1177 2.4703 5.1848	46.6 41.1 34.7	45.9 39.9 32.7
<p>S₁ - volume of nitrous oxide absorbed per 100 cm³ of salt solution</p> <p>S₂ - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S₁ and S₂ were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure. (1). Density of the aqueous solution determined by Sprengel pyknometer.			1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. 2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES: 1. Manchot, W. <i>Z. Anorg. Chem.</i> <u>1924</u> , 141, 38.		

COMPONENTS: 1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5] 3. Ammonium bromide; NH_4Br ; [12124-97-9]		ORIGINAL MEASUREMENTS: Manchot, von W.; Jahrstorfer, M.; Zepter, H. <i>Z. Anorg. Allg. Chem.</i> <u>1924</u> , <i>141</i> , 45-81.			
VARIABLES: Concentration		PREPARED BY: C. L. Young			
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt / 10^2 mol m^{-3} (soln.)	Conc. of salt /mol kg^{-1} (water)	S_1 / cm^3	S_2 / cm^3
298.15	1.0535 1.1088 1.2122	1.04 2.11 4.15	1.1598 2.3387 4.9922	47.4 42.3 35.8	45.0 38.1 29.6
<p>S_1 - volume of nitrous oxide absorbed per 100 cm of salt solution</p> <p>S_2 - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S_1 and S_2 were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE: Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure. (1). Density of the aqueous solution determined by Sprengel pyknometer.			SOURCE AND PURITY OF MATERIALS: 1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. 2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES: 1. Manchot, W. <i>Z. Anorg. Chem.</i> <u>1924</u> , <i>47</i> , 38.		

COMPONENTS:		ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5] 3. Ammonium sulfate; $(NH_4)_2SO_4$; [7783-20-2]		Manchot, von W.; Jahrstorfer, M.; Zepter, H. <i>Z. Anorg. Allg. Chem.</i> <u>1924</u> , <i>141</i> , 45-81.			
VARIABLES:		PREPARED BY:			
Concentration		C. L. Young			
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt / 10^3 mol m^{-3} (soln.)	Conc. of salt /mol kg^{-1} (water)	S_1 / cm^3	S_2 / cm^3
298.15	1.0896 1.1393	1.346 2.18	1.4763 2.5610	27.1 17.5	24.9 15.4
<p>S_1 - volume of nitrous oxide absorbed per 100 cm^3 of salt solution</p> <p>S_2 - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S_1 and S_2 were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
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			ESTIMATED ERROR:		
			REFERENCES:		
			1. Manchot, W. <i>Z. Anorg. Chem.</i> <u>1924</u> , <i>141</i> , 38.		

COMPONENTS: 1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5] 3. Ammonium nitrate; NH_4NO_3 ; [6484-52-2]		ORIGINAL MEASUREMENTS: Manchot, von W.; Jahrstorfer, M.; Zepter, H. <i>Z. Anorg. Allg. Chem.</i> <u>1924</u> , <i>141</i> , 45-81.			
VARIABLES: Concentration		PREPARED BY: C. L. Young			
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt /10 ³ mol m ⁻³ (soln.)	Conc. of salt /mol kg ⁻¹ (water)	S ₁ /cm ³	S ₂ /cm ³
298.15	1.0249 1.0527 1.1040 1.2116	0.89 1.85 3.63 7.40	0.9333 2.0451 4.4627 11.950	49.8 46.4 40.9 30.8	48.6 44.1 37.1 25.4
<p>S₁ - volume of nitrous oxide absorbed per 100 cm³ of salt solution</p> <p>S₂ - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S₁ and S₂ were reduced to conditions of 273.15 K and 101.3 kPa</p>					
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METHOD/APPARATUS/PROCEDURE: Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure (1). Density of the aqueous solution determined by Sprengel pyknometer.			SOURCE AND PURITY OF MATERIALS: 1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. 2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES: 1. Manchot, W. <i>Z. Anorg. Chem.</i> <u>1924</u> , <i>141</i> , 38.		

COMPONENTS: 1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5]; 3. Ammonium nitrate; NH_4NO_3 ; [6484-52-2]	ORIGINAL MEASUREMENTS: Sada, E.; Ando, N.; Kito, S. <i>J. Appl. Chem. Biotechnol.</i> <u>1972</u> , <i>22</i> , 1185-1193.												
VARIABLES: T/K: 298.15 P/kPa : 101.325 (1 atm) Molarity of salt: mol l^{-1}	PREPARED BY: W. Gerrard/C. L. Young												
EXPERIMENTAL VALUES: <table border="1" data-bbox="69 529 1194 754"> <thead> <tr> <th>T/K</th> <th>Concn. of salt/mol l^{-1}</th> <th>Bunsen coefficient, α</th> </tr> </thead> <tbody> <tr> <td rowspan="4">298.15</td> <td>0</td> <td>0.5512 (pure water)</td> </tr> <tr> <td>1.322</td> <td>0.5009</td> </tr> <tr> <td>3.049</td> <td>0.4381</td> </tr> <tr> <td>4.484</td> <td>0.3098*</td> </tr> </tbody> </table> <p>* This appears to be a typographical error, it appears from the the graph given in the original paper that the value should be 0.3908</p>		T/K	Concn. of salt/mol l^{-1}	Bunsen coefficient, α	298.15	0	0.5512 (pure water)	1.322	0.5009	3.049	0.4381	4.484	0.3098*
T/K	Concn. of salt/mol l^{-1}	Bunsen coefficient, α											
298.15	0	0.5512 (pure water)											
	1.322	0.5009											
	3.049	0.4381											
	4.484	0.3098*											
AUXILIARY INFORMATION													
METHOD/APPARATUS/PROCEDURE: Equilibrium established between a measured volume of gas and a measured amount of gas-free liquid in a cell fitted with a magnetic stirrer. Details in source and ref. 1.	SOURCE AND PURITY OF MATERIALS: 1. From commercial cylinder; 99.8 per cent, as attested by gas chromatography. 2. Distilled water was used. 3. Salt was of reagent grade. ESTIMATED ERROR: $\delta T/K = \pm 0.2$; $\delta \alpha = \pm 2\%$ (estimated by compiler). REFERENCES: 1. Onda, K.; Sada, E.; Kobayashi, T.; Kito, S.; Ito, K. <i>J. Chem. Engng. Japan</i> <u>1970</u> , <i>3</i> , 18; 137.												

COMPONENTS: 1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5] 3. Zinc sulfate; $ZnSO_4$; [7733-02-0]			ORIGINAL MEASUREMENTS: Manchot, von W.; Jahrstorfer, M.; Zepfer, H. <i>Z. Anorg. Allg. Chem.</i> <u>1924</u> , 141, 45-81.		
VARIABLES: Concentration			PREPARED BY: C. L. Young		
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt $/10^3 \text{ mol m}^{-3}$ (soln.)	Conc. of salt $/\text{mol kg}^{-1}$ (water)	S_1 $/\text{cm}^3$	S_2 $/\text{cm}^3$
298.15	1.1403 1.2699	0.95 1.84	0.9626 1.8914	29.9 16.9	26.2 13.3
<p> S_1 - volume of nitrous oxide absorbed per 100 cm^3 of salt solution S_2 - volume of nitrous oxide absorbed per 100 g of salt solution Both S_1 and S_2 were reduced to conditions of 273.15 K and 101.3 kPa </p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE: Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure. (1) Density of the aqueous solution determined by Sprengel pycnometer.			SOURCE AND PURITY OF MATERIALS: 1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. 2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES: 1. Manchot, W. <i>Z. Anorg. Chem.</i> <u>1924</u> , 141, 38.		

COMPONENTS:			ORIGINAL MEASUREMENTS:		
1. Nitrous oxide; N_2O ; [10024-97-2]			Manchot, von W.; Jahrstorfer, M.;		
2. Water; H_2O ; [7732-18-5]			Zepter, H.		
3. Zinc nitrate; $Zn(NO_3)_2$; [7779-88-6]			Z. Anorg. Allg. Chem. <u>1924</u> , 141, 45-81.		
VARIABLES:			PREPARED BY:		
Concentration			C. L. Young		
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt / 10^3 mol m^{-3} (soln.)	Conc. of salt /mol kg^{-1} (water)	S_1 / cm^3	S_2 / cm^3
298.15	1.1223 1.2433	0.84 1.68	0.8721 1.8160	39.7 29.1	35.4 23.4
<p>S_1 - volume of nitrous oxide absorbed per 100 cm^3 of salt solution</p> <p>S_2 - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S_1 and S_2 were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
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			1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled.		
			2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES:		
			1. Manchot, W. Z. Anorg. Chem. <u>1924</u> , 141, 38.		

COMPONENTS:		ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N_2O ; [10024-97-2]		Manchot, von W.; Jahrstorfer, M.;			
2. Water; H_2O ; [7732-18-5]		Zepter, H.			
3. Cadmium nitrate; $Cd(NO_3)_2$; [10325-94-7]		Z. Anorg. Allg. Chem. <u>1924</u> , 141, 45-81.			
VARIABLES:		PREPARED BY:			
Concentration		C. L. Young			
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt / 10^3 mol m^{-3} (soln.)	Conc. of salt /mol kg^{-1} (water)	S_1 / cm^3	S_2 / cm^3
298.15	1.1435 1.2874	0.781 1.562	0.8145 1.7014	35.0 27.0	30.6 21.0
<p>S_1 - volume of nitrous oxide absorbed per 100 cm^3 of salt solution</p> <p>S_2 - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S_1 and S_2 were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE: Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure. (1). Density of the aqueous solution determined by Sprengel pyknometer.			SOURCE AND PURITY OF MATERIALS: 1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. 2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES: 1. Manchot, W. Z. Anorg. Chem. <u>1924</u> , 141, 38.		

COMPONENTS: 1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5] 3. Copper(II) nitrate; $Cu(NO_3)_2$; [3251-23-8]		ORIGINAL MEASUREMENTS: Manchot, von W.; Jahrstorfer, M.; Zepter, H. <i>Z. Anorg. Allg. Chem.</i> <u>1924</u> , <i>141</i> , 45-81.			
VARIABLES: Concentration		PREPARED BY: C. L. Young			
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt / 10^3 mol m^{-3} (soln.)	Conc. of salt /mol kg^{-1} (water)	S_1 / cm^3	S_2 / cm^3
298.15	1.1028 1.2049	0.69 1.38	0.7089 1.4587	35.6 27.8	32.3 23.1
<p>S_1 - volume of nitrous oxide absorbed per 100 cm^3 of salt solution</p> <p>S_2 - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S_1 and S_2 were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE: Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure. (1). Density of the aqueous solution determined by Sprengel pyknometer.			SOURCE AND PURITY OF MATERIALS: 1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. 2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES: 1. Manchot, W. <i>Z. Anorg. Chem.</i> <u>1924</u> , <i>141</i> , 38.		

COMPONENTS:		ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N ₂ O; [10024-97-2]		Manchot, von W.; Jahrstorfer, M.;			
2. Water; H ₂ O; [7732-18-5]		Zepter, H.			
3. Nickel(II) sulfate; NiSO ₄ ; [7786-81-4]		Z. Anorg. Allg. Chem. <u>1924</u> , 141, 45-81.			
VARIABLES:		PREPARED BY:			
Concentration		C. L. Young			
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt /10 ³ mol m ⁻³ (soln.)	Conc. of salt /mol kg ⁻¹ (water)	S ₁ /cm ³	S ₂ /cm ³
298.15	1.1355 1.2642	0.937 1.874	0.946 1.9236	24.6 13.8	21.7 10.9
<p>S₁ - volume of nitrous oxide absorbed per 100 cm³ of salt solution</p> <p>S₂ - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S₁ and S₂ were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure. (1). Density of the aqueous solution determined by Sprengel pyknometer.			1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled.		
			2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES:		
			1. Manchot, W. Z. Anorg. Chem. <u>1924</u> , 141, 38.		

COMPONENTS:		ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. Cobalt(II) sulfate; CoSO ₄ ; [10124-43-3]		Manchot, von W.; Jahrstorfer, M.; Zepter, H. <i>Z. Anorg. Allg. Chem.</i> <u>1924</u> , 141, 45-81.			
VARIABLES:		PREPARED BY:			
Concentration		C. L. Young			
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt /10 ³ mol m ⁻³ (soln.)	Conc. of salt /mol kg ⁻¹ (water)	S ₁ /cm ³	S ₂ /cm ³
298.15	1.1131 1.2218	0.788 1.576	0.7952 1.6123	27.5 17.1	24.7 14.0
<p>S₁ - volume of nitrous oxide absorbed per 100 cm³ of salt solution</p> <p>S₂ - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S₁ and S₂ were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE: Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure. (1). Density of the aqueous solution determined by Sprengel pycnometer.			SOURCE AND PURITY OF MATERIALS: 1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled 2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES: 1. Manchot, W. <i>Z. Anorg. Chem.</i> <u>1924</u> , 141, 38.		

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. Iron(II) sulfate; FeSO ₄ ; [7720-78-7]		ORIGINAL MEASUREMENTS: Manchot, von W.; Jahrstorfer, M.; Zepter, H. <i>Z. Anorg. Allg. Chem.</i> <u>1924</u> , 141, 45-81.			
VARIABLES: Concentration		PREPARED BY: C. L. Young			
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt /10 ³ mol m ⁻³ (soln.)	Conc. of salt /mol kg ⁻¹ (water)	S ₁ /cm ³	S ₂ /cm ³
298.15	1.1017 1.2011	0.72 1.438	0.7256 1.4634	34.0 21.6	30.9 18.0
<p>S₁ - volume of nitrous oxide absorbed in 100 cm³ of salt solution</p> <p>S₂ - volume of nitrous oxide absorbed in 100 g of salt solution</p> <p>Both S₁ and S₂ were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE: Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure. (1). Density of the aqueous solution determined by Sprengel pyknometer.			SOURCE AND PURITY OF MATERIALS: 1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. 2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES: 1. Manchot, W. <i>Z. Anorg. Chem.</i> <u>1924</u> , 141, 38.		

COMPONENTS: 1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5] 3. Iron(III) sulfate; $Fe_2(SO_4)_3$; [10028-22-5]		ORIGINAL MEASUREMENTS: Manchot, von W.; Jahrstorfer, M.; Zepter, H. 2. <i>Anorg. Allg. Chem.</i> <u>1924</u> , 141, 45-81.			
VARIABLES: Concentration		PREPARED BY: C. L. Young			
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt $/10^3 \text{ mol m}^{-3}$ (soln.)	Conc. of salt $/\text{mol kg}^{-1}$ (water)	S_1 $/\text{cm}^3$	S_2 $/\text{cm}^3$
298.15	1.2240 1.4319	0.66 1.32	0.6874 1.460	25.9 13.1	21.2 9.2
<p>S_1 - volume of nitrous oxide absorbed per 100 cm^3 of salt solution</p> <p>S_2 - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S_1 and S_2 were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE: Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure. (1). Density of the aqueous solution determined by Sprengel pycnometer.			SOURCE AND PURITY OF MATERIALS: 1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. 2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES: 1. Manchot, W. <i>Z. Anorg. Chem.</i> <u>1924</u> , 141, 38.		

COMPONENTS:		ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N ₂ O; [10024-97-2]		Manchot, von W.; Jahrstorfer, M.;			
2. Water; H ₂ O; [7732-18-5]		Zepter, H.			
3. Manganese(II) sulfate; MnSO ₄ ; [7785-87-7]		Z. Anorg. Allg. Chem. <u>1924</u> , 141, 45-81.			
VARIABLES:		PREPARED BY:			
Concentration		C. L. Young			
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt /10 ³ mol m ⁻³ (soln.)	Conc. of salt /mol kg ⁻¹ (water)	S ₁ /cm ³	S ₂ /cm ³
298.15	1.1226 1.2460	0.94 1.93	0.9585 2.0219	30.6 17.0	27.3 13.6
<p>S₁ - volume of nitrous oxide absorbed in 100 cm³ of salt solution</p> <p>S₂ - volume of nitrous oxide absorbed in 100 g of salt solution</p> <p>Both S₁ and S₂ were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE: Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure. (1). Density of the aqueous solution determined by Sprengel pyknometer.			SOURCE AND PURITY OF MATERIALS: 1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. 2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES: 1. Manchot, W. Z. Anorg. Chem. <u>1924</u> , 11, 38.		

COMPONENTS:		ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. Chromium(III) sulfate; Cr ₂ (SO ₄) ₃ ; [10101-53-8]		Manchot, von W.; Jahrstorfer, M.; Zepter, H. Z. Anorg. Allg. Chem. <u>1924</u> , <u>141</u> , 45-81.			
VARIABLES:		PREPARED BY:			
Concentration		C. L. Young			
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt /10 ³ mol m ⁻³ (soln.)	Conc. of salt /mol kg ⁻¹ (water)	S ₁ /cm ³	S ₂ /cm ³
298.15	1.1657 1.3280	0.57 1.14	0.605 1.294	31.8 18.2	27.2 13.7
<p>S₁ - volume of nitrous oxide absorbed per 100 cm³ of salt solution</p> <p>S₂ - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S₁ and S₂ were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure. (1). Density of the aqueous solution determined by Sprengel pycnometer.			1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. 2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES: 1. Manchot, W. Z. Anorg. Chem. <u>1924</u> , <u>141</u> , 38.		

COMPONENTS: 1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5] 3. Aluminium sulfate; $Al_2(SO_4)_3$; [10043-01-3]		ORIGINAL MEASUREMENTS: Manchot, von W.; Jahrstorfer, M.; Zepter, H. <i>Z. Anorg. Allg. Chem.</i> <u>1924</u> , 141, 45-81.			
VARIABLES: Concentration		PREPARED BY: C. L. Young			
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt $/10^3 \text{ mol m}^{-3}$ (soln.)	Conc. of salt $/\text{mol kg}^{-1}$ (water)	S_1 $/\text{cm}^3$	S_2 $/\text{cm}^3$
298.15	1.1558 1.2381	0.5166 0.8141	0.5277 0.8486	22.4 13.4	19.4 10.8
<p>S_1 - volume of nitrous oxide absorbed per 100 cm^3 of salt solution</p> <p>S_2 - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S_1 and S_2 were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE: Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure. (1). Density of the aqueous solution determined by Sprengel pycnometer.			SOURCE AND PURITY OF MATERIALS: 1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. 2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES: 1. Manchot, W. <i>Z. Anorg. Chem.</i> <u>1924</u> , 141, 38.		

COMPONENTS:		ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N_2O ; [10024-97-2]		Manchot, von W.; Jahrstorfer, M.;			
2. Water; H_2O ; [7732-18-5]		Zepter, H.			
3. Aluminium nitrate; $Al(NO_3)_3$; [13473-90-0]		Z. Anorg. Allg. Chem. <u>1924</u> , 141, 45-81.			
VARIABLES:		PREPARED BY:			
Concentration		C. L. Young			
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt / 10^3 mol m^{-3} (soln.)	Conc. of salt /mol kg^{-1} (water)	S_1 / cm^3	S_2 / cm^3
298.15	1.0703 1.1414	0.4795 0.959	0.4953 1.0235	36.1 29.3	33.7 25.7
<p>S_1 - volume of nitrous oxide absorbed per 100 cm^3 of salt solution</p> <p>S_2 - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S_1 and S_2 were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE: Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure. (1). Density of the aqueous solution determined by Sprengel pyknometer.			SOURCE AND PURITY OF MATERIALS: 1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. 2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES: 1. Manchot, W. Z. Anorg. Chem. <u>1924</u> , 141, 38.		

COMPONENTS: 1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5]; 3. Magnesium chloride; $MgCl_2$; [7786-30-3]	ORIGINAL MEASUREMENTS: Sada, E.; Ando, N.; Kito, S. <i>J. Appl. Chem. Biotechnol.</i> <u>1972</u> , <i>22</i> , 1185-1193.
VARIABLES: T/K: 298.15 P/kPa : 101.325 (1 atm) Molarity of salt: $mol\ l^{-1}$	PREPARED BY: W. Gerrard/C. L. Young
EXPERIMENTAL VALUES:	
T/K Concn. of salt/ $mol\ l^{-1}$	Bunsen coefficient, α
298.15 0 0.441 0.582 0.851 1.451	0.5512 (pure water) 0.4513 0.4254 0.3375 * 0.2919
* not used in calculating salt effect parameter	
AUXILIARY INFORMATION	
METHOD /APPARATUS/PROCEDURE: Equilibrium established between a measured volume of gas and a measured amount of gas-free liquid in a cell fitted with a magnetic stirrer. Details in source and ref. 1.	SOURCE AND PURITY OF MATERIALS: 1. From commercial cylinder; 99.8 per cent, as attested by gas chromatography. 2. Distilled water was used. 3. Salt was of reagent grade. ESTIMATED ERROR: $\delta T/K = \pm 0.2$; $\delta \alpha = \pm 2\%$ (estimated by compiler). REFERENCES. 1. Onda, K.; Sada, E.; Kobayashi, T.; Kito, S.; Ito, K. <i>J. Chem. Engng. Japan</i> <u>1970</u> , <i>3</i> , 18; 137.

COMPONENTS:		ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N ₂ O; [10024-97-2]		Manchot, von W.; Jahrstorfer, M.;			
2. Water; H ₂ O; [7732-18-5]		Zepter, H.			
3. Magnesium sulfate; MgSO ₄ ; [7487-88-9]		Z. Anorg. Allg. Chem. <u>1924</u> , 141, 45-81.			
VARIABLES:		PREPARED BY:			
Concentration		C. L. Young			
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt /10 ³ mol m ⁻³ (soln.)	Conc. of salt /mol kg ⁻¹ (water)	S ₁ /cm ³	S ₂ /cm ³
298.15	1.0992 1.1925	0.90 1.78	0.9083 1.8197	29.5 15.9	26.8 13.3
<p>S₁ - volume of nitrous oxide absorbed per 100 cm³ of salt solution</p> <p>S₂ - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S₁ and S₂ were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure. (1) Density of the aqueous solution determined by Sprengel pyknometer.			1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled.		
			2. Recrystallized.		
ESTIMATED ERROR:					
REFERENCES:					
1. Manchot, W. Z. Anorg. Chem. <u>1924</u> , 141, 38.					

COMPONENTS:				ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]; 3. Magnesium sulfate; MgSO ₄ ; [7487-88-9]				Gordon, V. Z. <i>Phys. Chem.</i> <u>1895</u> , 18, 1-16.			
VARIABLES:				PREPARED BY:			
Temperature, concentration				W. Gerrard			
EXPERIMENTAL VALUES:							
T/K	Conc. of salt Weight-%	Density, ρ	Bunsen Coefficient, α	T/K	Conc. of salt Weight-%	Density, ρ	Bunsen Coefficient, α
295.46	5.9009	1.05836	0.43448	284.16	7.6585	1.07755	0.55515
291.76		1.05945	0.50647	281.26		1.0781	0.62931
288.26		1.06028	0.55857	295.46	10.7765	1.109	0.31431
284.16		1.0612	0.63936	291.76		1.1101	0.364375
281.26		1.06184	0.70626	288.26		1.1112	0.41560
295.46	7.6585	1.0753	0.38733	284.16		1.11236	0.46870
291.76		1.0762	0.44329	281.26		1.11333	0.52035
288.26		1.0768	0.48596				
<u>Smoothing Equations</u>							
(t = T/K - 273.15)							
For 5.9009 wt-% solution: $\alpha = 0.91034 - 0.0274t + 0.000272t^2$							
For 7.6585 wt-% solution: $\alpha = 0.853488 - 0.03154t + 0.000477t^2$							
For 10.7765 wt-% solution: $\alpha = 0.649261 - 0.0164252t + 0.000063t^2$							
AUXILIARY INFORMATION							
METHOD / APPARATUS / PROCEDURE:				SOURCE AND PURITY OF MATERIALS:			
Measurement of volume of gas by means of Ostwald type apparatus, gas buret and pipet. Density of the solution determined by Sprengel pyknometer.				1. N ₂ O: Self prepared and purified. Attested by combustion with hydrogen.			
				ESTIMATED ERROR:			
				REFERENCES:			

COMPONENTS: 1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5]; 3. Magnesium sulfate; $MgSO_4$; [7487-88-9]	ORIGINAL MEASUREMENTS: Markham, A. E.; Kobe, K. A. <i>J. Amer. Chem. Soc.</i> <u>1941</u> , <i>63</i> , 449-54.																																												
VARIABLES: T/K: 273.35-313.15 Salt molality/mol kg^{-1} : 0.1-8 Partial pressure of gas/atm: 1	PREPARED BY: P. L. Long																																												
EXPERIMENTAL VALUES: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">T/K*</th> <th style="text-align: left;">Salt molality/mol kg^{-1}*</th> <th style="text-align: left;">Bunsen Coefficient, α^*</th> <th style="text-align: left;">'Solubility Coefficient', S^a</th> </tr> </thead> <tbody> <tr> <td rowspan="3">273.15</td> <td>0</td> <td>1.2970</td> <td>1.2971</td> </tr> <tr> <td>0.5</td> <td>0.8778</td> <td>0.8777</td> </tr> <tr> <td>1</td> <td>0.6019</td> <td>0.6039</td> </tr> <tr> <td rowspan="3">298.15</td> <td>2</td> <td>0.2771</td> <td>0.2820</td> </tr> <tr> <td>0</td> <td>0.5392</td> <td>0.5408</td> </tr> <tr> <td>0.5</td> <td>0.3840</td> <td>0.3858</td> </tr> <tr> <td rowspan="5">313.15</td> <td>1</td> <td>0.2790</td> <td>0.2816</td> </tr> <tr> <td>2</td> <td>0.1442</td> <td>0.1478</td> </tr> <tr> <td>0</td> <td>0.3579</td> <td>0.3607</td> </tr> <tr> <td>0.5</td> <td>0.2612</td> <td>0.2638</td> </tr> <tr> <td>1</td> <td>0.1945</td> <td>0.1969</td> </tr> <tr> <td></td> <td>2</td> <td>0.1018</td> <td>0.1049</td> </tr> </tbody> </table>		T/K*	Salt molality/mol kg^{-1} *	Bunsen Coefficient, α^*	'Solubility Coefficient', S^a	273.15	0	1.2970	1.2971	0.5	0.8778	0.8777	1	0.6019	0.6039	298.15	2	0.2771	0.2820	0	0.5392	0.5408	0.5	0.3840	0.3858	313.15	1	0.2790	0.2816	2	0.1442	0.1478	0	0.3579	0.3607	0.5	0.2612	0.2638	1	0.1945	0.1969		2	0.1018	0.1049
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<p>* From the original data.</p> <p>^a The 'solubility coefficient', "refers to the volume of gas, reduced to standard conditions ... which is dissolved by the quantity of solution containing one gram of water".</p>																																													
AUXILIARY INFORMATION																																													
METHOD/APPARATUS/PROCEDURE: <p>An Ostwald method was used. A known volume of gas was placed in contact with a known volume of gas-free liquid. After equilibrium was established by agitation, the volume of the remaining gas was measured from which the amount of gas dissolved was found. Solutions were prepared by weight, and verified by density measurements compared with the literature values. Apparatus consisted of an absorption flask with two bulbs, one twice the volume of the other, which was connected by a capillary tube to a gas buret and a manometer system.</p>	SOURCE AND PURITY OF MATERIALS: <ol style="list-style-type: none"> 1. 99.7 per cent pure, no source. 2. Water was freshly boiled, distilled. 3. Analytical grade. ESTIMATED ERROR: $\delta T/K = \pm 0.1$ (273.35 K); ± 0.03 (above 273.35 K); $\delta \alpha/\alpha = \pm 0.02$. REFERENCES:																																												

COMPONENTS:			ORIGINAL MEASUREMENTS:		
1. Nitrous oxide; N_2O ; [10024-97-2]			Manchot, von W.; Jahrstorfer, M.;		
2. Water; H_2O ; [7732-18-5]			Zepter, H.		
3. Magnesium nitrate; $Mg(NO_3)_2$; [10377-60-3]			Z. Anorg. Allg. Chem. <u>1924</u> , 141, 45-81.		
VARIABLES:			PREPARED BY:		
Concentration			C. L. Young		
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt / 10^3 mol m^{-3} (soln.)	Conc. of salt / mol kg^{-1} (water)	S_1 / cm^3	S_2 / cm^3
298.15	1.0935 1.1846	0.97 1.93	1.0215 2.1485	39.2 28.5	35.8 24.1
<p>S_1 - volume of nitrous oxide absorbed per 100 cm^3 of salt solution</p> <p>S_2 - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S_1 and S_2 were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE: Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure.(1). Density of the aqueous solution determined by Sprengel pyknometer.			SOURCE AND PURITY OF MATERIALS: 1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. 2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES: 1. Manchot, W. Z. Anorg. Chem. <u>1924</u> , 141, 38.		

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5]; 3. Magnesium nitrate; $Mg(NO_3)_2$; [10377-60-3]		Markham, A. E.; Kobe, K. A. <i>J. Amer. Chem. Soc.</i> <u>1941</u> , <i>63</i> , 449-54.	
VARIABLES:		PREPARED BY:	
T/K: 273.35-313.15 Salt molality/mol kg^{-1} : 0.1-8 Partial pressure of gas/atm: 1		P. L. Long	
EXPERIMENTAL VALUES:			
T/K*	Salt molality/mol kg^{-1} *	Bunsen Coefficient, α^*	'Solubility Coefficient', S^a
273.35	0	1.2970	1.2971
	0.5	1.0139	1.0316
	1	0.7921	0.8215
	2	0.5238	0.5664
	3	0.3618	0.4079
298.15	0	0.5392	0.5408
	0.5	0.4488	0.4593
	1	0.3850	0.4023
	2	0.2785	0.3042
	3	0.2104	0.2403
313.15	0	0.3579	0.3607
	0.5	0.3061	0.3150
	1	0.2620	0.2756
	2	0.1989	0.2188
	3	0.1556	0.1793
<p>* From the original data.</p> <p>^a The 'solubility coefficient', "refers to the volume of gas, reduced to standard conditions ... which is dissolved by the quantity of solution containing one gram of water".</p>			
AUXILIARY INFORMATION			
METHOD / APPARATUS / PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
An Ostwald method was used. A known volume of gas was placed in contact with a known volume of gas-free liquid. After equilibrium was established by agitation, the volume of the remaining gas was measured from which the amount of gas dissolved was found. Solutions were prepared by weight, and verified by density measurements compared with the literature values. Apparatus consisted of an absorption flask with two bulbs, one twice the volume of the other, which was connected by a capillary tube to a gas buret and a manometer system.		1. 99.7 per cent pure, no source. 2. Water was freshly boiled, distilled. 3. Analytical grade.	
		ESTIMATED ERROR: $\delta T/K = \pm 0.1$ (273.35 K); ± 0.03 (above 273.35 K); $\delta \alpha/\alpha = \pm 0.02$.	
		REFERENCES:	

COMPONENTS:				ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N ₂ O; [10024-97-2]				Gordon, V. Z. <i>Phys. Chem.</i> <u>1895</u> , 18, 1-16.			
2. Water; H ₂ O; [7732-18-5];							
3. Calcium chloride; CaCl ₂ ; [10043-52-4]							
VARIABLES:				PREPARED BY:			
Temperature, concentration				W. Gerrard			
EXPERIMENTAL VALUES:							
T/K	Conc. of salt Weight-%	Density, ρ	Bunsen Coefficient, α	T/K	Conc. of salt Weight-%	Density, ρ	Bunsen Coefficient, α
295.46	5.7898	1.04695	0.46447	284.16	9.856	1.0864	0.56462
291.76		1.04784	0.52416	281.26		1.0873	0.61709
288.26	9.856	1.04902	0.58870	295.46	13.987	1.1209	0.30676
284.16		1.04982	0.67323	291.76		1.1221	0.33760
281.26		1.05043	0.74106	288.26		1.1234	0.37919
295.46		1.0830	0.39256	284.16		1.1247	0.42001
291.76		1.0842	0.44409	281.26		1.1256	0.46642
288.26		1.0852	0.50743				
<u>Smoothing Equations</u>							
(t = T/K - 273.16)							
For 5.7898 wt-% solution: α = 0.958202 - 0.029356t + 0.0003236t ²							
For 9.856 wt-% solution: α = 0.754096 - 0.01757t + 0.000081t ²							
For 13.987 wt-% solution: α = 0.58801 - 0.01638t + 0.000169t ²							
AUXILIARY INFORMATION							
METHOD /APPARATUS/PROCEDURE:				SOURCE AND PURITY OF MATERIALS:			
Measurement of volume of gas by means of Ostwald type apparatus, gas buret and pipet (ref. 1). Density of the solution determined by Sprengel pyknometer.				1. N ₂ O: Self prepared and purified. Attested by combustion with hydrogen.			
				ESTIMATED ERROR:			
				REFERENCES:			
				1. Timofejew, W. Z. <i>Phys. Chem.</i> <u>1890</u> , 6, 141.			

COMPONENTS:		ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5] 3. Calcium chloride; $CaCl_2$; [10043-52-4]		Manchot, von W.; Jahrstorfer, M.; Zepter, H. <i>Z. Anorg. Allg. Chem.</i> <u>1924</u> , <i>141</i> , 45-81.			
VARIABLES:		PREPARED BY:			
Concentration		C. L. Young			
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt / 10^3 mol m^{-3} soln.)	Conc. of salt /mol kg^{-1} (water)	S_1 / cm^3	S_2 / cm^3
298.15	1.0786 1.1665	0.93 1.99	0.9535 2.1044	33.9 20.2	31.4 17.3
<p>S_1 - volume of nitrous oxide absorbed per 100 cm^3 of salt solution</p> <p>S_2 - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S_1 and S_2 were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE: Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure. (1). Density of the aqueous solution determined by Sprengel pyknometer.			SOURCE AND PURITY OF MATERIALS: 1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. 2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES: 1. Manchot, W. <i>Z. Anorg. Chem.</i> <u>1924</u> , <i>141</i> , 38.		

<p>COMPONENTS:</p> <ol style="list-style-type: none"> Nitrous oxide; N_2O; [10024-97-2] Water; H_2O; [7732-18-5]; Calcium chloride; $CaCl_2$; [10043-52-4] 	<p>ORIGINAL MEASUREMENTS:</p> <p>Sada, E.; Ando, N.; Kito, S. <i>J. Appl. Chem. Biotechnol.</i> <u>1972</u>, <i>22</i>, 1185-1193.</p>															
<p>VARIABLES:</p> <p style="text-align: center;">Concentration</p>	<p>PREPARED BY:</p> <p style="text-align: center;">W. Gerrard/C. L. Young</p>															
<p>EXPERIMENTAL VALUES:</p>																
<p>T/K</p>	<p>Conc. of salt/mol l^{-1} Bunsen coefficient, α</p>															
<p>298.15</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"></td> <td style="width: 30%; text-align: center;">0</td> <td style="width: 40%; text-align: center;">0.5512 (pure water)</td> </tr> <tr> <td></td> <td style="text-align: center;">0.323</td> <td style="text-align: center;">0.4705</td> </tr> <tr> <td></td> <td style="text-align: center;">0.666</td> <td style="text-align: center;">0.4019</td> </tr> <tr> <td></td> <td style="text-align: center;">1.088</td> <td style="text-align: center;">0.3275</td> </tr> <tr> <td></td> <td style="text-align: center;">1.451</td> <td style="text-align: center;">0.2760</td> </tr> </table>		0	0.5512 (pure water)		0.323	0.4705		0.666	0.4019		1.088	0.3275		1.451	0.2760
	0	0.5512 (pure water)														
	0.323	0.4705														
	0.666	0.4019														
	1.088	0.3275														
	1.451	0.2760														
<p>AUXILIARY INFORMATION</p>																
<p>METHOD /APPARATUS/PROCEDURE:</p> <p>Equilibrium established between a measured volume of gas and a measured amount of gas-free liquid in a cell fitted with a magnetic stirrer. Details in source and ref. 1.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <ol style="list-style-type: none"> From commercial cylinder; 99.8 per cent, as attested by gas chromatography. Distilled water was used. Salt was of reagent grade. <p>ESTIMATED ERROR:</p> <p style="text-align: center;">T/K = 0.2; = 2% (estimated by compiler).</p> <p>REFERENCES:</p> <ol style="list-style-type: none"> Onda, K.; Sada, E.; Kobayashi, T.; Kito, S.; Ito, K. <i>J. Chem. Engng. Japan</i> <u>1970</u>, <i>3</i>, 18; 137. 															

COMPONENTS: 1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5] 3. Calcium nitrate; $Ca(NO_3)_2$; [10124-37-5]		ORIGINAL MEASUREMENTS: Manchot, von W.; Jahrstorfer, M.; Zepter, H. <i>Z. Anorg. Allg. Chem.</i> <u>1924</u> , 141, 45-81.			
VARIABLES: Concentration		PREPARED BY: C. L. Young			
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt / 10^3 mol m^{-3} (soln.)	Conc. of salt /mol kg^{-1} (water)	S_1 /cm ³	S_2 /cm ³
298.15	1.1503 1.2927	1.365 2.73	1.474 3.232	32.2 19.4	28.0 15.0
<p>S_1 - volume of nitrous oxide absorbed per 100 cm³ of salt solution</p> <p>S_2 - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S_1 and S_2 were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE: Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure. (1). Density of the aqueous solution determined by Sprengel pyknometer.			SOURCE AND PURITY OF MATERIALS: 1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. 2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES: 1. Manchot, W. <i>Z. Anorg. Chem.</i> <u>1924</u> , 141, 38.		

COMPONENTS:				ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]; 3. Strontium chloride; SrCl ₂ ; [10476-85-4]				Gordon, V. Z. <i>Phys. Chem.</i> <u>1895</u> , 18, 1-16.			
VARIABLES:				PREPARED BY:			
Temperature, concentration				W. Gerrard			
EXPERIMENTAL VALUES:							
T/K	Conc. of salt Weight-%	Density, ρ	Bunsen Coefficient, α	T/K	Conc. of salt Weight-%	Density, ρ	Bunsen Coefficient, α
295.46	3.309	1.0283	0.54357	284.16	5.7315	1.0528	0.68591
291.76		1.029	0.60269	281.26		1.0537	0.75729
288.26		1.0297	0.66902	295.46	13.239	1.1226	0.36143
284.16		1.0304	0.76665	291.76		1.1238	0.41191
281.26		1.0309	0.83808	288.26		1.1251	0.44876
291.76	5.7315	1.0506	0.56234	284.16		1.1265	0.52249
288.26		1.0515	0.60944	281.26		1.1273	0.58233
<u>Smoothing Equations</u> (t = T/K - 273.15)							
For 3.309 wt-% solution: α = 1.091696 - 0.03515t + 0.000474t ²							
For 5.7315 wt-% solution: α = 1.02683 - 0.0397t + 0.000793t ²							
For 13.239 wt-% solution: α = 0.75313 - 0.023095t + 0.000248t ²							
AUXILIARY INFORMATION							
METHOD/APPARATUS/PROCEDURE:				SOURCE AND PURITY OF MATERIALS:			
Measurement of volume of gas by means of Ostwald type apparatus, gas buret and pipet. Density of the solution determined by Sprengel pyknometer.				1. N ₂ O: Self prepared and purified. Attested by combustion with hydrogen.			
				ESTIMATED ERROR:			
				REFERENCES:			

COMPONENTS:		ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5] 3. Barium chloride; $BaCl_2$; [10361-37-2]		Manchot, von W.; Jahrstorfer, M.; Zepter, H. <i>Z. Anorg. Allg. Chem.</i> <u>1924</u> , <i>141</i> , 45-81.			
VARIABLES:		PREPARED BY:			
Concentration		C. L. Young			
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt / 10^5 mol m^{-3} (soln.)	Conc. of salt / mol kg^{-1} (water)	S_1 / cm^3	S_2 / cm^3
298.15	1.1090 1.2290	0.620 1.313	0.6327 1.3741	37.4 26.1	33.8 21.2
<p>S_1 - volume of nitrous oxide absorbed per 100 cm^3 of salt solution</p> <p>S_2 - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S_1 and S_2 were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure. (1). Density of the aqueous solution determined by Sprengel pyknometer.			1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. 2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES:		
			1. Manchot, W. <i>Z. Anorg. Chem.</i> <u>1924</u> , <i>141</i> , 38.		

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]; 3. Lithium chloride; LiCl; [7447-41-8]				ORIGINAL MEASUREMENTS: Gordon, V. Z. <i>Phys. Chem.</i> <u>1895</u> , 18, 1-16.			
VARIABLES: Temperature, concentration				PREPARED BY: W. Gerrard			
EXPERIMENTAL VALUES:							
T/K	Conc. of salt Weight-%	Density, ρ	Bunsen Coefficient, α	T/K	Conc. of salt Weight-%	Density, ρ	Bunsen Coefficient, α
295.46	1.346	0.0058	0.5559	295.46	3.853	1.0211	0.5005
			0.5523	291.76		1.0221	0.5643
291.76		1.0067	0.6232	288.26		1.0227	0.6268
			0.6224	284.16		1.0237	0.7090
288.26		1.0074	0.6890	281.26		1.0242	0.7917
			0.7065	295.46	11.476	1.065	0.3632
284.16		1.0081	0.7959	291.76		1.0658	0.3874
			0.7820	288.26		1.0666	0.4351
281.26		1.0085	0.8866	284.16		1.0675	0.4916
				281.26		1.0682	0.5452
<u>Smoothing Equations</u> (t = T/K - 273.16) For 1.345 wt-% solution: α = 1.1658234 - 0.038488t + 0.0004958t ² For 3.853 wt-% solution: α = 1.0343228 - 0.0333846t + 0.0004236t ² For 11.476 wt-% solution: α = 0.720982 - 0.0249286t + 0.0003984t ²							
AUXILIARY INFORMATION							
METHOD/APPARATUS/PROCEDURE: Measurement of volume of gas by means of Ostwald type apparatus, gas buret and pipet (ref. 1.). Density of the solution determined by Sprengel pyknometer.				SOURCE AND PURITY OF MATERIALS 1. N ₂ O: Self prepared and purified. Attested by combustion with hydrogen.			
				ESTIMATED ERROR:			
				REFERENCES: 1. Timofejew, W. <i>Z. Phys. Chem.</i> <u>1890</u> , 6, 141.			

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]; 3. Lithium chloride; LiCl; [7447-41-8]	ORIGINAL MEASUREMENTS: Geffcken, G. <i>Z. Phys. Chem.</i> <u>1904</u> , 49, 257-302.	
VARIABLES: Temperature, concentration	PREPARED BY: W. Gerrard/C. L. Young	
EXPERIMENTAL VALUES:		
T/K 288.16 298.16	Conc. of salt/mol dm ⁻³ (soln.) 0.558 0.561 1.057 1.059 0.558 0.561 1.057 1.059	Ostwald coefficient, L 0.6884 0.6877 0.6163 0.6146 0.5276 0.5278 0.4760 0.4773
AUXILIARY INFORMATION		
METHOD / APPARATUS / PROCEDURE: Measurement of volume of N ₂ O absorbed by the aqueous solution. Detailed description and diagram given in source.	SOURCE AND PURITY OF MATERIALS. 1. Nitrous oxide self prepared and attested. ESTIMATED ERROR: REFERENCES:	

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. Lithium chloride; LiCl; [7447-41-8]		ORIGINAL MEASUREMENTS: Kreitus, I.; Gorbovitskalya, T. I. <i>Latv. PRS Zinat. Akad. Vestis</i> <i>Khim. Ser.</i> 1979, 664-666.	
VARIABLES: Concentration of salt		PREPARED BY: C. L. Young	
EXPERIMENTAL VALUES:			
T/K	Conc. of salt /mol kg ⁻¹ (water)	Bunsen coefficient, α	Absorption [†] coefficient, S
298.15	0.0 0.97 2.66 5.44 9.10 12.2 15.5 18.7 19.8	0.55 0.47 0.36 0.21 0.12 0.074 0.042 0.03 0.026	0.55 0.48 0.38 0.23 0.15 0.094 0.059 0.044 0.039
[†] Volume of gas, corrected to 101.3 kPa and 273.15 K, dissolved at specified temperature and a partial pressure of 101.3 kPa, by solution containing 1 g of water.			
AUXILIARY INFORMATION			
METHOD APPARATUS/PROCEDURE: Aqueous solution saturated at 0.1013 MPa and 1 cm ³ sample analyzed by gas chromatography. Column contained molecular sieves and was operated isothermally at 250 °C using helium as carrier gas. Thermal conductivity detector used.		SOURCE AND PURITY OF MATERIALS: 1. Medical grade sample. 2. Twice distilled. 3. Twice recrystallised from laboratory reagent grade sample.	
		ESTIMATED ERROR: $\delta T/K = \pm 0.1$; $\delta \alpha/\alpha = \pm 0.1$	
		REFERENCES:	

COMPONENTS:				ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]; 3. Lithium sulfate; Li ₂ SO ₄ ; [10377-48-7]				Gordon, V. Z. <i>Phys. Chem.</i> <u>1895</u> , 18, 1-16.			
VARIABLES:				PREPARED BY:			
Temperature, concentration				W. Gerrard			
EXPERIMENTAL VALUES:							
T/K	Conc. of salt Weight-%	Density, ρ	Bunsen Coefficient, α	T/K	Conc. of salt Weight-%	Density, ρ	Bunsen Coefficient, α
295.46	2.3689	1.01873	0.52973	284.16	5.463	1.0518	0.64055
291.76		1.01954	0.59615	281.26		1.0525	0.71145
288.26		1.02024	0.66775	295.46	8.5596	1.0732	0.3912
284.16		1.02094	0.76423	291.76		1.07412	0.43526
281.26		1.02156	0.84337	288.26		1.0751	0.47611
295.46	5.463	1.04917	0.44372	284.16		1.07626	0.52889
291.76		1.050	0.49822	281.26		1.07684	0.58768
288.26		1.051	0.55552				
<u>Smoothing Equations</u>							
(t = T/K - 273.15)							
For 2.3689 wt-% solution: $\alpha = 1.09758 - 0.03476t + 0.0004168t^2$							
For 5.463 wt-% solution: $\alpha = 0.950112 - 0.033325t + 0.000476t^2$							
For 8.5596 wt-% solution: $\alpha = 0.752485 - 0.022711t + 0.00029193t^2$							
AUXILIARY INFORMATION							
METHOD/APPARATUS/PROCEDURE:				SOURCE AND PURITY OF MATERIALS.			
Measurement of volume of gas by means of Ostwald type apparatus, gas buret and pipet. Density of the solution determined by Sprengel pyknometer.				1. N ₂ O: Self prepared and purified. Attested by combustion with hydrogen.			
				ESTIMATED ERROR:			
				REFERENCES:			

COMPONENTS:				ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N ₂ O; [10024-97-2]				Gordon, V. Z. <i>Phys. Chem.</i> <u>1895</u> , 18, 1-16.			
2. Water; H ₂ O; [7732-18-5];							
3. Sodium chloride; NaCl; [7647-14-5]							
VARIABLES:				PREPARED BY:			
Temperature, concentration				W. Gerrard			
EXPERIMENTAL VALUES:							
T/K	Conc. of salt Weight-%	Density, ρ	Bunsen Coefficient, α	T/K	Conc. of salt Weight-%	Density, ρ	Bunsen Coefficient, α
295.46	8.88	1.0608	0.4091	295.46	6.196	1.04255	0.48086
			0.4013	291.76		1.0436	0.5262
291.76		1.0622	0.4577	288.26		1.0447	0.58368
			0.4558	284.16		1.0457	0.66302
288.26		1.0641	0.5046	281.26		1.04646	0.72482
			0.5112	295.46	12.782	1.0915	0.3626
284.16		1.0654	0.5790	291.76		1.0930	0.3994
			0.5790	288.26		1.0943	0.4480
281.26		1.0666	0.6412	284.16		1.0958	0.5118
			0.6437	281.26		1.0969	0.5687
<u>Smoothing Equations</u>							
(t = T/K - 273.16)							
For 8.88 wt-% solution: $\alpha = 0.84069 - 0.027303t + 0.0003486t^2$							
For 6.196 wt-% solution: $\alpha = 0.93959 - 0.029923t + 0.00042072t^2$							
For 12.782 wt-% solution: $\alpha = 0.75472 - 0.026034t + 0.00037894t^2$							
AUXILIARY INFORMATION							
METHOD / APPARATUS / PROCEDURE:				SOURCE AND PURITY OF MATERIALS:			
Measurement of volume of gas by means of Ostwald type apparatus, gas buret and pipet (ref. 1). Density of the solution determined by Sprengel pyknometer.				1. N ₂ O: Self prepared and purified. Attested by combustion with hydrogen.			
				ESTIMATED ERROR:			
				REFERENCES:			
				1. Timofejew, W. Z. <i>Phys. Chem.</i> <u>1890</u> , 6, 141.			

COMPONENTS: 1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5]; 3. Sodium chloride; $NaCl$; [7647-14-5]	ORIGINAL MEASUREMENTS: Roth, W. <i>Z. Phys. Chem.</i> <u>1897</u> , 24, 114-151.												
VARIABLES: Temperature, concentration	PREPARED BY: W. Gerrard												
EXPERIMENTAL VALUES: $t = T/K - 273.16$; density = d ; α = Bunsen coefficient.													
<p>Concn. of sodium chloride, %: 0.9475</p> <p>Change of d with t: $d = 1.00750 - 0.00001729t - 0.000005159t^2$</p> <p>Change of α with t: $\alpha = 1.2754 - 0.045597t + 0.00063655t^2$</p> <table border="1" data-bbox="128 578 966 637"> <thead> <tr> <th>T/K</th> <th>298.17</th> <th>293.28</th> <th>288.11</th> <th>282.93</th> <th>278.12</th> </tr> </thead> <tbody> <tr> <td>α</td> <td>0.5332</td> <td>0.6210</td> <td>0.7360</td> <td>0.8880</td> <td>1.0649</td> </tr> </tbody> </table>		T/K	298.17	293.28	288.11	282.93	278.12	α	0.5332	0.6210	0.7360	0.8880	1.0649
T/K	298.17	293.28	288.11	282.93	278.12								
α	0.5332	0.6210	0.7360	0.8880	1.0649								
<p>Concn. of sodium chloride, %: 1.033</p> <p>Change of d with t: $d = 1.00812 - 0.00002546t - 0.0000049403t^2$</p> <p>Change of α with t: $\alpha = 1.2704 - 0.045682t + 0.0006573t^2$</p> <table border="1" data-bbox="128 735 966 793"> <thead> <tr> <th>T/K</th> <th>298.00</th> <th>293.24</th> <th>288.11</th> <th>283.16</th> <th>278.32</th> </tr> </thead> <tbody> <tr> <td>α</td> <td>0.5412</td> <td>0.6226</td> <td>0.7344</td> <td>0.8746</td> <td>1.0522</td> </tr> </tbody> </table>		T/K	298.00	293.24	288.11	283.16	278.32	α	0.5412	0.6226	0.7344	0.8746	1.0522
T/K	298.00	293.24	288.11	283.16	278.32								
α	0.5412	0.6226	0.7344	0.8746	1.0522								
<p>Concn. of sodium chloride, %: 1.754</p> <p>Change of d with t: $d = 1.01362 - 0.00004550t - 0.000004672t^2$</p> <p>Change of α with t: $\alpha = 1.1990 - 0.04191t + 0.00059064t^2$</p> <table border="1" data-bbox="128 891 966 950"> <thead> <tr> <th>T/K</th> <th>298.16</th> <th>293.21</th> <th>288.11</th> <th>283.00</th> <th>278.10</th> </tr> </thead> <tbody> <tr> <td>α</td> <td>0.5204</td> <td>0.6049</td> <td>0.7045</td> <td>0.8380</td> <td>1.0065</td> </tr> </tbody> </table>		T/K	298.16	293.21	288.11	283.00	278.10	α	0.5204	0.6049	0.7045	0.8380	1.0065
T/K	298.16	293.21	288.11	283.00	278.10								
α	0.5204	0.6049	0.7045	0.8380	1.0065								
<p>Concn. of sodium chloride, %: 1.862</p> <p>Change of d with t: $d = 1.0145 + 0.00005068t - 0.000004778t^2$</p> <p>Change of α with t: $\alpha = 1.1956 - 0.041595t + 0.00057893t^2$</p> <table border="1" data-bbox="128 1048 966 1107"> <thead> <tr> <th>T/K</th> <th>298.06</th> <th>293.16</th> <th>288.13</th> <th>283.04</th> <th>278.10</th> </tr> </thead> <tbody> <tr> <td>α</td> <td>0.5188</td> <td>0.5992</td> <td>0.7026</td> <td>0.8297</td> <td>1.0042</td> </tr> </tbody> </table>		T/K	298.06	293.16	288.13	283.04	278.10	α	0.5188	0.5992	0.7026	0.8297	1.0042
T/K	298.06	293.16	288.13	283.04	278.10								
α	0.5188	0.5992	0.7026	0.8297	1.0042								
(continued)													
AUXILIARY INFORMATION													
METHOD / APPARATUS / PROCEDURE: Ostwald method, using gas buret and pipet. Measurement of volume of gas before and after absorption. Specific gravity of solution was determined by a Sprengel pycnometer. Vapour pressure of water, adjusted by assuming Raoult's law, was allowed for.	SOURCE AND PURITY OF MATERIALS: 1. N_2O was self prepared and purified. 3. Sodium chloride was analysed by an appropriate method.												
ESTIMATED ERROR:													
REFERENCES:													

COMPONENTS:	ORIGINAL MEASUREMENTS:											
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]; 3. Sodium chloride; NaCl; [7647-14-5]	Roth, W. Z. <i>Phys. Chem.</i> <u>1897</u> , <i>24</i> , 114-151.											
EXPERIMENTAL VALUES: $t = T/K - 273.16$; density = d ; α = Bunsen coefficient.												
Concn. of sodium chloride, %: 3.718												
Change of d with t : $d = 1.02864 - 0.00010466t - 0.0000041586t^2$												
Change of α with t : $\alpha = 1.0678 - 0.035518t + 0.0004774t^2$												
T/K	<table border="0"> <tr> <td>298.34</td> <td>293.24</td> <td>287.70</td> <td>283.17</td> <td>278.03</td> </tr> <tr> <td>α</td> <td>0.4761</td> <td>0.5508</td> <td>0.6523</td> <td>0.7558</td> <td>0.9063</td> </tr> </table>	298.34	293.24	287.70	283.17	278.03	α	0.4761	0.5508	0.6523	0.7558	0.9063
298.34	293.24	287.70	283.17	278.03								
α	0.4761	0.5508	0.6523	0.7558	0.9063							
Concn. of sodium chloride, %: 4.054												
Change of d with t : $d = 1.03152 - 0.00009209t - 0.000004826t^2$												
Change of α with t : $\alpha = 1.0907 - 0.03552t + 0.00043835t^2$												
T/K	<table border="0"> <tr> <td>298.18</td> <td>293.29</td> <td>288.18</td> <td>283.13</td> <td>277.98</td> </tr> <tr> <td>α</td> <td>0.4764</td> <td>0.5594</td> <td>0.6561</td> <td>0.7764</td> <td>0.9297</td> </tr> </table>	298.18	293.29	288.18	283.13	277.98	α	0.4764	0.5594	0.6561	0.7764	0.9297
298.18	293.29	288.18	283.13	277.98								
α	0.4764	0.5594	0.6561	0.7764	0.9297							
Concn. of sodium chloride, %: 5.705												
Change of d with t : $d = 1.04393 - 0.0001515t - 0.000003995t^2$												
Change of α with t : $\alpha = 1.0025 - 0.03409t + 0.0004606t^2$												
T/K	<table border="0"> <tr> <td>298.21</td> <td>293.24</td> <td>288.30</td> <td>283.30</td> <td>278.29</td> </tr> <tr> <td>α</td> <td>0.4375</td> <td>0.5053</td> <td>0.5919</td> <td>0.7031</td> <td>0.8397</td> </tr> </table>	298.21	293.24	288.30	283.30	278.29	α	0.4375	0.5053	0.5919	0.7031	0.8397
298.21	293.24	288.30	283.30	278.29								
α	0.4375	0.5053	0.5919	0.7031	0.8397							
Concn. of sodium chloride, %: 6.024												
Change of d with t : $d = 1.04647 - 0.00017481t - 0.00003314t^2$												
Change of α with t : $\alpha = 0.9956 - 0.032925t + 0.00043854t^2$												
T/K	<table border="0"> <tr> <td>298.25</td> <td>292.87</td> <td>288.34</td> <td>283.18</td> <td>278.39</td> </tr> <tr> <td>α</td> <td>0.4456</td> <td>0.5222</td> <td>0.5968</td> <td>0.7087</td> <td>0.8354</td> </tr> </table>	298.25	292.87	288.34	283.18	278.39	α	0.4456	0.5222	0.5968	0.7087	0.8354
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COMPONENTS:		ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. Sodium chloride; NaCl; [7647-14-5]		Manchot, von W.; Jahrstorfer, M.; Zepter, H. <i>Z. Anorg. Allg. Chem.</i> <u>1924</u> , <i>141</i> , 45-81.			
VARIABLES:		PREPARED BY:			
Concentration		C. L. Young			
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt /10 ³ mol m ⁻³ (soln.)	Conc. of salt /mol kg ⁻¹ (water)	S ₁ /cm ³	S ₂ /cm ³
298.15	1.0438 1.0874 1.1600	1.15 2.31 4.32	1.1776 2.4256 4.7606	39.0 28.5 17.2	37.4 26.2 14.8
<p>S₁ - volume of nitrous oxide absorbed per 100 cm³ of salt solution</p> <p>S₂ - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S₁ and S₂ were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure. (1). Density of the aqueous solution determined by Sprengel pyknometer.			1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. 2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES: 1. Manchot, W. <i>Z. Anorg. Chem.</i> <u>1924</u> , <i>141</i> , 38.		

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]; 3. Sodium chloride; NaCl; [7647-14-5]	ORIGINAL MEASUREMENTS: Markham, A. E.; Kobe, K. A. <i>J. Amer. Chem. Soc.</i> <u>1941</u> , <i>63</i> , 449-54.																																											
VARIABLES: T/K: 273.35 - 313.15 Salt molality/mol kg ⁻¹ : 0.1-8 Partial pressure of gas/atm: 1	PREPARED BY: P. L. Long																																											
EXPERIMENTAL VALUES:																																												
<table border="1"> <thead> <tr> <th>T/K*</th> <th>Salt molality/mol kg⁻¹ *</th> <th>Bunsen Coefficient, α *</th> <th>'Solubility Coefficient', S *^a</th> </tr> </thead> <tbody> <tr> <td rowspan="4">273.35</td> <td>0</td> <td>1.2970</td> <td>1.2971</td> </tr> <tr> <td>1</td> <td>0.9178</td> <td>0.9327</td> </tr> <tr> <td>2</td> <td>0.6675</td> <td>0.6902</td> </tr> <tr> <td>3</td> <td>0.5053</td> <td>0.5330</td> </tr> <tr> <td rowspan="4">298.15</td> <td>0</td> <td>0.5392</td> <td>0.5408</td> </tr> <tr> <td>1</td> <td>0.4026</td> <td>0.4127</td> </tr> <tr> <td>2</td> <td>0.3166</td> <td>0.3299</td> </tr> <tr> <td>3</td> <td>0.2502</td> <td>0.2662</td> </tr> <tr> <td rowspan="4">313.15</td> <td>0</td> <td>0.3579</td> <td>0.3607</td> </tr> <tr> <td>1</td> <td>0.2719</td> <td>0.2707</td> </tr> <tr> <td>2</td> <td>0.2181</td> <td>0.2288</td> </tr> <tr> <td>3</td> <td>0.1743</td> <td>0.1866</td> </tr> </tbody> </table>		T/K*	Salt molality/mol kg ⁻¹ *	Bunsen Coefficient, α *	'Solubility Coefficient', S * ^a	273.35	0	1.2970	1.2971	1	0.9178	0.9327	2	0.6675	0.6902	3	0.5053	0.5330	298.15	0	0.5392	0.5408	1	0.4026	0.4127	2	0.3166	0.3299	3	0.2502	0.2662	313.15	0	0.3579	0.3607	1	0.2719	0.2707	2	0.2181	0.2288	3	0.1743	0.1866
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METHOD/APPARATUS/PROCEDURE: An Ostwald method was used. A known volume of gas was placed in contact with a known volume of gas-free liquid. After equilibrium was established by agitation, the volume of the remaining gas was measured from which the amount of gas dissolved was found. Solutions were prepared by weight, and verified by density measurements compared with the literature values. Apparatus consisted of an absorption flask with two bulbs, one twice the volume of the other, which was connected by a capillary tube to a gas buret and a manometer system.	SOURCE AND PURITY OF MATERIALS: 1. 99.7 per cent pure, no source. 2. Water was freshly boiled, distilled. 3. Analytical grade.																																											
ESTIMATED ERROR: δT/K = ±0.1 (273.35 K); ±0.03 (above 273.35 K); δα/α = ±0.02.																																												
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COMPONENTS:			ORIGINAL MEASUREMENTS:		
1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5] 3. Sodium bromide; NaBr; [7647-15-6]			Manchot, von W.; Jahrstorfer, M.; Zepter, H. <i>Z. Anorg. Allg. Chem.</i> <u>1924</u> , 141, 45-81.		
VARIABLES:			PREPARED BY:		
Concentration			C. L. Young		
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt /10 ³ mol m ⁻³ (soln.)	Conc. of salt /mol kg ⁻¹ (water)	S ₁ /cm ³	S ₂ /cm ³
298.15	1.0849 1.1645 1.3338	1.125 2.17 4.46	1.1608 2.3057 5.0983	40.1 30.9 17.8	37.0 26.5 13.3
<p>S₁ - volume of nitrous oxide absorbed per 100 cm³ of salt solution</p> <p>S₂ - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S₁ and S₂ were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE: Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure. (1). Density of the aqueous solution determined by Sprengel pyknometer.			SOURCE AND PURITY OF MATERIALS:		
			1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled.		
			2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES:		
			1. Manchot, W. <i>Z. Anorg. Chem.</i> <u>1924</u> , 141, 38.		

COMPONENTS:				ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]; 3. Sodium sulfate; Na ₂ SO ₄ ; [7757-82-6]				Gordon, V. Z. <i>Phys. Chem.</i> <u>1895</u> , 18, 1-16.			
VARIABLES:				PREPARED BY:			
Temperature, concentration				W. Gerrard			
EXPERIMENTAL VALUES:							
T/K	Conc. of salt Weight-%	Density, ρ	Bunsen Coefficient, α	T/K	Conc. of salt Weight-%	Density, ρ	Bunsen Coefficient, α
295.46	5.765	1.0514	0.4675	288.26	8.533	1.0770	0.48033
291.76		1.0525	0.5083	284.16		1.0785	0.54547
288.26		1.05374	0.57065	281.26		1.0793	0.61583
284.16		1.0548	0.67153	295.46	12.439	1.1138	0.33739
281.26		1.0555	0.72345	291.76		1.1152	0.37911
295.46	8.533	1.0747	0.3940	288.26		1.1166	0.41606
291.76		1.0758	0.43089	284.16		1.1181	0.47152
<u>Smoothing Equations</u>							
$(t = T/K - 273.16)$							
For 5.765 wt-% solution: $\alpha = 0.96489 - 0.034086t + 0.00052831t^2$							
For 8.533 wt-% solution: $\alpha = 0.836072 - 0.031393t + 0.00051879t^2$							
For 12.439 wt-% solution: $\alpha = 0.637428 - 0.016216t + 0.00010304t^2$							
AUXILIARY INFORMATION							
METHOD / APPARATUS / PROCEDURE:				SOURCE AND PURITY OF MATERIALS:			
Measurement of volume of gas by means of Ostwald type apparatus, gas buret and pipet (ref. 1). Density of the solution determined by Sprengel pyknometer.				1. N ₂ O: Self prepared and purified. Attested by combustion with hydrogen.			
				ESTIMATED ERROR:			
				REFERENCES:			
				1. Timofojew, W. <i>...</i> <u>1890</u> , 6, 141.			

COMPONENTS:		ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5] 3. Sodium sulfate; Na_2SO_4 ; [7757-82-6]		Manchot, von W.; Jahrstorfer, M.; Zepter, H. <i>Z. Anorg. Allg. Chem.</i> <u>1924</u> , <i>141</i> , 45-81.			
VARIABLES:		PREPARED BY:			
Concentration		C. L. Young			
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt / 10^3 mol m^{-3} (soln.)	Conc. of salt / mol kg^{-1} (water)	S_1 / cm^3	S_2 / cm^3
298.15	1.0550 1.1141	0.4646 0.977	0.4698 1.0017	36.5 24.8	34.6 22.2
<p>S_1 - volume of nitrous oxide absorbed per 100 cm^3 of salt solution</p> <p>S_2 - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S_1 and S_2 were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure. (1). Density of the aqueous solution determined by Sprengel pycnometer.			1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. 2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES: 1. Manchot, W. <i>Z. Anorg. Chem.</i> <u>1924</u> , <i>141</i> , 38.		

<p>COMPONENTS:</p> <ol style="list-style-type: none"> Nitrous oxide; N_2O; [10024-97-2] Water; H_2O; [7732-18-5]; Sodium sulfate; Na_2SO_4; [7757-82-6] 	<p>ORIGINAL MEASUREMENTS:</p> <p>Markham, A. E.; Kobe, K. A. <i>J. Amer. Chem. Soc.</i> <u>1941</u>, <i>63</i>, 449-54.</p>																														
<p>VARIABLES:</p> <p>T/K: 273.35-313.15 Salt molality/mol kg^{-1}: 0.1-8 Partial pressure of gas/atm: 1</p>	<p>PREPARED BY:</p> <p>P. L. Long</p>																														
<p>EXPERIMENTAL VALUES:</p> <table border="1" data-bbox="106 497 1238 825"> <thead> <tr> <th>T/K*</th> <th>Salt molality/mol kg^{-1}*</th> <th>Bunsen Coefficient, α^*</th> <th>'Solubility Coefficient', S *^a</th> </tr> </thead> <tbody> <tr> <td rowspan="4">298.15</td> <td>0</td> <td>0.5392</td> <td>0.5408</td> </tr> <tr> <td>0.5</td> <td>0.3565</td> <td>0.3612</td> </tr> <tr> <td>1</td> <td>0.2476</td> <td>0.2547</td> </tr> <tr> <td>1.5</td> <td>0.1721</td> <td>0.1797</td> </tr> <tr> <td rowspan="4">313.15</td> <td>0</td> <td>0.3579</td> <td>0.3607</td> </tr> <tr> <td>0.5</td> <td>0.2425</td> <td>0.2472</td> </tr> <tr> <td>1</td> <td>0.1722</td> <td>0.1791</td> </tr> <tr> <td>1.5</td> <td>0.1226</td> <td>0.1297</td> </tr> </tbody> </table>		T/K*	Salt molality/mol kg^{-1} *	Bunsen Coefficient, α^*	'Solubility Coefficient', S * ^a	298.15	0	0.5392	0.5408	0.5	0.3565	0.3612	1	0.2476	0.2547	1.5	0.1721	0.1797	313.15	0	0.3579	0.3607	0.5	0.2425	0.2472	1	0.1722	0.1791	1.5	0.1226	0.1297
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<p>* From the original data.</p> <p>^a The 'solubility coefficient', "refers to the volume of gas, reduced to standard conditions ... which is dissolved by the quantity of solution containing one gram of water".</p>																															
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<p>METHOD/APPARATUS/PROCEDURE:</p> <p>An Ostwald method was used. A known volume of gas was placed in contact with a known volume of gas-free liquid. After equilibrium was established by agitation, the volume of the remaining gas was measured from which the amount of gas dissolved was found. Solutions were prepared by weight, and verified by density measurements compared with the literature values. Apparatus consisted of an absorption flask with two bulbs, one twice the volume of the other, which was connected by a capillary tube to a gas buret and a manometer system.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <ol style="list-style-type: none"> 99.7 per cent pure, no source. Water was freshly boiled, distilled. Analytical grade. <p>ESTIMATED ERROR:</p> <p>$\delta T/K = \pm 0.1$ (273.35 K); ± 0.03 (above 273.35 K); $\delta \alpha/\alpha = \pm 0.02$.</p> <p>REFERENCES:</p>																														

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. Sodium sulfate; Na ₂ SO ₄ ; [7757-82-6] 4. Sulfuric acid; H ₂ SO ₄ ; [7664-93-9]		ORIGINAL MEASUREMENTS: Kobe, K. A.; Kenton, F. H. <i>Ind. Eng. Chem., Anal. Ed.</i> <u>1938</u> , 10, 76-77.		
VARIABLES: T/K: 298.15 N ₂ O P/kPa: 101.325 (760 mmHg)		PREPARED BY: C. L. Young		
EXPERIMENTAL VALUES:				
Temperature	Solvent	Volume	Bunsen	Ostwald
t/°C	Volume	Absorbed	Coefficient	Coefficient
T/K	cm ³	cm ³	α	L
25	49.54	7.88	0.159	0.146
	49.54	7.90		
<p>The solvent was a mixture of 800 g H₂O 200 g Na₂SO₄ (anhydrous) 40 ml H₂SO₄ (conc., 36 N)</p> <p>Thus the molality of the solution was</p> $m_{\text{Na}_2\text{SO}_4} / \text{mol kg}^{-1} = 1.76$ $m_{\text{H}_2\text{SO}_4} / \text{mol kg}^{-1} = 0.90.$				
AUXILIARY INFORMATION				
METHOD APPARATUS/PROCEDURE: <p>The apparatus was described in detail in an earlier paper (1). The apparatus consists of a gas buret, a pressure compensator, and a 200 cm³ absorption bulb and mercury leveling bulb. The absorption bulb is attached to a shaking mechanism.</p> <p>The solvent and the gas are placed in the absorption bulb. The bulb was shaken until equilibrium was reached. The remaining gas was returned to the buret. The difference in final and initial volumes was taken as the gas absorbed.</p>		SOURCE AND PURITY OF MATERIALS: 1. Nitrous oxide source not given. Purity stated to be 99+ per cent. 2. Water: distilled. 3, 4. Sodium sulfate and sulfuric acid: sources not given. Analytical grades.		
		ESTIMATED ERROR: $\delta\alpha / \text{cm}^3 = \pm 0.001$		
		REFERENCES: 1. Kobe, K. A.; Williams, J. S. <i>Ind. Eng. Chem., Anal. Ed.</i> <u>1935</u> , 7, 37.		

COMPONENTS: 1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5] 3. Sodium nitrate; $NaNO_3$; [7631-99-4]		ORIGINAL MEASUREMENTS: Knopp, W. <i>Z. Phys. Chem.</i> <u>1904</u> , <i>48</i> , 97-108		
VARIABLES: Concentration		PREPARED BY: W. Gerrard		
EXPERIMENTAL VALUES:				
Pressure assumed to be 101.325 kPa.				
T/K	Weight of salt in 100 g of solution	Conc of salt /mol dm^3 (soln)	Density of solution	Bunsen absorption coefficient, α
293.15	1.124	0.1336	1.00590	0.6089
	2.531	0.3052	1.01537	0.5876
	5.077	0.6286	1.03284	0.5465
	8.701	1.1200	1.05834	0.4926
			Water	0.6270
AUXILIARY INFORMATION				
METHOD: /APPARATUS/PROCEDURE: An absorption pipet and gas buret were used to measure the volume of nitrous oxide absorbed. Densities were determined by a Sprengel pyknometer.		SOURCE AND PURITY OF MATERIALS: 1. Nitrous oxide was prepared by heating pure ammonium nitrate at 513-523 K. It was passed through aqueous ferrous sulfate, aqueous sodium hydroxide, and concentrated sulfuric acid. 2. Appeared to be of satisfactory purity.		
		ESTIMATED ERROR:		
		REFERENCES:		

COMPONENTS:		ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. Sodium nitrate; NaNO ₃ ; [7631-99-4]		Manchot, von W.; Jahrstorfer, M.; Zepter, H. <i>Z. Anorg. Allg. Chem.</i> <u>1924</u> , 141, 45-81.			
VARIABLES:		PREPARED BY:			
Concentration		C. L. Young			
EXPERIMENTAL VALUES:					
T/K	Density, d_t^{25} of salt soln.	Conc. of salt /10 ³ mol m ⁻³ (soln.)	Conc. of salt /mol kg ⁻¹ (water)	S ₁ /cm ³	S ₂ /cm ³
298.15	1.0560 1.0677 1.1141 1.1543 1.2152	1.08 1.31 2.17 3.01 4.20	1.1201 1.3698 2.3343 3.3504 4.8942	42.3 40.3 33.5 27.7 21.6	40.1 37.7 30.1 24.0 17.8
<p>S₁ - volume of nitrous oxide absorbed per 100 cm³ of salt solution</p> <p>S₂ - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S₁ and S₂ were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE: Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure (1). Density of the aqueous solution determined by Sprengel pyknometer.			SOURCE AND PURITY OF MATERIALS: 1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. 2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES: 1. Manchot, W. <i>Z. Anorg. Chem.</i> <u>1924</u> , 141, 38.		

COMPONENTS:			ORIGINAL MEASUREMENTS:		
1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5] 3. Sodium phosphate; Na_3PO_4 ; [7601-54-9] or Disodium hydrogen phosphate; Na_2HPO_4 ; [7558-79-4]			Manchot, von W.; Jahrstorfer, M.; Zepfer, H. <i>Z. Anorg. Allg. Chem.</i> <u>1924</u> , <i>141</i> , 45-81.		
VARIABLES:			PREPARED BY:		
Concentration			C. L. Young		
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt / 10^3 mol m^{-3} (soln.)	Conc. of salt / mol kg^{-1} (water)	S_1 / cm^3	S_2 / cm^3
Sodium phosphate					
298.15	1.0348	0.22	0.2203	40.7	39.3
Disodium hydrogen phosphate					
298.15	1.0470	0.3985	0.4024	38.0	39.6
S_1 - volume of nitrous oxide in 100 cm^3 of salt solution S_2 - volume of nitrous oxide in 100 g of salt solution					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure. (1). Density of the aqueous solution determined by Sprengel pyknometer.			1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. 2. Recrystallized.		
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			REFERENCES:		
			1. Manchot, W. <i>Z. Anorg. Chem.</i> <u>1924</u> , <i>141</i> , 38.		

COMPONENTS:		ORIGINAL MEASUREMENTS:		
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. Sodium carbonate; Na ₂ CO ₃ ; [497-19-8] or Sodium bicarbonate; NaHCO ₃ ; [144-55-8]		Hikita, H.; Asai, S.; Ishikawa, H.; Esaka, H. <i>J. Chem. Engng. Data</i> , <u>1974</u> , <i>19</i> , 89-92.		
VARIABLES:		PREPARED BY:		
Concentration		C. L. Young		
EXPERIMENTAL VALUES:				
T/K	Conc. of sodium carbonate /g l ⁻¹ (soln.)	Conc. of sodium bicarbonate /g l ⁻¹ (soln.)	Ionic strength /g-ion l ⁻¹	Solubility, S /mol l ⁻¹ (soln.)
298.15	0	0	0	2.356
	0.329	0	0.987	1.753
	0.661	0	1.98	1.296
	0.992	0	2.98	1.064
	1.33	0	3.98	0.7750
	1.66	0	4.97	0.6404
	0.309	0.0630	0.990	1.729
	0.621	0.125	1.99	1.389
	0.927	0.183	2.96	1.036
	1.24	0.249	3.97	0.7923
	1.54	0.310	4.93	0.6314
	0.198	0.200	0.794	1.777
	0.395	0.398	1.58	1.429
	0.600	0.587	2.39	1.180
	0.783	0.755	3.10	0.9568
	0.0990	0.199	0.496	1.917
	0.197	0.402	0.993	1.668
	0.301	0.593	1.50	1.441
	0.395	0.801	1.99	1.186
	0.0374	0.187	0.299	2.024
	0.0740	0.373	0.595	1.807
	0.113	0.553	0.892	1.665
	0.151	0.736	1.19	1.439
	0.190	0.927	1.50	1.267
Pressure = 1 atmosphere = 1.01325 bar.				
AUXILIARY INFORMATION				
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:		
Gas volumetric method similar to that used by Onda <i>et al.</i> (ref. 1). Chemical compositions of absorbing solutions determined by chemical method of Danckwerts and Kennedy (ref. 2).		1. Commercial sample, purity better than 99.8 mole per cent. 2. Distilled and boiled. 3. Analytical grade reagent. 4. Analytical grade reagent.		
		ESTIMATED ERROR:		
		$\delta T/K = \pm 0.1$; $\delta S/\text{mol l}^{-1} = \pm 1.0\%$ (estimated by compiler).		
		REFERENCES:		
		1. Onda, K.; Sada, E.; Kobayashi, T.; Kito, S.; Ito, K.; <i>J. Chem. Eng. Japan</i> , <u>1970</u> , <i>3</i> , 18. 2. Dankwerts, P. V.; Kennedy, A. M.; <i>Chem. Eng. Sci.</i> , <u>1958</u> , <i>8</i> , 201.		

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]; 3. Potassium hydroxide; KOH; [1310-58-3]		Geffcken, G. Z. <i>Phys. Chem.</i> <u>1904</u> , 49, 257-302.	
VARIABLES:		PREPARED BY:	
Temperature, concentration		W. Gerrard/C. L. Young	
EXPERIMENTAL VALUES:			
T/K	Conc. of hydroxide/mol dm ⁻³ (soln.)	Ostwald coefficient, L	
288.16	0.541	0.6591	
	0.542	0.6595	
	1.074	0.5427	
298.15	1.082	0.5392	
	0.541	0.5087	
	0.542	0.5093	
	1.074	0.4252	
	1.082	0.4221	
AUXILIARY INFORMATION			
METHOD / APPARATUS / PROCEDURE:		SOURCE AND PURITY OF MATERIALS	
Measurement of volume of N ₂ O absorbed by the aqueous solution. Detailed description and diagram given in source.		1. Nitrous oxide self prepared and attested.	
		ESTIMATED ERROR:	
		REFERENCES:	

<p>COMPONENTS:</p> <p>1. Nitrous oxide; N₂O; [10024-97-2] 2. Water; H₂O; [7732-18-5] 3. Potassium fluoride; KF; [7789-23-3]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Kreitus, I.; Abramkov, A. <i>Latv. PRS Zinat. Akad. Vestis Khim. Ser.</i> <u>1980</u>, 238.</p>														
<p>VARIABLES:</p> <p>Concentration of salt</p>	<p>PREPARED BY:</p> <p>C. L. Young</p>														
<p>EXPERIMENTAL VALUES:</p> <table border="1"> <thead> <tr> <th>T/K</th> <th>Conc. of salt/mol kg⁻¹ (solvent)</th> <th>Bunsen coefficient, α</th> </tr> </thead> <tbody> <tr> <td rowspan="5">298.15</td> <td>0</td> <td>0.54</td> </tr> <tr> <td>1.21</td> <td>0.37</td> </tr> <tr> <td>5.84</td> <td>0.093</td> </tr> <tr> <td>7.78</td> <td>0.079</td> </tr> <tr> <td>12.33</td> <td>0.019</td> </tr> </tbody> </table>		T/K	Conc. of salt/mol kg ⁻¹ (solvent)	Bunsen coefficient, α	298.15	0	0.54	1.21	0.37	5.84	0.093	7.78	0.079	12.33	0.019
T/K	Conc. of salt/mol kg ⁻¹ (solvent)	Bunsen coefficient, α													
298.15	0	0.54													
	1.21	0.37													
	5.84	0.093													
	7.78	0.079													
	12.33	0.019													
<p>AUXILIARY INFORMATION</p>															
<p>METHOD APPARATUS/PROCEDURE:</p> <p>Aqueous solution saturated at 0.1013 MPa and 1 cm³ sample analyzed by gas chromatography. Column contained molecular sieves and was operated isothermally at 250 °C using helium as carrier gas. Thermal conductivity detector used. Details in ref. (1).</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <ol style="list-style-type: none"> 1. Medical grade sample. 2. Twice distilled. 3. Pure. <p>ESTIMATED ERROR:</p> <p>$\delta T/K = \pm 0.1$; $\delta \alpha/\alpha = \pm 0.06$</p> <p>REFERENCES:</p> <ol style="list-style-type: none"> 1. Kreitus, I.; Gorbvitskalya, T. I. <i>Latv. PRS Zinat. Akad. Vestis Khim. Ser.</i> 1979, 664-666. 														

COMPONENTS:				ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N ₂ O; [10024-97-2]				Gordon, V. Z. <i>Phys. Chem.</i> <u>1895</u> , 18, 1-16.			
2. Water; H ₂ O; [7732-18-5];							
3. Potassium chloride; KCl; [7447-40-7]							
VARIABLES:				PREPARED BY:			
Temperature, concentration				W. Gerrard			
EXPERIMENTAL VALUES:							
T/K	Conc. of salt Weight-%	Density, ρ	Bunsen Coefficient, α	T/K	Conc. of salt Weight-%	Density, ρ	Bunsen Coefficient, α
295.46	4.899	1.029	0.5091	295.46	14.582	1.0939	0.4004
291.76		1.0302	0.5700	291.76		1.0954	0.4521
288.26		1.0309	0.6351	288.26		1.0965	0.4983
284.16		1.0318	0.7243	284.16		1.0977	0.5611
281.26		1.0324	0.7999	281.26		1.0987	0.6042
295.46	7.640	1.0461	0.4513	295.46	22.083	1.1487	0.3208
291.76		1.0475	0.5191	291.76		1.1502	0.3570
288.26		1.049	0.5893	288.26		1.1516	0.3888
284.16		1.0503	0.6661	284.16		1.1533	0.4606
281.26		1.0533	0.7329	281.26		1.1543	0.4892
<u>Smoothing Equations</u>							
(t = T/K - 273.16)							
For 4.899 wt-% solution: $\alpha = 1.02649 - 0.0315t + 0.000397t^2$							
For 7.640 wt-% solution: $\alpha = 0.91032 - 0.0227t + 0.0000949t^2$							
For 14.582 wt-% solution: $\alpha = 0.73968 - 0.017583t + 0.0001058t^2$							
For 22.083 wt-% solution: $\alpha = 0.647561 - 0.0223445t + 0.0003449t^2$							
AUXILIARY INFORMATION							
METHOD / APPARATUS / PROCEDURE:				SOURCE AND PURITY OF MATERIALS			
Measurement of volume of gas by means of Ostwald type apparatus, gas buret and pipet (ref. 1). Density of the solution determined by Sprengel pyknometer.				1. N ₂ O: Self prepared and purified. Attested by combustion with hydrogen.			
				ESTIMATED ERROR:			
				REFERENCES:			
				1. Timofejew, W. Z. <i>Phys. Chem.</i> 1890, 6, 141.			

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]; 3. Potassium chloride; KCl; [7447-40-7]	ORIGINAL MEASUREMENTS: Geffcken, G. <i>Z. Phys. Chem.</i> <u>1904</u> , 49, 257-302.	
VARIABLES: Temperature, concentration	PREPARED BY: W. Gerrard/C. L. Young	
EXPERIMENTAL VALUES:		
T/K	Conc. of salt/mol dm ⁻³ (soln.)	Ostwald coefficient, L
288.16	0.558 0.559 1.070 1.102	0.6782 0.6787 0.6046 0.6020
298.16	0.558 0.559 1.070 1.102	0.5218 0.5217 0.4673 0.4639
AUXILIARY INFORMATION		
METHOD/APPARATUS/PROCEDURE: Measurement of volume of N ₂ O absorbed by the aqueous solution. Diagram and detailed description given in original paper.	SOURCE AND PURITY OF MATERIALS: 1. Nitrous oxide self prepared and attested.	
ESTIMATED ERROR:		
REFERENCES:		

COMPONENTS:		ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N ₂ O; [10024-97-2]		Manchot, von W.; Jahrstorfer, M.;			
2. Water; H ₂ O; [7732-18-5]		Zepter, M.			
3. Potassium chloride; KCl; [7447-40-7]		Z. Anorg. Allg. Chem. <u>1924</u> , 141, 45-81.			
VARIABLES:		PREPARED BY:			
Concentration		C. L. Young			
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt /10 ³ mol m ⁻³ (soln.)	Conc. of salt /mol kg ⁻¹ (water)	S ₁ /cm ³	S ₂ /cm ³
298.15	1.0334	0.78	0.7998	45.3	43.8
	1.0540	1.25	1.3010	41.0	38.9
	1.0850	1.98	2.1123	35.5	32.7
	1.1385	3.21	3.5700	28.1	24.7
	1.1734	4.04	4.6321	24.0	20.4
<p>S₁ - volume of nitrous oxide absorbed per 100 cm³ of salt solution</p> <p>S₂ - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S₁ and S₂ were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure. (1). Density of the aqueous solution determined by Sprengel pyknometer.			1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled.		
			2. Recrystallized.		
ESTIMATED ERROR:					
REFERENCES:					
1. Manchot. W. Z. Anorg. Chem. <u>1924</u> , 141, 38.					

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]; 3. Potassium chloride; KCl; [7447-40-7]	ORIGINAL MEASUREMENTS: Markham, A. E.; Kobe, K. A. <i>J. Amer. Chem. Soc.</i> <u>1941</u> , <i>63</i> , 449-54.		
VARIABLES: T/K: 273.35-313.15 Salt molality/mol kg ⁻¹ : 0.1-8 Partial pressure of gas/atm: 1	PREPARED BY: P. L. Long		
EXPERIMENTAL VALUES:			
T/K*	Salt molality/mol kg ⁻¹ *	Bunsen Coefficient, α*	'Solubility Coefficient', S*a
273.35	0 1 2 3	1.2970 0.9880 0.7784 0.6349	1.2971 1.0140 0.8212 0.6893
298.15	0 1 2 3	0.5392 0.4329 0.3580 0.3030	0.5408 0.4466 0.3803 0.3315
313.15	0 1 2 3	0.3579 0.2885 0.2416 0.2077	0.3607 0.2993 0.2613 0.2286
<p>* From the original data.</p> <p>a The 'solubility coefficient', "refers to the volume of gas, reduced to standard conditions ... which is dissolved by the quantity of solution containing one gram of water".</p>			
AUXILIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE: An Ostwald method was used. A known volume of gas was placed in contact with a known volume of gas-free liquid. After equilibrium was established by agitation, the volume of the remaining gas was measured from which the amount of gas dissolved was found. Solutions were prepared by weight, and verified by density measurements compared with the literature values. Apparatus consisted of an absorption flask with two bulbs, one twice the volume of the other, which was connected by a capillary tube to a gas buret and a manometer system.	SOURCE AND PURITY OF MATERIALS: 1. 99.7 per cent pure, no source. 2. Water was freshly boiled, distilled. 3. Analytical grade.		
	ESTIMATED ERROR: δT/K = ±0.1 (273.35 K); ±0.03 (above 273.35 K); δα/α = ±0.02.		
	REFERENCES:		

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. Potassium chloride; KCl; [7447-40-7]		Kreitus, I.; Gorbovitskalya, T. I. <i>Latv. PRS Zinat. Akad. Vestis</i> <i>Khim. Ser.</i> <u>1979</u> , 664-666.	
VARIABLES:		PREPARED BY:	
Concentration of salt		C. L. Young	
EXPERIMENTAL VALUES:			
T/K	Conc. of salt /mol kg ⁻¹ (solvent)	Bunsen coefficient, α	Absorption [†] coefficient, S
298.15	0.0	0.55	0.55
	0.51	0.49	0.50
	1.03	0.44	0.46
	2.13	0.37	0.39
	2.70	0.33	0.35
	3.61	0.29	0.32
	4.63	0.25	0.29
	[†] Volume of gas, corrected to 101.3 kPa and 273.15 K, dissolved at specified temperature and a partial pressure of 101.3 kPa, by solution containing 1 g of water.		
AUXILIARY INFORMATION			
METHOD APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS.	
Aqueous solution saturated at 0.1013 MPa and 1 cm ³ sample analyzed by gas chromatography. Column contained molecular sieves and was operated isothermally at 250 °C using helium as carrier gas. Thermal conductivity detector used.		1. Medical grade sample.	
		2. Twice distilled.	
		3. Chemically pure grade.	
		ESTIMATED ERROR:	
		$\delta T/K = \pm 0.1$; $\delta \alpha/\alpha = \pm 0.1$	
		REFERENCES.	

COMPONENTS:		ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. Potassium bromide; KBr; [7758-02-3]		Manchot, von W.; Jahrstorfer, M.; Zepter, H. <i>Z. Anorg. Allg. Chem.</i> <u>1924</u> , <i>141</i> , 45-81.			
VARIABLES:		PREPARED BY:			
Concentration		C. L. Young			
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt /10 ³ mol m ⁻³ (soln.)	Conc. of salt /mol kg ⁻¹ (water)	S ₁ /cm ³	S ₂ /cm ³
298.15	1.0891 1.1752 1.3380	1.11 2.15 4.19	1.1598 2.3387 4.9922	43.0 35.1 24.7	39.5 29.9 18.5
<p>S₁ - volume of nitrous oxide absorbed per 100 cm³ of salt solution</p> <p>S₂ - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S₁ and S₂ were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure (1). Density of the aqueous solution determined by Sprengel pycnometer.			1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. 2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES:		
			1. Manchot, W. <i>Z. Anorg. Chem.</i> <u>1924</u> , <i>141</i> , 38.		

<p>COMPONENTS:</p> <ol style="list-style-type: none"> 1. Nitrous oxide; N₂O; [10024-97-2] 2. Water; H₂O; [7732-18-5]; 3. Potassium bromide; KBr; [7758-02-3] 	<p>ORIGINAL MEASUREMENTS:</p> <p>Geffcken, G. <i>Z. Phys. Chem.</i> <u>1904</u>, 49, 257-302.</p>	
<p>VARIABLES:</p> <p>Temperature, concentration</p>	<p>PREPARED BY:</p> <p>W. Gerrard/C. L. Young</p>	
<p>EXPERIMENTAL VALUES:</p>		
<p>T/K</p>	<p>Conc. of salt/mol dm⁻³ (soln.)</p>	<p>Ostwald coefficient, L</p>
<p>288.16</p>	<p>0.546 0.550 0.937 0.959</p>	<p>0.6877 0.6892 0.6352 0.6334</p>
<p>298.16</p>	<p>0.546 0.550 0.937 0.959</p>	<p>0.5306 0.5318 0.4908 0.4899</p>
<p>AUXILIARY INFORMATION</p>		
<p>METHOD / APPARATUS / PROCEDURE:</p> <p>Measurement of volume of N₂O absorbed by the aqueous solution. Detailed description and diagram given in source.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>1. Nitrous oxide self prepared and attested.</p>	
	<p>ESTIMATED ERROR:</p>	
	<p>REFERENCES:</p>	

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]; 3. Potassium iodide; KI; [7681-11-0]	ORIGINAL MEASUREMENTS: Geffcken, G. <i>Z. Phys. Chem.</i> <u>1904</u> , 49, 257-302.	
VARIABLES: Temperature, concentration	PREPARED BY: W. Gerrard/C. L. Young	
EXPERIMENTAL VALUES:		
T/K	Conc. of salt/mol dm ⁻³ (soln.)	Ostwald coefficient, L
288.16	0.550	0.6950
	0.557	0.6916
	0.886	0.6466
	0.913	0.6442
298.16	0.550	0.5367
	0.557	0.5344
	0.886	0.5025
	0.913	0.5012
AUXILIARY INFORMATION		
METHOD/APPARATUS/PROCEDURE: Measurement of volume of N ₂ O absorbed by the aqueous solution. Detailed description and diagram given in source.	SOURCE AND PURITY OF MATERIALS: 1. Nitrous oxide self prepared and attested.	
	ESTIMATED ERROR:	
	REFERENCES:	

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]; 3. Potassium iodide; KI; [7681-11-0]	ORIGINAL MEASUREMENTS: Sada, E.; Ando, N.; Kito, S. <i>J. Appl. Chem. biotechnol.</i> <u>1972</u> , <i>22</i> , 1185-1193.																
VARIABLES: T/K: 298.15 P/kPa: 101.325 (atm) Molarity of salt: mol l ⁻¹	PREPARED BY: W. Gerrard/C. L. Young																
EXPERIMENTAL VALUES: <table border="1" data-bbox="93 532 1233 777"> <thead> <tr> <th>T/K</th> <th>Concn. of salt/mol l⁻¹</th> <th>Bunsen coefficient, α</th> </tr> </thead> <tbody> <tr> <td rowspan="6">298.15</td> <td>0</td> <td>0.5512 (pure water)</td> </tr> <tr> <td>0.644</td> <td>0.4862</td> </tr> <tr> <td>1.093</td> <td>0.4491</td> </tr> <tr> <td>1.661</td> <td>0.4080</td> </tr> <tr> <td>2.196</td> <td>0.3712</td> </tr> <tr> <td>2.859</td> <td>0.3241</td> </tr> </tbody> </table>		T/K	Concn. of salt/mol l ⁻¹	Bunsen coefficient, α	298.15	0	0.5512 (pure water)	0.644	0.4862	1.093	0.4491	1.661	0.4080	2.196	0.3712	2.859	0.3241
T/K	Concn. of salt/mol l ⁻¹	Bunsen coefficient, α															
298.15	0	0.5512 (pure water)															
	0.644	0.4862															
	1.093	0.4491															
	1.661	0.4080															
	2.196	0.3712															
	2.859	0.3241															
AUXILIARY INFORMATION																	
METHOD/APPARATUS/PROCEDURE: Equilibrium established between a measured volume of gas and a measured amount of gas-free liquid in a cell fitted with a magnetic stirrer. Details in source and ref. 1.	SOURCE AND PURITY OF MATERIALS: 1. From commercial cylinder; 99.8 per cent, as attested by gas chromatography. 2. Distilled water was used. 3. Salt was of reagent grade. ESTIMATED ERROR: $\delta T/K = \pm 0.2$; $\delta \alpha = \pm 2\%$ (estimated by compiler). REFERENCES: 1. Onda, K.; Sada, E.; Kobayashi, T.; Kito, S.; Ito, K. <i>J. Chem. Engng. Japan</i> <u>1970</u> , <i>3</i> , 18; 137.																

COMPONENTS:				ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]; 3. Potassium sulfate; K ₂ SO ₄ ; [7778-80-5]				Gordon, V. Z. <i>Phys. Chem.</i> <u>1895</u> , 18, 1-16.			
VARIABLES:				PREPARED BY:			
Temperature, concentration				W. Gerrard			
EXPERIMENTAL VALUES:							
T/K	Conc. of salt Weight-%	Density, ρ	Bunsen Coefficient, α	T/K	Conc. of salt Weight-%	Density, ρ	Bunsen Coefficient, α
295.46	2.623	1.0194	0.55560	295.46	4.784	1.0369	0.50827
291.76		1.0198	0.63128	291.76		1.0378	0.56699
288.26		1.021	0.69827	288.26		1.0387	0.63497
284.16		1.0218	0.79579	284.16		1.0395	0.73157
281.26		1.01222	0.88724	281.26		1.0403	0.81797
<u>Smoothed Equations</u>							
(t - T/K - 273.15)							
For 2.623 wt-% solution:				= 1.166991 - 0.03864t + 0.0005028t ²			
For 4.784 wt-% solution:				= 1.1033557 - 0.040109t + 0.000602t ²			
AUXILIARY INFORMATION							
METHOD / APPARATUS / PROCEDURE:				SOURCE AND PURITY OF MATERIALS:			
Measurement of volume of gas by means of Ostwald type apparatus, gas buret and pipet. Density of the solution determined by Sprengel pyknometer.				1. N ₂ O: Self prepared and purified. Attested by combustion with hydrogen.			
				ESTIMATED ERROR:			
				REFERENCES:			

COMPONENTS:			ORIGINAL MEASUREMENTS:		
1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5] 3. Potassium sulfate; K_2SO_4 ; [7778-80-5]			Manchot, von W.; Jahrstorfer, M.; Zepter, H. <i>Z. Anorg. Allg. Chem.</i> <u>1924</u> , <i>141</i> , 45-81.		
VARIABLES:			PREPARED BY:		
Concentration			C. L. Young		
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt / 10^5 mol m^{-3} (soln.)	Conc. of salt /mol kg^{-1} (water)	S_1 / cm^3	S_2 / cm^3
298.15	1.0762	0.5991	0.6165	35.5	33.0
<p>S_1 - volume of nitrous oxide absorbed per 100 cm^3 of salt solution</p> <p>S_2 - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S_1 and S_2 were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure. (1). Density of the aqueous solution determined by Sprengel pyknometer.			1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. 2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES:		
			1. Manchot, W. <i>Z. Anorg. Chem.</i> <u>1924</u> , <i>141</i> , 38.		

COMPONENTS:		ORIGINAL MEASUREMENTS:		
1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5] 3. Potassium nitrate; KNO_3 ; [7757-79-1]		Knopp, W. Z. <i>Phys. Chem.</i> <u>1904</u> , 48, 97-108.		
VARIABLES:		PREPARED BY:		
Concentration		W. Gerrard		
EXPERIMENTAL VALUES:				
Pressure assumed to be 101.325 kPa.				
T/K	Weight of salt in 100 g of solution	Conc of salt /mol dm^3 (soln)	Density of solution	Bunsen absorption coefficient, α
293.15	1.063	0.1061	1.0049	0.6173
	2.720	0.2764	1.01534	0.6002
	5.389	0.5630	1.03231	0.5713
	10.577	1.1683	1.06644	0.5196
			Water	0.6270
AUXILIARY INFORMATION				
METHOD: / APPARATUS / PROCEDURE:		SOURCE AND PURITY OF MATERIALS:		
An absorption pipet and gas buret were used to measure the volume of nitrous oxide absorbed. Densities were determined by Sprengel pyknometer.		(1) Nitrous oxide was prepared by heating pure ammonium nitrate at 523-513 K. It was passed through aqueous ferrous sulfate, aqueous sodium hydroxide, and concentrated sulfuric acid. (2) Appeared to be of satisfactory purity.		
		ESTIMATED ERROR:		
		REFERENCES:		

COMPONENTS:			ORIGINAL MEASUREMENTS:		
1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5] 3. Potassium nitrate; KNO_3 ; [7757-79-1]			Manchot, von W.; Jahrstorfer, M.; Zepfer, H. <i>Z. Anorg. Allg. Chem.</i> <u>1924</u> , 141, 45-81.		
VARIABLES:			PREPARED BY:		
Concentration			C. L. Young		
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of salt soln.	Conc. of salt /10 mol m^{-3} (soln.)	Conc. of salt /mol kg^{-1} (water)	S_1 /cm ³	S_2 /cm ³
298.15	1.0586 1.1231	1.02 2.15	1.0675 2.3738	44.8 38.3	42.4 34.1
<p>S_1 - volume of nitrous oxide absorbed per 100 cm³ of salt solution</p> <p>S_2 - volume of nitrous oxide absorbed per 100 g of salt solution</p> <p>Both S_1 and S_2 were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS		
Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure. (1). Density of the aqueous solution determined by Sprengel pyknometer.			1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. 2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES:		
			1. Manchot, W. <i>Z. Anorg. Chem.</i> <u>1924</u> , , 38.		

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5]; 3. Potassium nitrate; KNO_3 ; [7757-79-1]		Markham, A. E.; Kobe, K. A. <i>J. Amer. Chem. Soc.</i> <u>1941</u> , <i>63</i> , 449-54.	
VARIABLES:		PREPARED BY:	
T/K: 273.35-313.15 Salt molality/mol kg^{-1} : 0.1-8 Partial pressure of gas/atm: 1		P. L. Long	
EXPERIMENTAL VALUES:			
T/K*	Salt molality/mol kg^{-1} *	Bunsen Coefficient, α^*	'Solubility Coefficient', S^{*a}
273.35	0	1.2970	1.2971
	0.2	1.2183	1.2267
	0.5	1.1355	1.1556
298.15	1	1.0174	1.0545
	0	0.5392	0.5408
	1	0.4552	0.4749
	2	0.3961	0.4299
313.15	3	0.3524	0.3978
	0	0.3579	0.3607
	1	0.3100	0.3254
	2	0.2761	0.3018
	3	0.2475	0.2814
<p>* From the original data.</p> <p>^a The 'solubility coefficient', "refers to the volume of gas, reduced to standard conditions ... which is dissolved by the quantity of solution containing one gram of water".</p>			
AUXILIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS.	
An Ostwald method was used. A known volume of gas was placed in contact with a known volume of gas-free liquid. After equilibrium was established by agitation, the volume of the remaining gas was measured from which the amount of gas dissolved was found. Solutions were prepared by weight, and verified by density measurements compared with the literature values. Apparatus consisted of an absorption flask with two bulbs, one twice the volume of the other, which was connected by a capillary tube to a gas buret and a manometer system.		1. 99.7 per cent pure, no source. 2. Water was freshly boiled, distilled. 3. Analytical grade.	
		ESTIMATED ERROR: $\delta T/K = \pm 0.1$ (273.35 K); ± 0.03 (above 273.35 K); $\delta \alpha/\alpha = \pm 0.02$.	
		REFERENCES:	

COMPONENTS: 1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5]; 3. Potassium nitrate; KNO_3 ; [7757-79-1]	ORIGINAL MEASUREMENTS: Sada, E.; Ando, N.; Kito, S. <i>J. Appl. Chem. biotechnol.</i> <u>1972</u> , 22, 1185-1193.										
VARIABLES: T/K: 298.15 P/kPa : 101.325 (1 atm) Molarity of salt: $mol\ l^{-1}$	PREPARED BY: W. Gerrard/C. L. Young										
EXPERIMENTAL VALUES: <table border="1" data-bbox="113 528 1247 711"> <thead> <tr> <th>T/K</th> <th>Concn. of salt/$mol\ l^{-1}$</th> <th>Bunsen coefficient, α</th> </tr> </thead> <tbody> <tr> <td rowspan="3">298.15</td> <td>0</td> <td>0.5512 (pure water)</td> </tr> <tr> <td>1.381</td> <td>0.4433</td> </tr> <tr> <td>2.645</td> <td>0.3626</td> </tr> </tbody> </table>		T/K	Concn. of salt/ $mol\ l^{-1}$	Bunsen coefficient, α	298.15	0	0.5512 (pure water)	1.381	0.4433	2.645	0.3626
T/K	Concn. of salt/ $mol\ l^{-1}$	Bunsen coefficient, α									
298.15	0	0.5512 (pure water)									
	1.381	0.4433									
	2.645	0.3626									
AUXILIARY INFORMATION											
METHOD/APPARATUS/PROCEDURE: Equilibrium established between a measured volume of gas and a measured amount of gas-free liquid in a cell fitted with a magnetic stirrer. Details in source and ref. 1.	SOURCE AND PURITY OF MATERIALS: 1. From commercial cylinder; 99.8 per cent, as attested by gas chromatography. 2. Distilled water was used. 3. Salt was of reagent grade. ESTIMATED ERROR: $\delta T/K = \pm 0.2$; $\delta \alpha = \pm 2\%$ (estimated by compiler). REFERENCES: 1. Onda, K.; Sada, E.; Kobayashi, T.; Kito, S.; Ito, K. <i>J. Chem. Engng. Japan</i> <u>1970</u> , 3, 18; 137.										

COMPONENTS:		ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5] 3. Potassium periodate; KIO_4 ; [7790-21-8]		Manchot, von W.; Jahrstorfer, M.; Zepter, H. <i>Z. Anorg. Allg. Chem.</i> <u>1924</u> , 141, 45-81.			
VARIABLES:		PREPARED BY:			
Concentration		C. L. Young			
EXPERIMENTAL VALUES:					
T/K	Density, d_4^{25} of acid soln.	Conc. of salt $/10^3 \text{ mol m}^{-3}$ (soln.)	Conc. of salt $/\text{mol kg}^{-1}$ (water)	S_1 $/\text{cm}^3$	S_2 $/\text{cm}^3$
298.15	1.0008	0.0164	0.0164	52.1	52.1
<p>S_1 - volume of nitrous oxide per 100 cm^3 of salt</p> <p>S_2 - volume of nitrous oxide per 100 g of salt</p> <p>Both S_1 and S_2 were reduced to conditions of 273.15 K and 101.3 kPa</p>					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure (1). Density of the aqueous solution determined by Sprengel pycnometer.			1. Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. 2. Recrystallized.		
			ESTIMATED ERROR:		
			REFERENCES:		
			1. Manchot, W. <i>Z. Anorg. Chem.</i> <u>1924</u> , 141, 38.		

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. Potassium carbonate; K ₂ CO ₃ ; [584-08-7] 4. Potassium bicarbonate; KHCO ₃ ; [298-14-6]	ORIGINAL MEASUREMENTS: Joosten, G. E. H.; Danckwerts, P. V. <i>J. Chem. Engng. Data</i> <u>1972, 17, 452-454.</u>
VARIABLES: Concentration	PREPARED BY: C. L. Young
EXPERIMENTAL VALUES: $T/K = 298.15$ Concentration of K ₂ CO ₃ = Concentration of KHCO ₃	
Concentration of K ₂ CO ₃ /mol dm ⁻³	Solubility, S × 10 ² /mol dm ³ atm ⁻¹
0.000 0.095 0.165 0.30 0.60 0.89 1.00 1.25	2.44 2.21 2.06 1.82 1.37 1.00 0.93 0.75
AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE: Apparatus and procedure similar to that of Markham and Kobe (1). Few details given.	SOURCE AND PURITY OF MATERIALS: No details given. ESTIMATED ERROR: $\delta T/K = \pm 0.02$; $\delta S/S = \pm 0.015$. REFERENCES: 1. Markham, A. E.; Kobe, K. A. <i>J. Amer. Chem. Soc.</i> <u>1941, 63, 449.</u>

COMPONENTS: 1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5]; 3. Rubidium chloride; $RbCl$; [7791-11-9]	ORIGINAL MEASUREMENTS: Geffcken, G. Z. <i>Phys. Chem.</i> <u>1904</u> , 49, 257-302.																					
VARIABLES: Temperature, concentration	PREPARED BY: W. Gerrard/C. L. Young																					
EXPERIMENTAL VALUES:																						
<table border="1"> <thead> <tr> <th data-bbox="63 501 131 540">T/K</th> <th data-bbox="284 501 731 540">Conc. of salt/mol dm^{-3} (soln.)</th> <th data-bbox="823 501 1152 540">Ostwald coefficient, L</th> </tr> </thead> <tbody> <tr> <td data-bbox="63 580 131 619" rowspan="4">288.16</td> <td data-bbox="442 580 521 619">0.439</td> <td data-bbox="942 580 1021 619">0.7050</td> </tr> <tr> <td data-bbox="442 619 521 658">0.444</td> <td data-bbox="942 619 1021 658">0.7053</td> </tr> <tr> <td data-bbox="442 658 521 697">0.977</td> <td data-bbox="942 658 1021 697">0.6306</td> </tr> <tr> <td data-bbox="442 697 521 736">0.993</td> <td data-bbox="942 697 1021 736">0.6276</td> </tr> <tr> <td data-bbox="63 736 131 776" rowspan="4">298.16</td> <td data-bbox="442 736 521 776">0.439</td> <td data-bbox="942 736 1021 776">0.5399</td> </tr> <tr> <td data-bbox="442 776 521 815">0.444</td> <td data-bbox="942 776 1021 815">0.5386</td> </tr> <tr> <td data-bbox="442 815 521 854">0.977</td> <td data-bbox="942 815 1021 854">0.4873</td> </tr> <tr> <td data-bbox="442 854 521 893">0.993</td> <td data-bbox="942 854 1021 893">0.4846</td> </tr> </tbody> </table>	T/K	Conc. of salt/mol dm^{-3} (soln.)	Ostwald coefficient, L	288.16	0.439	0.7050	0.444	0.7053	0.977	0.6306	0.993	0.6276	298.16	0.439	0.5399	0.444	0.5386	0.977	0.4873	0.993	0.4846	
T/K	Conc. of salt/mol dm^{-3} (soln.)	Ostwald coefficient, L																				
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AUXILIARY INFORMATION																						
METHOD/APPARATUS/PROCEDURE: Measurement of volume of N_2O absorbed by the aqueous solution. Detailed description and diagram given in source.	<table border="1"> <tr> <td data-bbox="632 1246 1205 1569"> SOURCE AND PURITY OF MATERIALS: 1. Nitrous oxide self prepared and attested. </td> </tr> <tr> <td data-bbox="632 1569 1205 1697"> ESTIMATED ERROR: </td> </tr> <tr> <td data-bbox="632 1697 1205 1907"> REFERENCES: </td> </tr> </table>	SOURCE AND PURITY OF MATERIALS: 1. Nitrous oxide self prepared and attested.	ESTIMATED ERROR:	REFERENCES:																		
SOURCE AND PURITY OF MATERIALS: 1. Nitrous oxide self prepared and attested.																						
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REFERENCES:																						

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]; 3. Caesium chloride; CsCl; [7647-17-8]	ORIGINAL MEASUREMENTS: Geffcken, G. Z. <i>Phys. Chem.</i> <u>1904</u> , 49, 257-302.	
VARIABLES: Temperature, concentration	PREPARED BY: W. Gerrard/C. L. Young	
EXPERIMENTAL VALUES:		
T/K	Conc. of salt/mol dm ⁻³ (soln.)	Ostwald coefficient, L
288.16	0.514	0.7074
298.16	0.545	0.7036
	0.514	0.5428
	0.545	0.5406
AUXILIARY INFORMATION		
METHOD/APPARATUS/PROCEDURE: Measurement of volume of N ₂ O absorbed by the aqueous solution. Detailed description and diagram given in source.	SOURCE AND PURITY OF MATERIALS: 1. Nitrous oxide self prepared and attested.	
	ESTIMATED ERROR:	
	REFERENCES:	

<p>COMPONENTS:</p> <ol style="list-style-type: none"> Nitrous oxide; N₂O; [10024-47-2] Water; H₂O; [7732-18-5] Cesium chloride; CsCl; [7647-17-8] 	<p>ORIGINAL MEASUREMENTS:</p> <p>Kreitus, I.; Abramensk, A. <i>Latv. PRS Zinat. Akad. Vestis Khim. Ser.</i> <u>1980</u>, 238.</p>																
<p>VARIABLES:</p> <p style="text-align: center;">Concentration of salt</p>	<p>PREPARED BY:</p> <p style="text-align: center;">C. L. Young</p>																
<p>EXPERIMENTAL VALUES:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">T/K</th> <th style="text-align: center;">Conc. of salt/mol kg⁻¹ (water)</th> <th style="text-align: right;">Bunsen coefficient, α</th> </tr> </thead> <tbody> <tr> <td rowspan="6" style="vertical-align: top;">298.15</td> <td style="text-align: center;">0</td> <td style="text-align: right;">0.54</td> </tr> <tr> <td style="text-align: center;">0.50</td> <td style="text-align: right;">0.49</td> </tr> <tr> <td style="text-align: center;">0.93</td> <td style="text-align: right;">0.43</td> </tr> <tr> <td style="text-align: center;">2.45</td> <td style="text-align: right;">0.32</td> </tr> <tr> <td style="text-align: center;">4.85</td> <td style="text-align: right;">0.23</td> </tr> <tr> <td style="text-align: center;">7.25</td> <td style="text-align: right;">0.14</td> </tr> </tbody> </table>		T/K	Conc. of salt/mol kg ⁻¹ (water)	Bunsen coefficient, α	298.15	0	0.54	0.50	0.49	0.93	0.43	2.45	0.32	4.85	0.23	7.25	0.14
T/K	Conc. of salt/mol kg ⁻¹ (water)	Bunsen coefficient, α															
298.15	0	0.54															
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	7.25	0.14															
<p>AUXILIARY INFORMATION</p>																	
<p>METHOD APPARATUS/PROCEDURE:</p> <p>Aqueous solution saturated at 0.1013 MPa and 1 cm³ sample analyzed by gas chromatography. Column contained molecular sieves and was operated isothermally at 250 °C using helium as carrier gas. Thermal conductivity detector used. Details in ref. (1).</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <ol style="list-style-type: none"> Medical grade sample. Twice distilled. Pure <p>ESTIMATED ERROR:</p> <p>$\delta T/K = \pm 0.1$; $\delta \alpha/\alpha = \pm 0.06$</p> <p>REFERENCES:</p> <ol style="list-style-type: none"> Kreitus, I.; Gorbovitskalya, T. I. <i>Latv. PRS Zinat. Akad. Vestis Khim. Ser.</i> <u>1979</u>, 004-000. 																

<p>COMPONENTS:</p> <ol style="list-style-type: none"> 1. Nitrous oxide; N₂O; [10024-97-2] 2. Water; H₂O; [7732-18-5] 3. Weak electrolytes and Nonelectrolytes 	<p>EVALUATOR:</p> <p>Colin L. Young, School of Chemistry, University of Melbourne, Parkville, Victoria 3052, Australia.</p> <p>February 1981</p>															
<p>CRITICAL EVALUATION:</p> <p>The most extensive studies of these systems has been undertaken by Sada and coworker (1), (2), (3), (4) and (5). Comparison with data of other workers for different systems indicates that Sada's data are fairly reliable, hence all data given in references (1) to (5) are classified as tentative. Roth's data (6) on oxalic acid, glycerol and urea are of fairly low precision and are classified as doubtful. Roth's data on electrolyte solution also studied by other workers indicate that the data are not as reliable as most other more recent data (see Electrolyte solution evaluation).</p> <p>The data of Knopp (7) appear to be of fairly good accuracy. The data for solubility in propanoic acid are consistent with Sada <i>et al.</i> data (3). Therefore Knopp's data are classified as tentative.</p> <p>In general it is not possible to fit the solubility data for non-electrolyte or weak electrolyte solutions with equations of the Sechenow type. Markham and Kobe (8) suggested an alternative equation:</p> $\frac{\alpha}{\alpha_0} = ac + \frac{1}{1 + bc}$ <p>where c is the molarity and a and b are constants for electrolyte solutions.</p> <p>Values of a and b calculated from the measurements of Sada <i>et al.</i> (3) are given below.</p> <table border="1" data-bbox="247 1023 1085 1188"> <thead> <tr> <th></th> <th>a/dm³ mol⁻¹</th> <th>b/dm³ mol⁻¹</th> </tr> </thead> <tbody> <tr> <td>Formic acid</td> <td>0.0716</td> <td>0.0776</td> </tr> <tr> <td>Acetic acid</td> <td>0.1231</td> <td>0.1298</td> </tr> <tr> <td>Propanoic acid</td> <td>0.1529</td> <td>0.1523</td> </tr> <tr> <td>Oxalic acid</td> <td>0.0335</td> <td>0.0683</td> </tr> </tbody> </table> <p><u>References</u></p> <ol style="list-style-type: none"> 1. Sada, E.; Kito, S.; Ito, Y. <i>Ind. Eng. Chem. Fundam.</i> <u>1975</u>, <i>14</i>, 232. 2. Sada, E.; Kumazawa, H.; Butt, M. A. <i>J. Chem. Engng. Data</i> <u>1977</u>, <i>22</i>, 277. 3. Sada, E.; Kito, S.; Ito, Y.; <i>J. Chem. Eng. Japan</i> <u>1974</u>, <i>7</i>, 57. 4. Sada, E.; Kito, S. <i>Kagaku Kogaku</i> <u>1972</u>, <i>36</i>, 218. 5. Sada, E.; Kumazawa, H.; Butt, M. A. <i>J. Chem. Engng. Data</i> <u>1978</u>, <i>23</i>, 161. 6. Roth, W. Z. <i>Phys. Chem.</i> <u>1897</u>, <i>24</i>, 114. 7. Knopp, W. Z. <i>Phys. Chem.</i> <u>1904</u>, <i>48</i>, 97. 8. Markham, A. E.; Kobe, K. A. <i>J. Am. Chem. Soc.</i> <u>1941</u>, <i>63</i>, 449. 			a/dm ³ mol ⁻¹	b/dm ³ mol ⁻¹	Formic acid	0.0716	0.0776	Acetic acid	0.1231	0.1298	Propanoic acid	0.1529	0.1523	Oxalic acid	0.0335	0.0683
	a/dm ³ mol ⁻¹	b/dm ³ mol ⁻¹														
Formic acid	0.0716	0.0776														
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Oxalic acid	0.0335	0.0683														

COMPONENTS:			ORIGINAL MEASUREMENTS:			
1. Nitrogen oxide (Nitrous oxide); N ₂ O; [10024-97-2];			Sada, E.; Kito, S.; Ito, Y.			
2. Water; H ₂ O; [7732-18-5];			Ind. Eng. Chem. Fundam. <u>1975</u> , 14,			
3. Methanol; CH ₃ OH; [67-56-1]			232-237.			
VARIABLES:			PREPARED BY:			
Mole fraction of the alcohol			W. Gerrard/C. L. Young			
EXPERIMENTAL VALUES:	Henry's			Henry's		
T/K	Mole fraction of alcohol	law constant atm *	x _{N₂O} [†]	Mole fraction of alcohol	law constant arm *	x _{N₂O} [†]
298.16	0.0	2320.1	0.000431	0.398	921.6	0.001085
	0.022	2208.7	0.000453	0.408	892.8	0.00112
	0.048	2106.7	0.000475	0.435	827.1	0.00121
	0.054	2090.7	0.000478	0.595	515.7	0.00194
	0.060	2062.1	0.000485	0.670	420.8	0.00238
	0.077	2025.7	0.000494	0.690	401.1	0.00249
	0.095	1980.2	0.000505	0.770	327.7	0.00305
	0.140	1814.0	0.000551	0.826	295.6	0.00338
	0.155	1670.8	0.000600	0.870	255.2	0.00392
	0.175	1724.3	0.000580	0.928	222.1	0.00450
	0.197	1631.6	0.000613	0.932	219.6	0.00455
	0.204	1609.0	0.000621	1.0	190.6	0.00525
	0.208	(1951.1)#	0.000314			
* This Henry's law constant appears to have been derived by dividing the observed, but unspecified, pressure of N ₂ O in atm, by the mole fraction x _{N₂O} for that pressure.						
† Calculated by the compiler by: 1/(Henry's law constant). The value refers to 1 atm (101.325 kPa).						
# Appears to be in error.						
AUXILIARY INFORMATION						
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:			
Equilibrium established between a measured volume of gas and a measured amount of gas-free liquid in a cell fitted with a magnetic stirrer. The densities of the mixed liquids were determined by an Ostwald-type pycnometer.			1. Nitrous oxide was used from a commercial cylinder (Japan), and stated to be of a purity better than 99.8%, as attested by gas-chromatography.			
			2. The water was carefully distilled.			
			3. The purity of the alcohol was stated to be satisfactory (ref. 2).			
			ESTIMATED ERROR:			
			REFERENCES:			
			1. Onda, K.; Sada, E.; Kobayashi, T.; Kito, S.; Ito, K. <i>J. Chem. Eng. Japan</i> <u>1970</u> , 3, 18; 137.			
			2. Sada, E.; Kito, S.; Ito, Y. <i>J. Chem. Eng. Japan</i> <u>1974</u> , 7, 57.			

COMPONENTS:			ORIGINAL MEASUREMENTS:			
1. Nitrogen oxide (Nitrous oxide); N_2O ; [10024-97-2]; 2. Water; H_2O ; [7732-18-5]; 3. Ethanol; C_2H_6O ; [64-17-5]			Sada, E.; Kito, S.; Ito, Y. <i>Ind. Eng. Chem. Fundam.</i> <u>1975</u> , 14, 232-237.			
VARIABLES:			PREPARED BY:			
Mole fraction of the alcohol			W. Gerrard/C. L. Young			
EXPERIMENTAL VALUES:						
T/K	Mole fraction of alcohol	Henry's law constant atm *	$x_{N_2O}^\dagger$	Mole fraction of alcohol	Henry's law constant atm *	$x_{N_2O}^\dagger$
298.16	0.0	2320.1	0.000431	0.442	539.1	0.00185
	0.023	2201.8	0.000454	0.537	437.8	0.00228
	0.036	2155.6	0.000469	0.651	303.6	0.00329
	0.058	2102.3	0.000476	0.731	256.6	0.00390
	0.077	2083.1	0.000480	0.783	216.5	0.00462
	0.130	1889.7	0.000529	0.797	218.5	0.00458
	0.192	1500.8	0.000666	0.853	193.3	0.00517
	0.197	1458.6	0.000686	0.868	189.6	0.00527
	0.251	1127.7	0.000887	0.978	151.1	0.00662
	0.349	761.1	0.001314	1.0	145.8	0.00686
<p>* This Henry's law constant appears to have been derived by dividing the observed, but unspecified, pressure of N_2O in atm, by the mole fraction, x_{N_2O} for that pressure.</p> <p>† Calculated by the compiler by: $1/(\text{Henry's law constant})$. The value refers to 1 atm (101.325 kPa).</p>						
AUXILIARY INFORMATION						
METHOD /APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:			
A gas volumetric method (ref. 1) was used. The densities of the mixture of liquids were determined by an Ostwald-type pycnometer. Equilibrium established between a measured volume of gas and a measured amount of gas-free liquid in a cell fitted with a magnetic stirrer.			1. Nitrous oxide was used from a commercial cylinder (Japan), and stated to be of a purity better than 99.8%, as attested by gas-chromatography. 2. The water was carefully distilled. 3. The purity of the alcohol was stated to be satisfactory (ref. 2).			
			ESTIMATED ERROR:			
			REFERENCES:			
			1. Onda, K.; Sada, E.; Kobayashi, T.; Kito, S.; Ito, K. <i>J. Chem. Eng. Japan</i> <u>1970</u> , 3, 18; 137. 2. Sada, E.; Kito, S.; Ito, Y. <i>J. Chem. Eng. Japan</i> <u>1974</u> , 7, 57.			

COMPONENTS:			ORIGINAL MEASUREMENTS:			
1. Nitrogen oxide (Nitrous oxide); N ₂ O; [10024-97-2];			Sada, E.; Kito, S.; Ito, Y.;			
2. Water; H ₂ O; [7732-18-5];			Ind. Eng. Chem. Fundam. <u>1975</u> , 14,			
3. 1-Propanol; C ₃ H ₈ O; [71-23-8]			232-237.			
VARIABLES:			PREPARED BY:			
Mole fraction of the alcohol			W. Gerrard/C. L. Young			
EXPERIMENTAL VALUES:						
T/K	Mole fraction of alcohol	Henry's law constant atm *	$x_{N_2O}^\dagger$	Mole fraction of alcohol	Henry's law constant atm *	$x_{N_2O}^\dagger$
298.16	0.0	2320.1	0.000431	0.517	302.1	0.00331
	0.040	2131.6	0.000469	0.655	224.6	0.00445
	0.085	1809.6	0.000553	0.707	204.5	0.00489
	0.167	1053.5	0.000949	0.852	160.4	0.00623
	0.267	636.5	0.00157	1.0	125.8	0.00795
<p>* This Henry's law constant appears to have been derived by dividing the observed, but unspecified, pressure of N₂O in atm, by the mole fraction, x_{N_2O} for that pressure.</p> <p>† Calculated by the compiler by: 1/(Henry's law constant). The value refers to 1 atm (101.325 kPa).</p>						
AUXILIARY INFORMATION						
METHOD / APPARATUS / PROCEDURE:			SOURCE AND PURITY OF MATERIALS:			
A gas volumetric method (ref. 1) was used. The densities of the mixture of liquids were determined by an Ostwald-type pycnometer. Equilibrium established between a measured volume of gas and a measured amount of gas-free liquid in a cell fitted with a magnetic stirrer.			1. Nitrous oxide was used from a commercial cylinder (Japan), and stated to be of a purity better than 99.8%, as attested by gas-chromatography.			
			2. The water was carefully distilled.			
			3. The purity of the alcohol was stated to be satisfactory (ref. 2).			
			ESTIMATED ERROR:			
			REFERENCES:			
			1. Onda, K.; Sada, E.; Kobayashi, T.; Kito, S.; Ito, K. <i>J. Chem. Eng. Japan</i> <u>1970</u> , 3, 18; 137.			
			2. Sada, E.; Kito, S.; Ito, Y. <i>J. Chem. Eng. Japan</i> <u>1974</u> , 7, 57.			

<p>COMPONENTS:</p> <ol style="list-style-type: none"> 1. Nitrous oxide; N_2O; [10024-97-2] 2. Water; H_2O; [7732-18-5] 3. 1-Propanol; C_3H_8O; [71-23-8] 	<p>ORIGINAL MEASUREMENTS:</p> <p>Laddha, S. S.; Diaz, J. M.; Danckwerts, P. V. <i>Chem. Eng. Sci.</i> <u>1981</u>, 36, 228-229.</p>										
<p>VARIABLES:</p> <p style="text-align: center;">Composition of liquid</p>	<p>PREPARED BY:</p> <p style="text-align: center;">C. L. Young</p>										
<p>EXPERIMENTAL VALUES:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">T/K</th> <th style="text-align: center;">Mole fraction of component 3</th> <th style="text-align: right;">10^{10} Solubility, S /mol cm^{-3} Pa$^{-1}$</th> </tr> </thead> <tbody> <tr> <td rowspan="3" style="text-align: left; vertical-align: top;">298.2</td> <td style="text-align: center;">0.02</td> <td style="text-align: right;">2.00</td> </tr> <tr> <td style="text-align: center;">0.04</td> <td style="text-align: right;">1.68</td> </tr> <tr> <td style="text-align: center;">0.06</td> <td style="text-align: right;">1.53</td> </tr> </tbody> </table>		T/K	Mole fraction of component 3	10^{10} Solubility, S /mol cm^{-3} Pa $^{-1}$	298.2	0.02	2.00	0.04	1.68	0.06	1.53
T/K	Mole fraction of component 3	10^{10} Solubility, S /mol cm^{-3} Pa $^{-1}$									
298.2	0.02	2.00									
	0.04	1.68									
	0.06	1.53									
<p>AUXILIARY INFORMATION</p>											
<p>METHOD APPARATUS/PROCEDURE:</p> <p>Apparatus consisted of two vessels of about 600 cm^3 capacity. Each vessel filled with gas at a pressure "somewhat less than atmospheric". A measured volume of water admitted to one vessel and an equal amount of mixture added to other vessel. Liquids stirred and pressure difference between flasks measured. From this measurement and a knowledge of the absolute pressures and exact volume of each vessel, it was possible to establish the solubility. Corrections were made for partial pressure of liquid.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p style="text-align: center;">No details given.</p> <hr/> <p>ESTIMATED ERROR:</p> <p>$\delta T/K = \pm 0.1$; $\delta S_{N_2O} = \pm 3\%$ (estimated by compiler).</p> <hr/> <p>REFERENCES.</p>										

COMPONENTS:				ORIGINAL MEASUREMENTS:		
1. Nitrogen oxide (Nitrous oxide); N_2O ; [10024-97-2]; 2. Water; H_2O ; [7732-18-5]; 3. 2-Propanol; C_3H_8O ; [67-63-0]				Sada, E.; Kito, S.; Ito, Y. <i>Ind. Eng. Chem. Fundam.</i> <u>1975</u> , <i>14</i> , 232-237.		
VARIABLES:				PREPARED BY:		
Mole fraction of the alcohol				W. Gerrard/ C. L. Young		
EXPERIMENTAL VALUES:						
T/K	Mole fraction of alcohol	Henry's law constant, atm *	x_{N_2O} †	Mole fraction of alcohol	Henry's law constant, atm *	x_{N_2O} †
298.16	0.0	2320.1	0.000431	0.338	524.4	0.00191
	0.008	2273.3	0.000440	0.433	382.0	0.00262
	0.028	2230.0	0.000448	0.572	266.3	0.00376
	0.051	2237.7	0.000447	0.708	201.0	0.00498
	0.070	2164.7	0.000462	0.760	182.9	0.00547
	0.076	2096.6	0.000477	0.865	148.5	0.00673
	0.140	1471.3	0.000680	1.0	125.8	0.00795
	0.267	718.1	0.00139			
* This Henry's law constant appears to have been derived by dividing the observed, but unspecified, pressure of N_2O in atm, by the mole fraction, x_{N_2O} for that pressure.						
† Calculated by the compiler by: $1/(\text{Henry's law constant})$. The value refers to 1 atm (101.325 kPa).						
AUXILIARY INFORMATION						
METHOD/APPARATUS/PROCEDURE:				SOURCE AND PURITY OF MATERIALS:		
A gas volumetric method (ref. 1) was used. The densities of the mixture of liquids were determined by an Ostwald-type pycnometer. Equilibrium established between a measured volume of gas and a measured amount of gas-free liquid in a cell fitted with a magnetic stirrer.				1. Nitrous oxide was used from a commercial cylinder (Japan), and stated to be of a purity better than 99.8%, as attested by gas-chromatography. 2. The water was carefully distilled. 3. The purity of the alcohol was stated to be satisfactory (ref. 2).		
				ESTIMATED ERROR:		
				REFERENCES:		
				1. Onda, K.; Sada, E.; Kobayashi, T. Kito, S.; Ito, K. <i>J. Chem. Eng. Japan</i> <u>1970</u> , <i>3</i> , 18; 137. 2. Sada, E.; Kito, S.; Ito, Y. <i>J. Chem. Eng. Japan</i> <u>1974</u> , <i>7</i> , 57.		

<p>COMPONENTS:</p> <ol style="list-style-type: none"> Nitrous oxide; N_2O; [10024-97-2] Water; H_2O; [7732-18-5] 1,2-Ethanediol; $C_2H_6O_2$; [107-21-1] 	<p>ORIGINAL MEASUREMENTS:</p> <p>Laddha, S. S.; Diaz, J. M.; Danckwerts, P. V. <i>Chem. Eng. Sci.</i> <u>1981</u>, <i>36</i>, 228-229.</p>												
<p>VARIABLES:</p> <p>Composition of liquid</p>	<p>PREPARED BY:</p> <p>C. L. Young</p>												
<p>EXPERIMENTAL VALUES:</p> <table border="1"> <thead> <tr> <th data-bbox="123 558 168 578">T/K</th> <th data-bbox="486 558 722 618">Mole fraction of component 3</th> <th data-bbox="896 558 1156 618">10^{10} Solubility, S /mol cm^{-3} Pa$^{-1}$</th> </tr> </thead> <tbody> <tr> <td data-bbox="123 663 194 683">298.2</td> <td data-bbox="561 663 615 683">0.02</td> <td data-bbox="1012 663 1070 683">2.29</td> </tr> <tr> <td></td> <td data-bbox="561 687 615 707">0.04</td> <td data-bbox="1012 687 1070 707">2.22</td> </tr> <tr> <td></td> <td data-bbox="561 711 615 731">0.06</td> <td data-bbox="1012 711 1070 731">2.13</td> </tr> </tbody> </table>		T/K	Mole fraction of component 3	10^{10} Solubility, S /mol cm^{-3} Pa $^{-1}$	298.2	0.02	2.29		0.04	2.22		0.06	2.13
T/K	Mole fraction of component 3	10^{10} Solubility, S /mol cm^{-3} Pa $^{-1}$											
298.2	0.02	2.29											
	0.04	2.22											
	0.06	2.13											
<p>AUXILIARY INFORMATION</p>													
<p>METHOD APPARATUS/PROCEDURE.</p> <p>Apparatus consisted of two vessels of about 600 cm^3 capacity. Each vessel filled with gas at a pressure "somewhat less than atmospheric". A measured volume of water admitted to one vessel and an equal amount of mixture added to other vessel. Liquids stirred and pressure difference between flasks measured. From this measurement and a knowledge of the absolute pressures and exact volume of each vessel, it was possible to establish the solubility. Corrections were made for partial pressure of liquid.</p>	<p>SOURCE AND PURITY OF MATERIALS.</p> <p>No details given.</p> <p>ESTIMATED ERROR:</p> <p>$\delta T/K = \pm 0.1$; $\delta S_{N_2O} = \pm 3\%$ (estimated by compiler).</p> <p>REFERENCES.</p>												

COMPONENTS: 1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5] 3. 1,2,3-Propanetriol; $C_3H_8O_3$; [56-81-5]	ORIGINAL MEASUREMENTS: Laddha, S. S.; Diaz, J. M. Danckwerts, P. V. <i>Chem. Eng. Sci.</i> <u>1981</u> , 36, 228-229.	
VARIABLES: Composition of liquid	PREPARED BY: C. L. Young	
EXPERIMENTAL VALUES:		
T/K	Mole fraction of component 3	10^{10} Solubility, S /mol cm^{-3} Pa$^{-1}$
298.2	0.02 0.04 0.06	2.18 2.05 1.88
AUXILIARY INFORMATION		
METHOD APPARATUS/PROCEDURE: <p>Apparatus consisted of two vessels of about 600 cm^3 capacity. Each vessel filled with gas at a pressure "somewhat less than atmospheric". A measured volume of water admitted to one vessel and an equal amount of mixture added to other vessel. Liquids stirred and pressure difference between flasks measured. From this measurement and a knowledge of the absolute pressures and exact volume of each vessel, it was possible to establish the solubility. Corrections were made for partial pressure of liquid.</p>	SOURCE AND PURITY OF MATERIALS. <p style="text-align: center;">No details given.</p> ESTIMATED ERROR: $\delta T/K = \pm 0.1$; $\delta S_{N_2O} = \pm 3\%$ (estimated by compiler). REFERENCES.	

COMPONENTS: 1. Nitrogen oxide (Nitrous oxide); N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5]; 3. 1,2,3-Propanetriol (Glycerol); $(CH_2OH)_2CHOH$; [56-81-5]	ORIGINAL MEASUREMENTS: Roth, W. <i>Z. Phys. Chem.</i> <u>1897</u> , <u>24</u> , 114-151.																																																
VARIABLES: Temperature, concentration	PREPARED BY: W. Gerrard																																																
EXPERIMENTAL VALUES: $t = T/K - 273.16$; density = d ; α = Bunsen coefficient. Concn. of glycerol, %: 3.376 Change of d with t : $d = 1.00858 - 0.000007042t - 0.000005447t^2$ Change of α with t : $\alpha = 1.3205 - 0.045803t + 0.0006068t^2$ <table border="1" data-bbox="189 568 1073 620"> <tr> <td>T/K</td> <td>298.29</td> <td>293.23</td> <td>288.09</td> <td>283.47</td> <td>278.51</td> </tr> <tr> <td>α</td> <td>0.5527</td> <td>0.6451</td> <td>0.7719</td> <td>0.9041</td> <td>1.0928</td> </tr> </table> Concn. of glycerol, %: 3.544 Change of d with t : $d = 1.00895 - 0.000004004t - 0.000005582t^2$ Change of α with t : $\alpha = 1.2906 - 0.043676t + 0.0005731t^2$ <table border="1" data-bbox="189 723 1073 775"> <tr> <td>T/K</td> <td>298.26</td> <td>293.37</td> <td>288.31</td> <td>283.27</td> <td>278.19</td> </tr> <tr> <td>α</td> <td>0.5553</td> <td>0.6429</td> <td>0.7604</td> <td>0.8984</td> <td>1.0854</td> </tr> </table> Concn. of glycerol, %: 6.338 Change of d with t : $d = 1.01611 - 0.00003711t - 0.0000052202t^2$ Change of α with t : $\alpha = 1.2709 - 0.04242t + 0.00053176t^2$ <table border="1" data-bbox="189 878 1073 930"> <tr> <td>T/K</td> <td>298.40</td> <td>293.24</td> <td>288.31</td> <td>283.23</td> <td>278.19</td> </tr> <tr> <td>α</td> <td>0.5390</td> <td>0.6347</td> <td>0.7503</td> <td>0.8932</td> <td>1.0710</td> </tr> </table> Concn. of glycerol, %: 7.114 Change of d with t : $d = 1.01810 - 0.000046138t - 0.0000050224t^2$ Change of α with t : $\alpha = 1.2285 - 0.040685t + 0.00052632t^2$ <table border="1" data-bbox="189 1033 1073 1085"> <tr> <td>T/K</td> <td>298.08</td> <td>293.17</td> <td>288.21</td> <td>283.10</td> <td>278.12</td> </tr> <tr> <td>α</td> <td>0.5415</td> <td>0.6242</td> <td>0.7354</td> <td>0.8661</td> <td>1.0396</td> </tr> </table> (continued)		T/K	298.29	293.23	288.09	283.47	278.51	α	0.5527	0.6451	0.7719	0.9041	1.0928	T/K	298.26	293.37	288.31	283.27	278.19	α	0.5553	0.6429	0.7604	0.8984	1.0854	T/K	298.40	293.24	288.31	283.23	278.19	α	0.5390	0.6347	0.7503	0.8932	1.0710	T/K	298.08	293.17	288.21	283.10	278.12	α	0.5415	0.6242	0.7354	0.8661	1.0396
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ADDITIONAL INFORMATION																																																	
METHOD/APPARATUS/PROCEDURE: Ostwald method, using gas buret and pipet. Measurement of volume of gas before and after absorption. Specific gravity of solution was determined by a Sprengel pycnometer. Vapour pressure of water, adjusted by assuming Raoult's law, was allowed for.	PURITY OF MATERIALS: 1. N_2O was self prepared and purified. 2. Glycerol was analysed by an appropriate method. ESTIMATED ERROR: REFERENCES:																																																

COMPONENTS:	ORIGINAL MEASUREMENTS:
1. Nitrogen oxide (Nitrous oxide); N ₂ O; [10024-97-2];	Roth, W.
2. Water; H ₂ O; [7732-18-5];	Z. Phys. Chem. <u>1897</u> , 24, 114-151.
3. 1,2,3-Propanetriol (Glycerol); (CH ₂ OH) ₂ CHOH; [56-81-5]	

EXPERIMENTAL VALUES:

$$t = T/K - 273.16; \text{ density} = d; \alpha = \text{Bunsen coefficient.}$$

Concn. of glycerol, %: 11.483

$$\text{Change of } d \text{ with } t: d = 1.02926 - 0.000084093t - 0.0000047447t^2$$

$$\text{Change of } \alpha \text{ with } t: \alpha = 1.1837 - 0.04000t + 0.00054926t^2$$

T/K	298.04	293.14	288.23	283.18	277.90
α	0.5285	0.6029	0.7056	0.8336	1.0064

Concn. of glycerol, %: 12.756

$$\text{Change of } d \text{ with } t: d = 1.03259 - 0.000094282t - 0.0000047244t^2$$

$$\text{Change of } \alpha \text{ with } t: \alpha = 1.1833 - 0.03911t + 0.00051373t^2$$

T/K	298.24	293.24	288.17	282.83	278.06
α	0.5255	0.6056	0.7120	0.8493	1.0040

Concn. of glycerol, %: 16.175

$$\text{Change of } d \text{ with } t: d = 1.04145 - 0.00012475t - 0.000004543t^2$$

$$\text{Change of } \alpha \text{ with } t: \alpha = 1.1375 - 0.036345t + 0.00044917t^2$$

T/K	298.14	293.24	288.13	283.00	277.98
α	0.5099	0.5916	0.6941	0.8199	0.9728

Concn. of glycerol, %: 16.313

$$\text{Change of } d \text{ with } t: d = 1.04192 - 0.0001389t - 0.000004059t^2$$

$$\text{Change of } \alpha \text{ with } t: \alpha = 1.1243 - 0.037362t + 0.0005068t^2$$

T/K	298.14	293.16	288.31	283.30	277.81
α	0.5073	0.5768	0.6746	0.7953	0.9615

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. 2,2'-Oxybisethanol (Diethylene glycol); C ₄ H ₁₀ O ₃ ; [111-46-6]		ORIGINAL MEASUREMENTS: Laddha, S. S.; Diaz, J. M.; Danckwerts, P. V. <i>Chem. Eng. Sci.</i> <u>1981</u> , 36, 228-229.
VARIABLES: Composition of liquid	PREPARED BY: C. L. Young	
EXPERIMENTAL VALUES:		
T/K	Mole fraction of component 3	10 ¹⁰ Solubility, S /mol cm ⁻³ Pa ⁻¹
298.2	0.02 0.04 0.06	2.27 2.18 2.09
AUXILIARY INFORMATION		
METHOD APPARATUS/PROCEDURE: Apparatus consisted of two vessels of about 600 cm ³ capacity. Each vessel filled with gas at a pressure "somewhat less than atmospheric". A measured volume of water admitted to one vessel and an equal amount of mixture added to other vessel. Liquids stirred and pressure difference between flasks measured. From this measurement and a knowledge of the absolute pressures and exact volume of each vessel, it was possible to establish the solubility. Corrections were made for partial pressure of liquid.		SOURCE AND PURITY OF MATERIALS. No details given.
		ESTIMATED ERROR: $\delta T/K = \pm 0.1$; $\delta S_{N_2O} = \pm 3\%$ (estimated by compiler).
		REFERENCES.

COMPONENTS: 1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5] 3. 1,5-Pentanediol; $C_5H_{12}O_2$; [111-29-5]	ORIGINAL MEASUREMENTS: Laddha, S. S.; Diaz, J. M.; Danckwerts, P. C. <i>Chem. Eng. Sci.</i> <u>1981</u> , 36, 228-229.	
VARIABLES: Composition of liquid	PREPARED BY: C. L. Young	
EXPERIMENTAL VALUES:		
T/K	Mole fraction of component 3	10^{10} Solubility, S /mol cm^{-3} Pa $^{-1}$
298.2	0.02 0.04 0.06	2.32 2.26 2.21
AUXILIARY INFORMATION		
METHOD APPARATUS/PROCEDURE: Apparatus consisted of two vessels of about 600 cm^3 capacity. Each vessel filled with gas at a pressure "somewhat less than atmospheric". A measured volume of water admitted to one vessel and an equal amount of mixture added to other vessel. Liquids stirred and pressure difference between flasks measured. From this measurement and a knowledge of the absolute pressures and exact volume of each vessel, it was possible to establish the solubility. Corrections were made for partial pressure of liquid.	SOURCE AND PURITY OF MATERIALS. <p style="text-align: center;">No details given.</p> ESTIMATED ERROR: $\delta T/K = \pm 0.1$; $\delta S_{N_2O} = \pm 3\%$ (estimated by compiler). REFERENCES:	

COMPONENTS:			ORIGINAL MEASUREMENTS:		
1. Nitrogen oxide (Nitrous oxide); N_2O ; [10024-97-2]; 2. Water; H_2O ; [7732-18-5]; 3. Formic acid; CH_2O_2 ; [64-18-6]			Sada, E.; Kito, S.; Ito, Y. <i>J. Chem. Eng. Japan</i> <u>1974</u> , <i>7</i> , 57-59.		
VARIABLES:			PREPARED BY:		
T/K: 298.15 P/kPa : 101.325 (1 atm) Molarity of acid: $mol\ l^{-1}$			W. Gerrard/C. L. Young		
EXPERIMENTAL VALUES:					
Pressure = 101.325 kPa					
T/K	Molarity of acid $mol\ l^{-1}$	Bunsen Coefficient α	T/K	Molarity of acid $mol\ l^{-1}$	Bunsen Coefficient α
298.15	0 0.6234 1.3125 1.4033	0.5512 0.5481 0.5529 0.5542	298.15	0 2.4451 2.8999	0.5512 0.5579 0.5653
AUXILIARY INFORMATION					
METHOD /APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS.		
Equilibrium established between a measured volume of gas and a measured amount of gas-free liquid in a cell fitted with a magnetic stirrer. Concentration of the organic acid was determined by a volumetric titration with sodium hydroxide to a phenolphthalein end-point. Details of apparatus and procedure in ref. 1.			1. High purity nitrous oxide was used; supplied by Showa Denko Co. Ltd.; attested to be 99.8 per cent by gas chromatography. 2. Distilled and degassed; d and n_D given. 3. Reagent grade was used; a and n_D given.		
			ESTIMATED ERROR: $\delta T/K = \pm 0.2$; $\delta \alpha = \pm 2\%$ (estimated by compiler).		
			REFERENCES: 1. Onda, K.; Sada, E.; Kobayashi, T.; Kito, S.; Ito, K. <i>J. Chem. Eng. Japan</i> <u>1970</u> , <i>3</i> , 18; 137.		

COMPONENTS: 1. Nitrogen oxide (Nitrous oxide); N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5] 3. Ethanedioic acid (Oxalic acid); $(COOH)_2$; [144-62-7]	ORIGINAL MEASUREMENTS: Roth, W. <i>Z. Phys. Chem.</i> <u>1897</u> , 24, 114-151.												
VARIABLES: Temperature, concentration	PREPARED BY: W. Gerrard												
EXPERIMENTAL VALUES: $t = T/K - 273.16$; density = d ; α = Bunsen coefficient.													
Conc. of oxalic acid, %: 0.7746 Change of d with t : $d = 1.00440 - 0.000001414t - 0.000005449t^2$ Change of α with t : $\alpha = 1.3667 - 0.048565t + 0.0006894t^2$ <table border="1" data-bbox="128 588 966 646"> <tr> <td>T/K</td> <td>298.33</td> <td>293.26</td> <td>288.29</td> <td>283.28</td> <td>278.29</td> </tr> <tr> <td>α</td> <td>0.5810</td> <td>0.6714</td> <td>0.7897</td> <td>0.9465</td> <td>1.1357</td> </tr> </table>		T/K	298.33	293.26	288.29	283.28	278.29	α	0.5810	0.6714	0.7897	0.9465	1.1357
T/K	298.33	293.26	288.29	283.28	278.29								
α	0.5810	0.6714	0.7897	0.9465	1.1357								
Conc. of oxalic acid, %: 0.8497 Change of d with t : $d = 1.00453 + 0.00003186t - 0.0000064535t^2$ Change of α with t : $\alpha = 1.3759 - 0.048714t + 0.00066483t^2$ <table border="1" data-bbox="128 744 966 793"> <tr> <td>T/K</td> <td>298.04</td> <td>293.33</td> <td>288.21</td> <td>283.10</td> <td>278.10</td> </tr> <tr> <td>α</td> <td>0.5754</td> <td>0.6719</td> <td>0.7933</td> <td>0.9509</td> <td>1.1514</td> </tr> </table>		T/K	298.04	293.33	288.21	283.10	278.10	α	0.5754	0.6719	0.7933	0.9509	1.1514
T/K	298.04	293.33	288.21	283.10	278.10								
α	0.5754	0.6719	0.7933	0.9509	1.1514								
Conc. of oxalic acid, %: 3.326 Change of d with t : $d = 1.01754 - 0.000047524t - 0.000005253t^2$ Change of α with t : $\alpha = 1.3178 - 0.046596t + 0.0006572t^2$ <table border="1" data-bbox="128 901 966 950"> <tr> <td>T/K</td> <td>298.27</td> <td>293.21</td> <td>288.25</td> <td>283.28</td> <td>278.73</td> </tr> <tr> <td>α</td> <td>0.5621</td> <td>0.6482</td> <td>0.7642</td> <td>0.9130</td> <td>1.0787</td> </tr> </table>		T/K	298.27	293.21	288.25	283.28	278.73	α	0.5621	0.6482	0.7642	0.9130	1.0787
T/K	298.27	293.21	288.25	283.28	278.73								
α	0.5621	0.6482	0.7642	0.9130	1.0787								
Conc. of oxalic acid, %: 3.640 Change of d with t : $d = 1.01911 - 0.000056536t - 0.0000050445t^2$ Change of α with t : $\alpha = 1.3338 - 0.046913t + 0.0006380t^2$ <table border="1" data-bbox="128 1058 966 1107"> <tr> <td>T/K</td> <td>298.25</td> <td>293.37</td> <td>288.41</td> <td>283.29</td> <td>278.17</td> </tr> <tr> <td>α</td> <td>0.5584</td> <td>0.6493</td> <td>0.7668</td> <td>0.9309</td> <td>1.1148</td> </tr> </table>		T/K	298.25	293.37	288.41	283.29	278.17	α	0.5584	0.6493	0.7668	0.9309	1.1148
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α	0.5584	0.6493	0.7668	0.9309	1.1148								
(continued)													
AUXILIARY INFORMATION													
METHOD/APPARATUS/PROCEDURE: Ostwald method, using gas buret and pipet. Measurement of volume of gas before and after absorption. Specific gravity of solution was determined by a Sprengel pycnometer. Vapour pressure of water, adjusted by assuming Raoult's law, was allowed for.	SOURCE AND PURITY OF MATERIALS: 1. N_2O was self prepared and purified. 2. Oxalic acid was analysed by an appropriate method. ESTIMATED ERROR: REFERENCES:												

COMPONENTS:

1. Nitrogen oxide (Nitrous oxide);
N₂O; [10024-97-2]
2. Water; H₂O; [7732-18-5]
3. Ethanedioic acid (Oxalic acid);
(COOH)₂; [144-62-7]

ORIGINAL MEASUREMENTS:

Roth, W.

Z. *Phys. Chem.* 1897, 24, 114-151.

EXPERIMENTAL VALUES:

$$t = T/K - 273.16; \text{ density} = d; \alpha = \text{Bunsen coefficient.}$$

Concn. of oxalic acid, %: 4.130

Change of d with t : $d = 1.02164 - 0.000058537t - 0.0000052552t^2$ Change of α with t : $\alpha = 1.3189 - 0.044307t + 0.00057285t^2$

T/K	298.21	293.30	288.25	283.24	278.15
α	0.5685	0.6615	0.7808	0.9247	1.1121

COMPONENTS: 1. Nitrogen oxide (Nitrous oxide); N_2O ; [10024-97-2]; 2. Water; H_2O ; [7732-18-5]; 3. Ethanedioic acid, (Oxalic acid); $C_2H_2O_4$; [144-62-7]	ORIGINAL MEASUREMENTS: Sada, E.; Kito, S.; Ito, Y. <i>J. Chem. Eng. Japan</i> <u>1974</u> , 7, 57-59.																
VARIABLES: T/K: 298.15 P/kPa : 101.325 (1 atm) Molarity of acid: mol l^{-1}	PREPARED BY: W. Gerrard/C. L. Young																
EXPERIMENTAL VALUES: <p style="text-align: center;">Pressure = 101.325 kPa</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>T/K</th> <th>Molarity of acid mol l^{-1}</th> <th>Bunsen Coefficient α</th> </tr> </thead> <tbody> <tr> <td rowspan="6" style="text-align: center;">298.15</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0.5512</td> </tr> <tr> <td style="text-align: center;">0.2091</td> <td style="text-align: center;">0.5471</td> </tr> <tr> <td style="text-align: center;">0.2433</td> <td style="text-align: center;">0.5468</td> </tr> <tr> <td style="text-align: center;">0.5227</td> <td style="text-align: center;">0.5418</td> </tr> <tr> <td style="text-align: center;">0.8434</td> <td style="text-align: center;">0.5380</td> </tr> <tr> <td style="text-align: center;">0.8567</td> <td style="text-align: center;">0.5353</td> </tr> </tbody> </table>		T/K	Molarity of acid mol l^{-1}	Bunsen Coefficient α	298.15	0	0.5512	0.2091	0.5471	0.2433	0.5468	0.5227	0.5418	0.8434	0.5380	0.8567	0.5353
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METHOD/APPARATUS/PROCEDURE: Equilibrium established between a measured volume of gas and a measured amount of gas-free liquid in a cell fitted with a magnetic stirrer. Concentration of the organic acid was determined by a volumetric titration with sodium hydroxide to a phenolphthalein end-point. Details of apparatus and procedure in ref. 1.	SOURCE AND PURITY OF MATERIALS: 1. High purity nitrous oxide was used; supplied by Showa Denko Co. Ltd.; attested to be 99.8 per cent by gas chromatography. 2. Distilled and degassed; d and n_D given. 3. Reagent grade was used; d and n_D given. ESTIMATED ERROR: $\delta T/K = \pm 0.2$; $\delta \alpha = \pm 2\%$ (estimated by compiler). REFERENCES: 1. Onda, K.; Sada, E.; Kobayashi, T.; Kito, S.; Ito, K. <i>J. Chem. Eng. Japan</i> <u>1970</u> , 3, 18; 137.																

COMPONENTS: 1. Nitrogen oxide (Nitrous oxide); N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5] 3. Acetic acid; $\text{C}_2\text{H}_4\text{O}_2$; [64-19-7]			ORIGINAL MEASUREMENTS: Sada, E.; Kito, S.; Ito, Y. <i>J. Chem. Eng. Japan</i> <u>1974</u> , <i>7</i> , 57-59.																																										
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COMPONENTS:		ORIGINAL MEASUREMENTS:		
1. Nitrogen oxide; (Nitrous oxide); N ₂ O; [10024-97-2]		Knopp, W.		
2. Water; H ₂ O; [7732-18-5]		Z. Phys. Chem. <u>1904</u> , 48,97-108		
3. Propanoic acid (Propionic acid); C ₃ H ₆ O ₂ ; [79-09-4]				
VARIABLES:		PREPARED BY:		
		C.L. Young		
EXPERIMENTAL VALUES:				
Pressure assumed to be 101.325 kPa.				
T/K	Weight of acid in 100 g of solution.	Conc of salt /mol dm ³ (soln)	Density of solution	Bunsen absorption coefficient, α
293.16	1.492	0.2045	0.99964	0.6323
	5.702	0.816	1.00349	0.6369
	13.680	2.140	1.01061	0.6504
	15.011	2.385	1.01190	0.6534
	25.589	4.645	1.01933	0.7219
			Water	0.6270
Calculated by compiler: Mole fraction, x_1 , of N ₂ O in water: 0.000506. Mole fraction of N ₂ O in the solution containing 4.645 moles of propionic acid in 1 dm ³ of solution : 0.000768.				
AUXILIARY INFORMATION				
METHOD /APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:		
An absorption pipet and gas buret were used to measure the volume of gas absorbed.		1. Nitrous oxide was prepared by heating pure ammonium nitrate at 513-523K. It was passed through aqueous ferrous sulfate, aqueous sodium hydroxide, and concentrated sulfuric acid.		
Densities were determined by a Sprengel pycnometer.		3. Analytically attested.		
		ESTIMATED ERROR:		
		REFERENCES:		

COMPONENTS: 1. Nitrogen oxide (Nitrous oxide); N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5] 3. Propanoic acid, (Propionic acid); $C_3H_6O_2$; [79-09-4]	ORIGINAL MEASUREMENTS: Sada, E.; Kito, S.; Ito, Y. <i>J. Chem. Eng. Japan</i> <u>1974</u> , 7, 57-59.																					
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METHOD/APPARATUS/PROCEDURE: Equilibrium established between a measured volume of gas and a measured amount of gas-free liquid in a cell fitted with a magnetic stirrer. Concentration of the organic acid was determined by a volumetric titration with sodium hydroxide to a phenolphthalein end-point. Details of apparatus and procedure in ref. 1.	SOURCE AND PURITY OF MATERIALS: 1. High purity nitrous oxide was used; supplied by Showa Denko Co. Ltd.; attested to be 99.8 mole per cent by gas chromatography. 2. Distilled and degassed; d and n_D given. 3. Reagent grade was used; d and n_D given. ESTIMATED ERROR: $\delta T/K = \pm 0.2$; $\delta \alpha = \pm 2\%$ (estimated by compiler). REFERENCES: 1. Onda, K.; Sada, E.; Kobayashi, T.; Kito, S.; Ito, K. <i>J. Chem. Eng. Japan</i> <u>1970</u> , 3, 18; 137.																					

COMPONENTS: 1. Nitrogen oxide (Nitrous oxide); N_2O ; [10024-97-2]; 2. Water; H_2O ; [7732-18-5]; 3. Urea; $CO(NH_2)_2$; [57-13-6]	ORIGINAL MEASUREMENTS: Roth, W. <i>Z. Phys. Chem.</i> <u>1897</u> , 24, 114-151.														
VARIABLES: Temperature, concentration	PREPARED BY: W. Gerrard														
EXPERIMENTAL VALUES: $t = T/K - 273.16$; density = d ; α = Bunsen coefficient.															
Concn. of urea, %: 3.288 Change of d with t : $d = 1.01013 - 0.000058765t - 0.0000045803t^2$ Change of α with t : $\alpha = 1.3252 - 0.046462t + 0.0006493t^2$ <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="text-align: center;">T/K</td> <td style="text-align: center;">297.56</td> <td style="text-align: center;">293.17</td> <td style="text-align: center;">287.75</td> <td style="text-align: center;">282.81</td> <td style="text-align: center;">280.78</td> <td style="text-align: center;">278.10</td> </tr> <tr> <td style="text-align: center;">α</td> <td style="text-align: center;">0.5781</td> <td style="text-align: center;">0.6591</td> <td style="text-align: center;">0.7855</td> <td style="text-align: center;">0.9369</td> <td style="text-align: center;">1.0092</td> <td style="text-align: center;">1.1114</td> </tr> </tbody> </table>		T/K	297.56	293.17	287.75	282.81	280.78	278.10	α	0.5781	0.6591	0.7855	0.9369	1.0092	1.1114
T/K	297.56	293.17	287.75	282.81	280.78	278.10									
α	0.5781	0.6591	0.7855	0.9369	1.0092	1.1114									
Concn. of urea, %: 3.336 Change of d with t : $d = 1.01059 - 0.00007987t - 0.000003545t^2$ Change of α with t : $\alpha = 1.3141 - 0.04637t + 0.00066066t^2$ <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="text-align: center;">T/K</td> <td style="text-align: center;">297.52</td> <td style="text-align: center;">293.20</td> <td style="text-align: center;">287.70</td> <td style="text-align: center;">282.70</td> <td style="text-align: center;">278.40</td> </tr> <tr> <td style="text-align: center;">α</td> <td style="text-align: center;">0.5765</td> <td style="text-align: center;">0.6501</td> <td style="text-align: center;">0.7806</td> <td style="text-align: center;">0.9276</td> <td style="text-align: center;">1.0892</td> </tr> </tbody> </table>		T/K	297.52	293.20	287.70	282.70	278.40	α	0.5765	0.6501	0.7806	0.9276	1.0892		
T/K	297.52	293.20	287.70	282.70	278.40										
α	0.5765	0.6501	0.7806	0.9276	1.0892										
Concn. of urea, %: 4.670 Change of d with t : $d = 1.01458 - 0.00011876t - 0.000003346t^2$ Change of α with t : $\alpha = 1.2920 - 0.04236t + 0.0005399t^2$ <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="text-align: center;">T/K</td> <td style="text-align: center;">298.04</td> <td style="text-align: center;">287.84</td> <td style="text-align: center;">277.81</td> </tr> <tr> <td style="text-align: center;">α</td> <td style="text-align: center;">0.5721</td> <td style="text-align: center;">0.7864</td> <td style="text-align: center;">1.1066</td> </tr> </tbody> </table>		T/K	298.04	287.84	277.81	α	0.5721	0.7864	1.1066						
T/K	298.04	287.84	277.81												
α	0.5721	0.7864	1.1066												
Concn. of urea, %: 4.963 Change of d with t : $d = 1.01513 - 0.00007098t - 0.000004811t^2$ Change of α with t : $\alpha = 1.2927 - 0.04387t + 0.00057684t^2$ <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="text-align: center;">T/K</td> <td style="text-align: center;">297.64</td> <td style="text-align: center;">293.20</td> <td style="text-align: center;">287.82</td> <td style="text-align: center;">282.83</td> <td style="text-align: center;">278.84</td> </tr> <tr> <td style="text-align: center;">α</td> <td style="text-align: center;">0.5643</td> <td style="text-align: center;">0.6516</td> <td style="text-align: center;">0.7734</td> <td style="text-align: center;">0.9177</td> <td style="text-align: center;">1.0621</td> </tr> </tbody> </table>		T/K	297.64	293.20	287.82	282.83	278.84	α	0.5643	0.6516	0.7734	0.9177	1.0621		
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α	0.5643	0.6516	0.7734	0.9177	1.0621										
(continued)															
AUXILIARY INFORMATION															
METHOD / APPARATUS / PROCEDURE: Ostwald method, using gas buret and pipet. Measurement of volume of gas before and after absorption. Specific gravity of solution was determined by a Sprengel pycnometer. Vapour pressure of water, adjusted by assuming Raoult's law, was allowed for.	SOURCE AND PURITY OF MATERIALS: 1. N_2O was self prepared and purified. 3. Urea was analysed by an appropriate method. ESTIMATED ERROR: REFERENCES:														

<p>COMPONENTS:</p> <ol style="list-style-type: none"> 1. Nitrogen oxide (Nitrous oxide); N₂O; [10024-97-2]; 2. Water; H₂O; [7732-18-5]; 3. Urea; CO(NH₂)₂; [57-13-6] 	<p>ORIGINAL MEASUREMENTS:</p> <p>Roth, W. <i>Z. Phys. Chem.</i> <u>1897</u>, 24, 114-151.</p>
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EXPERIMENTAL VALUES:
 $t = T/K - 273.16$; density = d ; α = Bunsen coefficient.

Concn. of urea, %: 5.288

Change of d with t : $d = 1.01640 - 0.00007353t - 0.000004942t^2$

Change of α with t : $\alpha = 1.3217 - 0.046054t + 0.0006497t^2$

T/K	297.75	293.14	287.80	282.69	278.69	276.70
α	0.5846	0.6699	0.7867	0.9350	1.0788	1.1668

Concn. of urea, %: 6.249

Change of d with t : $d = 1.01931 - 0.0001160t - 0.000003861t^2$

Change of α with t : $\alpha = 1.3063 - 0.045862t + 0.00063275t^2$

T/K	297.21	292.19	287.53	283.61
α	0.5693	0.6627	0.7811	0.8962

Concn. of urea, %: 6.483

Change of d with t : $d = 1.01964 - 0.00010387t - 0.0000042285t^2$

Change of α with t : $\alpha = 1.2917 - 0.04482t + 0.0006258t^2$

T/K	297.04	292.14	287.50	283.70	279.01	274.70
α	0.5734	0.6712	0.7777	0.8868	1.0451	1.2242

Concn. of urea, %: 7.262

Change of d with t : $d = 1.02214 - 0.0001099t - 0.000004543t^2$

Change of α with t : $\alpha = 1.3393 - 0.04750t + 0.0006866t^2$

T/K	297.63	292.46	287.67	283.63	280.79
α	0.5881	0.6830	0.7946	0.9191	1.0169

Concn. of urea, %: 7.330

Change of d with t : $d = 1.02200 - 0.00007845t - 0.000005349t^2$

Change of α with t : $\alpha = 1.2872 - 0.043684t + 0.00058266t^2$

T/K	297.54	292.34	287.63	283.72	280.86
α	0.5685	0.6691	0.7771	0.8924	0.9854

Concn. of urea, %: 9.931

Change of d with t : $d = 1.03007 - 0.00015102t - 0.000004114t^2$

Change of α with t : $\alpha = 1.2528 - 0.040516t + 0.0005196t^2$

T/K	297.66	292.49	287.78	283.50	278.31
α	0.5721	0.6635	0.7715	0.8915	1.0578

Concn. of urea, %: 10.000

Change of d with t : $d = 1.03029 - 0.00014818t - 0.000004305t^2$

Change of α with t : $\alpha = 1.2772 - 0.04381t + 0.00062565t^2$

T/K	297.28	292.36	287.69	283.77	279.83	276.90	275.91
α	0.5844	0.6758	0.7727	0.8819	1.0054	1.1165	1.1615

<p>COMPONENTS:</p> <p>1. Nitrous oxide; N₂O; [10024-97-2]</p> <p>2. Water; H₂O; [7732-18-5]</p> <p>3. Urea; CH₄NO; [57-13-6]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Manchot, von W.; Jahrstorfer, M.; Zepter, H. <i>Z. Anorg. Allg. Chem.</i> <u>1924</u>, 141, 45.</p>																	
<p>VARIABLES:</p> <p style="text-align: center;">Concentration</p>	<p>PREPARED BY:</p> <p style="text-align: center;">C. L. Young</p>																	
<p>EXPERIMENTAL VALUES:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">T/K</th> <th style="text-align: left;">Density, d_4^{25} of soln.</th> <th style="text-align: left;">Conc. of soln. /mol dm⁻³</th> <th style="text-align: left;">Bunsen coefficient, α</th> </tr> </thead> <tbody> <tr> <td rowspan="4" style="vertical-align: top;">298.15</td> <td>1.0134</td> <td>0.97</td> <td>51.0</td> </tr> <tr> <td>1.0287</td> <td>1.95</td> <td>49.2</td> </tr> <tr> <td>1.0619</td> <td>4.05</td> <td>46.3</td> </tr> <tr> <td>1.0905</td> <td>5.89</td> <td>44.5</td> </tr> </tbody> </table>		T/K	Density, d_4^{25} of soln.	Conc. of soln. /mol dm ⁻³	Bunsen coefficient, α	298.15	1.0134	0.97	51.0	1.0287	1.95	49.2	1.0619	4.05	46.3	1.0905	5.89	44.5
T/K	Density, d_4^{25} of soln.	Conc. of soln. /mol dm ⁻³	Bunsen coefficient, α															
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<p>AUXILIARY INFORMATION</p>																		
<p>METHOD APPARATUS/PROCEDURE:</p> <p>Measurement of volume of gas absorbed by means of gas buret and pipet. Volume absorbed appears to be taken as independent of pressure (1). Density of the aqueous solution determined by Sprengel pykometer.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <ol style="list-style-type: none"> Prepared by heating ammonium nitrate, frozen in liquid air and then distilled. No details given. <p>ESTIMATED ERROR:</p> <p>$\delta\alpha = \pm 0.1$.</p> <p>REFERENCES:</p> <ol style="list-style-type: none"> Manchot, W. <i>Z. Anorg. Chem.</i> <u>1924</u>, 141, 38. 																	

COMPONENTS:		ORIGINAL MEASUREMENTS:
1. Nitrous oxide; N_2O ; [10024-97-2] 2. Water; H_2O ; [7732-18-5] 3. 2-Aminoethanol, (monoethanol-amine); C_2H_7NO ; [141-43-5]		Sada, E.; Kito, S. <i>kagaku kogaku</i> , <u>1972</u> , 36, 218-20.
VARIABLES:		PREPARED BY:
Temperature, concentration		W.Gerrard / C.L. Young
EXPERIMENTAL VALUES:		
T/K	Conc. of monoethanolamine /mol l^{-1} (soln)	Bunsen coefficient, τ
288.15	0	0.7500
	1.0783	0.7435
	1.6839	0.7344
	2.4272	0.7219
	2.4420	0.7176
	3.1821	0.6991
	4.4639	0.6541
298.15	0	0.5512
	1.0853	0.5490
	2.0571	0.5406
	2.8975	0.5340
	4.1214	0.5111
	4.8359	0.4977
	5.8611	0.4762
AUXILIARY INFORMATION		
METHOD APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS
Equilibrium established between measured volume of gas and a measured amount of gas-free liquid in a cell fitted with a magnetic stirrer. Amount of gas absorbed estimated from change in volume of gas. Concentration of amine determined by titration. Details in source and ref. (1).		1. Commercial sample, purity 99.8 mole per cent. 2/3 Of satisfactory purity.
		ESTIMATED ERROR:
		$\delta T/K = \pm 0.2$; $\delta c = 2\%$. (estimated by compiler).
		REFERENCES:
		1. Onda, K.; Sada, E.; Kobayashi, T. <i>J. Chem. Eng. Japan</i> . <u>1970</u> , 3, 18 and 137.

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]; 3. 1,2-Ethanediamine (Ethylene-diamine); C ₂ H ₈ N ₂ ; [107-15-3]	ORIGINAL MEASUREMENTS: Sada, E.; Kumazawa, H.; Butt, M.A. <i>J. Chem. Engng. Data</i> <u>1977</u> , <i>22</i> , 277-278.																				
VARIABLES: Composition	PREPARED BY: C. L. Young																				
EXPERIMENTAL VALUES: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">T/K</th> <th style="text-align: left;">Conc. of amine/mol l⁻¹</th> <th style="text-align: left;">Bunsen coefficient, α</th> </tr> </thead> <tbody> <tr> <td rowspan="8" style="vertical-align: top;">298.15</td> <td>0.0</td> <td>0.5512</td> </tr> <tr> <td>0.805</td> <td>0.5276</td> </tr> <tr> <td>1.473</td> <td>0.5106</td> </tr> <tr> <td>1.871</td> <td>0.4936</td> </tr> <tr> <td>2.267</td> <td>0.4728</td> </tr> <tr> <td>2.371</td> <td>0.4687</td> </tr> <tr> <td>2.738</td> <td>0.4415</td> </tr> <tr> <td>3.133</td> <td>0.4211</td> </tr> </tbody> </table>		T/K	Conc. of amine/mol l ⁻¹	Bunsen coefficient, α	298.15	0.0	0.5512	0.805	0.5276	1.473	0.5106	1.871	0.4936	2.267	0.4728	2.371	0.4687	2.738	0.4415	3.133	0.4211
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COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. 1-Amino-2-propanol, (<i>iso</i> -propanolamine); C ₃ H ₇ NO; [78-96-6]	ORIGINAL MEASUREMENTS: Sada, E.; Kumazawa, H.; Butt, M. A. <i>J. Chem. Engng. Data</i> <u>1978</u> , <i>23</i> , 161-163.																																	
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COMPONENTS:		ORIGINAL MEASUREMENTS:
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. 2,2'-Iminobisethanol, (diethanol-amine) C ₄ H ₁₁ NO ₂ ; [111-42-2]		Sada, E.; Kumazawa, H.; Butt, M. A.; <i>J. Chem. Engng. Data</i> <u>1977</u> , <u>22</u> , 277-278.
VARIABLES:		PREPARED BY:
Composition		C. L. Young
EXPERIMENTAL VALUES:		
T/K	Conc. of amine/mol l ⁻¹	Bunsen coefficient, α
298.15	0.0 0.449 0.996 2.026 2.313 3.081	0.5512 0.5480 0.5406 0.5205 0.5114 0.4918
Pressure = 1 atmosphere = 1.01325 × 10 ⁵ Pa.		
AUXILIARY INFORMATION		
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:
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COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. 1,1'-Iminobis-2-propanol, (Diisopropanolamine); C ₆ H ₁₅ NO ₂ ; [110-97-4]	ORIGINAL MEASUREMENTS: Sada, E.; Kumazawa, H.; Butt, M. A. <i>J. Chem. Engng. Data</i> <u>1978</u> , <i>23</i> , 161-163.																																				
VARIABLES: Temperature, composition	PREPARED BY: C. L. Young																																				
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COMPONENTS:		ORIGINAL MEASUREMENTS:
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. 2,2',2''-Nitrilotrisethanol, (Triethanolamine); C ₆ H ₁₅ NO ₃ ; [102-71-6]		Sada, E.; Kumazawa, H.; Butt, M. A.; <i>J. Chem. Engng. Data</i> <u>1977</u> , 22, 277- 278.
VARIABLES:		PREPARED BY:
Composition		C. L. Young
EXPERIMENTAL VALUES:		
T/K	Conc. of amine/mol l ⁻¹	Bunsen coefficient, α
298.15	0.0	0.5512
	0.628	0.4997
	0.874	0.4774
	1.293	0.4327
	2.160	0.3825
	2.912	0.3170
<p>Pressure = 1 atmosphere = 1.01325 × 10⁵ Pa.</p>		
AUXILIARY INFORMATION		
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:
Equilibrium established between a measured volume of gas and a measured amount of gas-free liquid in a cell fitted with a magnetic stirrer. Amount of gas absorbed estimated from change in volume of gas. Concentration of amine determined by titration. Details in source and ref. 1.		1. Commercial sample, minimum purity 99.8 mole per cent. 2. Distilled and degassed. 3. Reagent grade of guaranteed quality.
		ESTIMATED ERROR: $\delta T/K = \pm 0.2$; $\delta \alpha = \pm 2\%$ (estimated by compiler).
		REFERENCES: 1. Onda, K.; Sada, E.; Kobayashi, T.; Kito, S.; Ito, K. <i>J. Chem. Engng. Japan</i> <u>1970</u> , 3, 18.

COMPONENTS:		ORIGINAL MEASUREMENTS:		
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. 2,2,2-Trichloro-1,1-ethanediol, (Chloral hydrate); C ₂ H ₃ Cl ₃ O ₂ ; [302-17-0]		Knopp, W. Z. Phys. Chem. <u>1904</u> , 48, 97-108		
VARIABLES:		PREPARED BY:		
Concentration		W. Gerrard		
EXPERIMENTAL VALUES:				
T/K	Weight of chloral hydrate in 100 g of solution	Conc. of chloral hydrate/mol dm ⁻³ (soln).	Density of solution / kg dm ⁻³	Bunsen absorption coefficient, α
293.15	2.947	0.184	1.01124	0.6182
	6.848	0.445	1.02907	0.6128
	13.48	0.942	1.06110	0.5960
	16.15	1.165	1.07407	0.5891
	19.60	1.474	1.09224	0.5793
	24.02	1.911	1.11602	0.5675
			Water	0.6270
Calculated by compiler: Mole fraction, x_1 , of N ₂ O in water = 0.000506 Mole fraction, x_1 , of N ₂ O in the solution containing 1.911 moles chloral hydrate in 1 dm ³ of solution = 0.000547. Thus, although α decreases as the molarity of chloral hydrate increases, the x_1 value increases.				
AUXILIARY INFORMATION				
METHOD APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS		
An absorption pipet and a gas buret were used to measure the volume of nitrous oxide absorbed. The densities of the solutions were determined by a Sprengel pycnometer.		1. Nitrous oxide was prepared by heating pure ammonium nitrate at 513-523 K. It was passed in order through aqueous ferrous sulfate, sodium hydroxide, and concentrated sulfuric acid. 3. Attested analytically.		
		ESTIMATED ERROR:		
		REFERENCES:		

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. Colloids;	ORIGINAL MEASUREMENTS: Geffcken, G.; <i>Z. Phys. Chem.</i> <u>1904</u> , 49,257-302.																
VARIABLES:	PREPARED BY: W. Gerrard																
EXPERIMENTAL VALUES: <p style="text-align: center;">T = 298.15 K Pressure = 101.325 kPa.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Colloid</th> <th style="text-align: center;">Conc. of colloid /g dm⁻³</th> <th style="text-align: center;">Ostwald coefficient</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Arsenious sulfide; As₂S₃; [1303-33-9]</td> <td style="text-align: center;">39.6</td> <td style="text-align: center;">0.5819</td> </tr> <tr> <td style="text-align: center;">42.4</td> <td style="text-align: center;">0.5833</td> </tr> <tr> <td rowspan="2">Ferric hydroxide; Fe(OH)₃; [1309-33-7]</td> <td style="text-align: center;">47.7</td> <td style="text-align: center;">0.5799</td> </tr> <tr> <td style="text-align: center;">47.9</td> <td style="text-align: center;">0.5787</td> </tr> <tr> <td style="text-align: right;">Water alone</td> <td></td> <td style="text-align: center;">0.5942</td> </tr> </tbody> </table>		Colloid	Conc. of colloid /g dm ⁻³	Ostwald coefficient	Arsenious sulfide; As ₂ S ₃ ; [1303-33-9]	39.6	0.5819	42.4	0.5833	Ferric hydroxide; Fe(OH) ₃ ; [1309-33-7]	47.7	0.5799	47.9	0.5787	Water alone		0.5942
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<p>COMPONENTS:</p> <ol style="list-style-type: none"> Nitrous oxide; N_2O; [10024-97-2] Water; H_2O; [7732-18-5]; Silicic acid (as SiO_2); [1342-98-2] 	<p>ORIGINAL MEASUREMENTS:</p> <p>Findlay, A.; Creighton, H. J. M. <i>J. Chem. Soc.</i> <u>1910</u>, <i>97</i>, 536-561.</p>																																				
<p>VARIABLES:</p> <p>Pressure, concentration</p>	<p>PREPARED BY:</p> <p>W. Gerrard</p>																																				
<p>EXPERIMENTAL VALUES:</p> <p style="text-align: center;">T/K 298.16</p> <p>Solubility, s, expressed as $\frac{\text{concentration of the gas in the liquid phase}}{\text{concentration of the gas in the gaseous phase}}$</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Conc. of colloid $10^2 \text{ g } (SiO_2) \text{ cm}^{-3}$ (soln.)</th> <th style="text-align: center;">Density of solution</th> <th style="text-align: center;">Pressure of gas kPa</th> <th style="text-align: center;">Solubility, s</th> </tr> </thead> <tbody> <tr> <td rowspan="5" style="text-align: center; vertical-align: middle;">1.87</td> <td rowspan="5" style="text-align: center; vertical-align: middle;">1.001</td> <td style="text-align: center;">99.723</td> <td style="text-align: center;">0.596</td> </tr> <tr> <td style="text-align: center;">109.989</td> <td style="text-align: center;">0.598</td> </tr> <tr> <td style="text-align: center;">122.788</td> <td style="text-align: center;">0.598</td> </tr> <tr> <td style="text-align: center;">139.453</td> <td style="text-align: center;">0.600</td> </tr> <tr> <td style="text-align: center;">162.250</td> <td style="text-align: center;">0.602</td> </tr> <tr> <td rowspan="5" style="text-align: center; vertical-align: middle;">3.63</td> <td rowspan="5" style="text-align: center; vertical-align: middle;">1.005</td> <td style="text-align: center;">179.849</td> <td style="text-align: center;">0.604</td> </tr> <tr> <td style="text-align: center;">98.790</td> <td style="text-align: center;">0.601</td> </tr> <tr> <td style="text-align: center;">113.055</td> <td style="text-align: center;">0.602</td> </tr> <tr> <td style="text-align: center;">132.520</td> <td style="text-align: center;">0.605</td> </tr> <tr> <td style="text-align: center;">149.585</td> <td style="text-align: center;">0.607</td> </tr> <tr> <td></td> <td></td> <td style="text-align: center;">162.250</td> <td style="text-align: center;">0.608</td> </tr> <tr> <td></td> <td></td> <td style="text-align: center;">185.848</td> <td style="text-align: center;">0.609</td> </tr> </tbody> </table>		Conc. of colloid $10^2 \text{ g } (SiO_2) \text{ cm}^{-3}$ (soln.)	Density of solution	Pressure of gas kPa	Solubility, s	1.87	1.001	99.723	0.596	109.989	0.598	122.788	0.598	139.453	0.600	162.250	0.602	3.63	1.005	179.849	0.604	98.790	0.601	113.055	0.602	132.520	0.605	149.585	0.607			162.250	0.608			185.848	0.609
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COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]; 3. Silicic acid (colloidal); [1343-98-2]	ORIGINAL MEASUREMENTS: Findlay, A.; Howell, O. R. <i>J. Chem. Soc.</i> <u>1914</u> , 105, 291-8.																																																																						
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EXPERIMENTAL VALUES: Temperature not stated: presumably 298.16 T/K Solubility, <i>s</i> , given as $\frac{\text{concentration of the gas in the liquid phase}}{\text{concentration of the gas in the gaseous phase}}$ <table border="1" data-bbox="118 620 1166 950"> <thead> <tr> <th rowspan="2">Conc. of colloid 10²g cm⁻³ (soln.)</th> <th rowspan="2">Density of solution</th> <th colspan="2"><i>P</i>_{N₂O}[†]</th> <th colspan="2"><i>P</i>_{N₂O}[†]</th> <th colspan="2"><i>P</i>_{N₂O}[†]</th> </tr> <tr> <th>kPa</th> <th><i>s</i></th> <th>kPa</th> <th><i>s</i></th> <th>kPa</th> <th><i>s</i></th> </tr> </thead> <tbody> <tr> <td rowspan="3">1.62</td> <td rowspan="3">1.000</td> <td>33.893</td> <td>0.590</td> <td>49.208</td> <td>0.587</td> <td>71.566</td> <td>0.589</td> </tr> <tr> <td>88.524</td> <td>0.589</td> <td>101.963</td> <td>0.588</td> <td>134.267</td> <td>0.592</td> </tr> <tr> <td>34.010</td> <td>0.594</td> <td>49.382</td> <td>0.591</td> <td>71.673</td> <td>0.589</td> </tr> <tr> <td rowspan="3">3.5</td> <td rowspan="3">1.004</td> <td>90.124</td> <td>0.588</td> <td>102.043</td> <td>0.588</td> <td>136.733</td> <td>0.591</td> </tr> <tr> <td>33.357</td> <td>0.600</td> <td>50.022</td> <td>0.595</td> <td>72.859</td> <td>0.594</td> </tr> <tr> <td>91.658</td> <td>0.593</td> <td>101.150</td> <td>0.594</td> <td>137.813</td> <td>0.598</td> </tr> <tr> <td></td> <td></td> <td>33.343</td> <td>0.596</td> <td>50.208</td> <td>0.595</td> <td>74.286</td> <td>0.593</td> </tr> <tr> <td></td> <td></td> <td>87.138</td> <td>0.594</td> <td>101.003</td> <td>0.595</td> <td>133.853</td> <td>0.598</td> </tr> </tbody> </table>		Conc. of colloid 10 ² g cm ⁻³ (soln.)	Density of solution	<i>P</i> _{N₂O} [†]		<i>P</i> _{N₂O} [†]		<i>P</i> _{N₂O} [†]		kPa	<i>s</i>	kPa	<i>s</i>	kPa	<i>s</i>	1.62	1.000	33.893	0.590	49.208	0.587	71.566	0.589	88.524	0.589	101.963	0.588	134.267	0.592	34.010	0.594	49.382	0.591	71.673	0.589	3.5	1.004	90.124	0.588	102.043	0.588	136.733	0.591	33.357	0.600	50.022	0.595	72.859	0.594	91.658	0.593	101.150	0.594	137.813	0.598			33.343	0.596	50.208	0.595	74.286	0.593			87.138	0.594	101.003	0.595	133.853	0.598
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VARIABLES:		PREPARED BY:	
Pressure, concentration		W. Gerrard	
EXPERIMENTAL VALUES:			
T/K 298.16			
Solubility, <i>s</i> , expressed as $\frac{\text{concentration of the gas in the liquid phase}}{\text{concentration of the gas in the gaseous phase}}$			
Conc. of colloid 10 ² g cm ⁻³ (soln.)	Density of solution	Pressure of gas kPa	Solubility, <i>s</i>
1.31	0.999	97.457	0.589
		113.189	0.590
		124.921	0.590
		142.519	0.592
		156.784	0.592
3.09	1.003	177.049	0.592
		97.324	0.581
		114.389	0.582
		126.654	0.584
		145.185	0.586
6.06	1.008	163.984	0.588
		183.048	0.588
		97.324	0.560
		113.322	0.563
		128.121	0.566
		146.252	0.568
		166.250	0.570
		183.848	0.571
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<p>VARIABLES:</p> <p>Temperature, concentration of colloid</p>	<p>PREPARED BY:</p> <p>W. Gerrard</p>		
<p>EXPERIMENTAL VALUES:</p>			
<p>T/K</p>	<p>Conc. of colloid/%</p>	<p>α</p>	<p>L</p>
<p>283.15</p>	<p>1</p>	<p>0.5340</p>	<p>0.5535</p>
<p>288.15</p>		<p>0.4890</p>	<p>0.5159</p>
<p>293.15</p>		<p>0.4370</p>	<p>0.4690</p>
<p>298.15</p>		<p>0.4150</p>	<p>0.4530</p>
<p>303.15</p>		<p>0.3950</p>	<p>0.4384</p>
<p>308.15</p>		<p>0.3200</p>	<p>0.3610</p>
<p>313.15</p>		<p>0.2610</p>	<p>0.2993</p>
<p>283.15</p>	<p>5</p>	<p>0.4852</p>	<p>0.5030</p>
<p>288.15</p>		<p>0.4321</p>	<p>0.4482</p>
<p>293.15</p>		<p>0.3809</p>	<p>0.4088</p>
<p>298.15</p>		<p>0.3614</p>	<p>0.3945</p>
<p>303.15</p>		<p>0.3430</p>	<p>0.3807</p>
<p>308.15</p>		<p>0.2921</p>	<p>0.3290</p>
<p>313.15</p>		<p>0.2410</p>	<p>0.2763</p>
<p>α = the Bunsen absorption coefficient. $L = \alpha \times T/K/273$, but defined as the ratio of the concentration of the gas in the liquid phase to that in the gas phase. Partial pressure of gas was taken to be 760 mmHg. 760 mmHg = 1 atm = 101.325 kPa.</p> <p style="text-align: right;">(cont.)</p>			
<p>AUXILIARY INFORMATION</p>			
<p>METHOD APPARATUS/PROCEDURE:</p> <p>The volume of N₂O absorbed was measured by the use of a gas buret and pipet.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <ol style="list-style-type: none"> Purity of nitrous oxide stated to be 99.6-99.7%; contained N₂, 0.4-0.3%. Water may be taken as of satisfactory purity. The gelatin solution was dialyzed. 		
<p>ESTIMATED ERROR:</p> <p>Reproducibility stated to be within $\pm 0.2\%$.</p>			
<p>REFERENCES:</p>			

<p>COMPONENTS:</p> <ol style="list-style-type: none"> 1. Nitrous oxide; N₂O; [10024-97-2] 2. Water; H₂O; [7732-18-5] 3. Gelatin (colloidal) 	<p>ORIGINAL MEASUREMENTS:</p> <p>Shkol'nikova, R. I. <i>Uchenye Zapiski Leningrad. Gosudart</i> <u>1959</u>, No. 18, Part 272, 64-86.</p>
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EXPERIMENTAL VALUES:			
T/K	Conc. of colloid/%	α	L
283.15	10	0.4300	0.4458
288.15		0.3850	0.4060
293.15		0.3366	0.3613
298.15		0.3194	0.3486
303.15		0.3030	0.3363
308.15		0.2710	0.3057
313.15		0.2280	0.2614

Conc. of colloid/%	A/cal mol ⁻¹	B/cal mol ⁻¹
0 (water)	5760	5161
1	4700	4100
5	4090	3520
10	3730	3140

Where A and B are defined by the equations:

$$\frac{d \ln \alpha}{dT} = - \frac{A}{RT^2}$$

$$\frac{d \ln L}{dT} = - \frac{B}{RT^2}$$

<p>COMPONENTS:</p> <ol style="list-style-type: none"> Nitrous oxide; N₂O; [10024-97-2] Water; H₂O; [7732-18-5] Starch, (colloidal) 	<p>ORIGINAL MEASUREMENTS:</p> <p>Findlay, A.; Creighton, H.J.M. <i>J. Chem. Soc.</i> <u>1910</u>, 97, 536-561.</p>																																																																																		
<p>VARIABLES:</p> <p>Pressure, concentration</p>	<p>PREPARED BY:</p> <p>W. Gerrard</p>																																																																																		
<p>EXPERIMENTAL VALUES:</p> <p>Solubility expressed as $\frac{\text{concentration of the gas in the liquid phase}}{\text{concentration of the gas in the gaseous phase}} = S$</p> <p>$P_{N_2O}$ is the pressure of N₂O over the solution. Temperature = 298.16 K.</p> <table border="1" data-bbox="155 624 1240 1160"> <thead> <tr> <th>Conc. of soln. /10⁻² g cm⁻³</th> <th>Density of Solution</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td rowspan="2">2.50</td> <td rowspan="2">1.009</td> <td>P_{N_2O} /kPa</td> <td>98.923</td> <td>116.122</td> <td>135.986</td> <td>155.451</td> <td>171.183</td> <td>192.114</td> <td></td> </tr> <tr> <td>S</td> <td>0.580</td> <td>0.576</td> <td>0.575</td> <td>0.578</td> <td>0.581</td> <td>0.582</td> <td></td> </tr> <tr> <td rowspan="2">6.89</td> <td rowspan="2">1.021</td> <td>P_{N_2O} /kPa</td> <td>98.923</td> <td>113.055</td> <td>123.854</td> <td>139.453</td> <td>168.117</td> <td>184.115</td> <td></td> </tr> <tr> <td>S</td> <td>0.561</td> <td>0.554</td> <td>0.553</td> <td>0.554</td> <td>0.562</td> <td>0.567</td> <td></td> </tr> <tr> <td rowspan="2">10.00</td> <td rowspan="2">1.030</td> <td>P_{N_2O} /kPa</td> <td>98.923</td> <td>114.655</td> <td>126.387</td> <td>142.786</td> <td>165.183</td> <td>179.982</td> <td></td> </tr> <tr> <td>S</td> <td>0.550</td> <td>0.544</td> <td>0.545</td> <td>0.545</td> <td>0.553</td> <td>0.555</td> <td></td> </tr> <tr> <td rowspan="2">13.73</td> <td rowspan="2">1.040</td> <td>P_{N_2O} /kPa</td> <td>98.523</td> <td>111.456</td> <td>130.920</td> <td>151.452</td> <td>166.917</td> <td>184.915</td> <td></td> </tr> <tr> <td>S</td> <td>0.537</td> <td>0.532</td> <td>0.530</td> <td>0.535</td> <td>0.536</td> <td>0.538</td> <td></td> </tr> </tbody> </table>		Conc. of soln. /10 ⁻² g cm ⁻³	Density of Solution									2.50	1.009	P_{N_2O} /kPa	98.923	116.122	135.986	155.451	171.183	192.114		S	0.580	0.576	0.575	0.578	0.581	0.582		6.89	1.021	P_{N_2O} /kPa	98.923	113.055	123.854	139.453	168.117	184.115		S	0.561	0.554	0.553	0.554	0.562	0.567		10.00	1.030	P_{N_2O} /kPa	98.923	114.655	126.387	142.786	165.183	179.982		S	0.550	0.544	0.545	0.545	0.553	0.555		13.73	1.040	P_{N_2O} /kPa	98.523	111.456	130.920	151.452	166.917	184.915		S	0.537	0.532	0.530	0.535	0.536	0.538	
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<p>METHOD: /APPARATUS/PROCEDURE:</p> <p>Gas buret and pipet similar to that of Geffcken (1), except that the manometer tube was longer to give the higher pressures.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <ol style="list-style-type: none"> Self prepared and purified: not attested. Used Kahlbaum's pure soluble starch. <p>ESTIMATED ERROR:</p> <p>$\delta S, S$ Stated to be $\pm 0.25\%$.</p> <p>REFERENCES:</p> <ol style="list-style-type: none"> Geffcken, G. <i>Z. Phys. Chem.</i> <u>1904</u>, 48, 257. 																																																																																		

COMPONENTS:				ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5]; 3. Starch (colloidal)				Findlay, A.; Howell, O. R. <i>J. Chem. Soc.</i> <u>1914</u> , <i>105</i> , 291-8.			
VARIABLES:				PREPARED BY:			
Pressure, concentration				W. Gerrard			
EXPERIMENTAL VALUES:							
Temperature not stated: presumably 298.16 T/K							
Solubility, <i>s</i> , given as $\frac{\text{concentration of the gas in the liquid phase}}{\text{concentration of the gas in the gaseous phase}}$							
Conc. of colloid 10 ² g cm ⁻³ (soln.)	Density of solution	N ₂ O [†]		N ₂ O [†]		N ₂ O [†]	
		kPa	<i>s</i>	kPa	<i>s</i>	kPa	<i>s</i>
6.76	1.023	38.023	0.565	55.328	0.563	75.552	0.560
		87.658	0.560	102.696	0.553	140.519	0.550
6.70		35.143	0.566	49.395	0.563	69.953	0.561
		86.205	0.558	100.070	0.554	132.987	0.550
9.58	1.030	35.676	0.554	49.822	0.551	67.230	0.549
		83.685	0.546	99.603	0.541	136.520	0.539
9.40	1.029	38.729	0.551	55.528	0.550	76.899	0.548
		87.858	0.543	103.430	0.540	133.800	0.537
13.62	1.039	37.903	0.541	55.781	0.537	81.965	0.535
		93.751	0.532	112.389	0.528	-	-
13.60		35.170	0.541	50.475	0.539	66.247	0.536
		83.192	0.534	100.670	0.530	129.787	0.525
† $P_{\text{N}_2\text{O}}$ is the pressure of N ₂ O over the solution.							
AUXILIARY INFORMATION							
METHOD / APPARATUS / PROCEDURE:				SOURCE AND PURITY OF MATERIALS:			
Measurement of volume of N ₂ O by gas buret and pipet (ref. 1).				1. Nitrous oxide self prepared and purified, see ref. 2. 3. Starch: Kahlbaum's pure soluble.			
ESTIMATED ERROR:							
REFERENCES:							
1. Findlay, A.; Williams, T. <i>J. Chem. Soc.</i> <u>1913</u> , <i>103</i> , 636.							
2. Findlay, A.; Creighton, H. J. M. <i>J. Chem. Soc.</i> <u>1910</u> , <i>97</i> , 536.							

<p>COMPONENTS:</p> <ol style="list-style-type: none"> Nitrous oxide; N₂O; [10024-97-2] Water; H₂O; [7732-18-5] Charcoal in suspension. 	<p>ORIGINAL MEASUREMENTS:</p> <p>Findlay, A.; Creighton, H.J.M. <i>J. Chem. Soc.</i> <u>1910</u>, 97, 536-561</p>
<p>VARIABLES:</p> <p style="text-align: center;">Pressure</p>	<p>PREPARED BY:</p> <p style="text-align: center;">W. Gerrard</p>
<p>EXPERIMENTAL VALUES:</p> <p>Solubility, S, expressed as $\frac{\text{concentration of the gas in the liquid phase}}{\text{concentration of the gas in the gaseous phase}}$</p> <p style="text-align: center;">T/K = 298.16</p> <p>100 cm³ of liquid contained 0.227 g of charcoal; density = 1.000.</p> <p>Pressure of N₂O/kPa : 97.190 109.856 124.788 137.853 167.183 180.782</p> <p>Solubility, S : 0.596 0.600 0.618 0.635 0.648 0.674</p>	
<p>AUXILIARY INFORMATION</p>	
<p>METHOD APPARATUS/PROCEDURE:</p> <p>Gas buret and absorption pipet similar to that of Geffcken (1), except that the manometer tube was longer to give the higher pressures.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <ol style="list-style-type: none"> Self prepared and purified; not attested. Used Kahlbaum's well powdered bone charcoal. <p>ESTIMATED ERROR:</p> <p style="text-align: center;">Stated to be \pm 0.25%</p> <p>REFERENCES:</p> <ol style="list-style-type: none"> Geffcken, G.Z. <i>Phys. Chem.</i> <u>1904</u>, 49, 257.

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. Charcoal suspension,	ORIGINAL MEASUREMENTS: Findlay, A.; Howell, O.R. <i>J. Chem. Soc.</i> <u>1914</u> , 105,291-8																																			
VARIABLES: Pressure	PREPARED BY: W. Gerrard																																			
EXPERIMENTAL VALUES: Solubility, S , given as $\frac{\text{concentration of the gas in the liquid phase}}{\text{concentration of the gas in the gaseous phase}}$ Temperature not stated: presumably 298.16 T/K <table border="1" data-bbox="134 626 1182 854"> <thead> <tr> <th>3.0 g of charcoal in 100 cm³ water</th> <th>$p_{N_2O^+}$ /kPa</th> <th>S</th> <th>$p_{N_2O^+}$ /kPa</th> <th>S</th> <th>$p_{N_2O^+}$ /kPa</th> <th>S</th> </tr> </thead> <tbody> <tr> <td></td> <td>33.677</td> <td>0.580</td> <td>48.902</td> <td>0.586</td> <td>70.353</td> <td>0.587</td> </tr> <tr> <td></td> <td>83.538</td> <td>0.588</td> <td>99.963</td> <td>0.588</td> <td>131.920</td> <td>0.609</td> </tr> <tr> <td></td> <td>34.0366</td> <td>0.583</td> <td>49.902</td> <td>0.581</td> <td>72.699</td> <td>0.586</td> </tr> <tr> <td></td> <td>85.191</td> <td>0.591</td> <td>101.363</td> <td>0.588</td> <td>133.493</td> <td>0.610</td> </tr> </tbody> </table> <p data-bbox="201 904 887 954">+ p_{N_2O} is the pressure of N O over the liquid.</p> <p data-bbox="100 984 913 1063">NOTE: No data were given for a suspension of silica; but it was stated that the values did not differ appreciably from those in pure water.</p>		3.0 g of charcoal in 100 cm ³ water	$p_{N_2O^+}$ /kPa	S	$p_{N_2O^+}$ /kPa	S	$p_{N_2O^+}$ /kPa	S		33.677	0.580	48.902	0.586	70.353	0.587		83.538	0.588	99.963	0.588	131.920	0.609		34.0366	0.583	49.902	0.581	72.699	0.586		85.191	0.591	101.363	0.588	133.493	0.610
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AUXILIARY INFORMATION																																				
METHOD /APPARATUS/PROCEDURE: Measurement of volume of N ₂ O by gas buret and pipet (1).	SOURCE AND PURITY OF MATERIALS: 1. Self prepared and purified (2). 2. Finely powdered animal charcoal was boiled with water, dried at 373.16 K, and then heated in a vacuum almost to redness. ESTIMATED ERROR: REFERENCES: 1. Findlay, A.; Williams. <i>J. Chem. Soc.</i> <u>1913</u> , 103,636. 2. Findlay, A.; Creighton, H.J.M. <i>J. Chem. Soc.</i> <u>1910</u> , 97,536.																																			

COMPONENTS:

1. Nitrous oxide; N₂O; [10024-97-2]
2. Organic liquids

EVALUATOR:

Colin Young
School of Chemistry
University of Melbourne,
Victoria, Australia: 3052.

March 1980.

Most solubility data on this gas are at temperatures in the range 273K to 323K and near atmospheric pressure. Nitrous oxide has a boiling point at 1 atmosphere pressure of 184.67K and a critical temperature of 309.6K. At 273K the vapor pressure of nitrous oxide is approximately 31.5 atm or 3.2 MPa.

The main sources of data for non-aqueous solvents are those of Kunerth (1), Horiuti (2), Yen and McKetta (3), Hsu and Campbell (4), Makranczy *et al* (5), and Sada *et al* (6). In general terms the data of ref. (2), (3), (5) and (6) appear to be reliable. The data of ref. (4) are usually in agreement with other data on the same system but not always. The extensive data of Kunerth (1) appears to have an unusual temperature dependence the solubility appears to decrease slightly too rapidly with increasing temperature.

ALKANES:

Pentane: There is reasonable agreement between the data of Hsu and Campbell (4) and Makranczy *et al* (5) for this system and both are classified as tentative.

Heptane: The solubility in this alkane has been studied by Yen and McKetta (3) and Makranczy *et al* (5). There is good agreement between the two sets of data at 298K but at 313K the Makranczy *et al* (5) data indicates the solubility is higher than reported by Yen and McKetta (3). It appears likely that the data of Makranczy *et al* (5) might be slightly in error at the higher temperature. The other data in the Makranczy *et al* (5) paper are also slightly suspect when comparison is made for systems on which there is more extensive data, see Helium and alkane evaluation (7). The data of Yen and McKetta (3) are classified as tentative.

2,2,4-Trimethylpentane: Yen and McKetta (3) data are classified as tentative since there are no other data with which to compare their data and their data on other systems appears reliable.

Other alkanes: The data of Makranczy *et al* (5) are classified as tentative however the comments under heptane regarding these workers data are brought to the users attention. Probably the data at 298K is more reliable than that at 313K.

Benzene: The data of Horiuti (2) and Yen and McKetta (3) are in good agreement and are classified as tentative.

ALCOHOLS

Methanol: The data of Kunerth (1) Hsu and Campbell (4) and Sada *et al*. (6) are in fair agreement. Only Kunerth (1) values are over a range of temperature and the temperature dependence of his results is unusual. All three sets of data are classified as tentative. The mole fraction solubility of Makranczy *et al*. (8) is considerably greater than that of the other three studies and is classified as doubtful.

Ethanol: This system has been studied by five groups. The data of Kunerth (1) has an unusual temperature dependence and the mole fraction data, interpolated to 298.15 K, are considerably lower than that of any other worker. They are therefore classified as doubtful. The mole fraction solubility at 298.15 K calculated from the results of Makranczy *et al.* (8) Hsu and Campbell (4) and Carius (9) agree within experimental error and are classified as tentative. The results of Carius (9) are over 120 years old and the agreement with recent data is surprising. (Weiss (10) also remarked on the surprising agreement between Carius' results and recent data for the system nitrous oxide and water). The mole fraction solubility calculated from the results of Sada *et al.* are about 8-10% lower than the values from references (4) (8) and (9). Such a large discrepancy is greater than can be accounted for by the estimated experimental error.

2-Propanone (Acetone)

The solubility of nitrous oxide in 2-propanone has been studied by Horiuti (1), Hsu and Campbell (4) and Kunerth (1). The Hsu and Campbell isolated value is in reasonable agreement with the other two sets of data. There is fair agreement between Kunerth's and Horiuti's datum at 298K but Kunerth's data have an unusual temperature dependence and there is a fairly wide discrepancy between the two sets of data at lower temperatures. The data of Horiuti (1) and Hsu and Campbell (4) are classified as tentative whereas that of Kunerth (1) is less reliable.

Acetic acid and Pentyl ester

There is good agreement between the data of Kunerth (1) and the isolated value at 294.3 K of Hsu and Campbell (4) for acetic acid. Therefore both workers values are classified as tentative. Similarly the results of both these workers are in good agreement for the pentyl-ester.

Halogenated hydrocarbons.

Tetrachloromethane (Carbon tetrachloride). The data of Horiuti (2) and Yen and McKetta (3) are in good agreement whereas the isolated value of Hsu and Campbell (4) is widely different. The values of Horiuti (2) and Yen and McKetta (3) are therefore classified as tentative whereas that of Hsu and Campbell is classified as doubtful.

Trichloromethane (Chloroform). The temperature dependence of values of Kunerth (1) is unusual but the isolated value of Hsu and Campbell (4) is in agreement with Kunerth's data and therefore both sets of data are classified as tentative.

1,2-Dibromoethane. There is good agreement between the values of Kunerth (1) and that of Hsu and Campbell (4) on this system and therefore both sets of data are classified as tentative.

REFERENCES:

1. Kunerth, W. *Phys. Rev.* 1922, 19, 512.
2. Horiuti, J. *Sci. Pap. Inst. Phys. Chem. Res. (Japan)*, 1931-2, 17, 125.
3. Yen, L.C.; McKetta, J.J.Jr. *J. Chem. Eng. Data.* 1962, 7, 288.
4. Hsu, H.; Campbell, D. *Aerosol Age.* 1964, December, 34.
5. Makranczy, J.; Megyery-Balog, K.; Rusz, L.; Patyi, L. *Hung. J. Ind. Chem.* 1976, 4, (2), 269.
6. Sada, E.; Kito, S.; Ito, Y. *Eng. Chem. Fundam.* 1975, 14, 232.
7. *Helium and Neon Gas Solubilities, Solubility Data Series*, Vol. 1. ed. H.L. Clever, Pergamon, Oxford. 1979
8. Makranczy, J.; Rusz, L.; Balog-Megyery, K. *Hung. J. Ind. Chem.* 1979, 7, 41.
9. Carius, L. *Annalen*, 1855, 94, 129.
10. Weiss, R.F.; Price, B.A. *Marine Chem.* 1980, 8, 347.

* * *

<p>COMPONENTS:</p> <p>1. Nitrous oxide; N₂O; [10024-97-2]</p> <p>2. Pentane; C₅H₁₂; [109-66-0]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Hsu, H.; Campbell, D.</p> <p><i>Aerosol Age</i>, 1964, December, 34.</p>						
<p>VARIABLES:</p>	<p>PREPARED BY:</p> <p>W. Gerrard / C.L. Young</p>						
<p>EXPERIMENTAL VALUES:</p> <table border="1" data-bbox="114 487 1240 685"> <thead> <tr> <th data-bbox="306 504 354 528">T/K</th> <th data-bbox="471 504 760 552">Ostwald coefficient, <i>L</i></th> <th data-bbox="821 493 1188 564">Mole fraction* of nitrous oxide in liquid, x_{N_2O}</th> </tr> </thead> <tbody> <tr> <td data-bbox="292 624 368 648">294.3</td> <td data-bbox="556 624 618 648">4.13</td> <td data-bbox="951 624 1040 648">0.0194</td> </tr> </tbody> </table> <p>* calculated by compiler as for a partial pressure of gas of 101.325 kPa. Molar volume of gas at 294.24K taken as 23967cm³ based on the density (l) 1.9775 g dm⁻³ at 101.325 kPa and 273.15K.</p>		T/K	Ostwald coefficient, <i>L</i>	Mole fraction* of nitrous oxide in liquid, x_{N_2O}	294.3	4.13	0.0194
T/K	Ostwald coefficient, <i>L</i>	Mole fraction* of nitrous oxide in liquid, x_{N_2O}					
294.3	4.13	0.0194					
<p>AUXILIARY INFORMATION</p>							
<p>METHOD/APPARATUS/PROCEDURE:</p> <p>Copper equilibrium cell fitted with Bourdon gauge and thermometer. Total amount of gas needed to attain given, but not stated, pressure measure. Ostwald coefficient calculated from knowledge of volume of liquid and container.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>No details given.</p> <p>ESTIMATED ERROR:</p> <p>$\delta T/K = \pm 0.5$; $\delta x_{N_2O} = \pm 3\%$. (estimated by compiler).</p> <p>REFERENCES:</p> <p>1. Kaye, G.W.C.; Laby, T.H. <i>Tables of Physical and Chemical Constants</i>, Longmans, London, 1966.</p>						

<p>COMPONENTS:</p> <p>1. Nitrous oxide; N₂O; [10024-97-2]</p> <p>2. Pentane; C₅H₁₂; [109-66-0]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Makranczy, J.; Megyery-Balog, K.; Ruzs, L.; Patyi, L. <i>Hung. J. Ind. Chem.</i> <u>1976</u>, 4(2), 269-280.</p>												
<p>VARIABLES:</p> <p>T/K: 298.15 - 313.15</p> <p>P/kPa: 101.325 (1 atm)</p>	<p>PREPARED BY:</p> <p>S. A. Johnson</p>												
<p>EXPERIMENTAL VALUES:</p> <table border="1" data-bbox="128 526 1242 735"> <thead> <tr> <th>T/K</th> <th>Mole fraction x_{N_2O}</th> <th>Bunsen coefficient α</th> <th>Ostwald Coefficient L</th> </tr> </thead> <tbody> <tr> <td>298.15</td> <td>0.01906</td> <td>3.750</td> <td>4.093</td> </tr> <tr> <td>313.15</td> <td>0.01682</td> <td>3.217</td> <td>3.688</td> </tr> </tbody> </table>		T/K	Mole fraction x_{N_2O}	Bunsen coefficient α	Ostwald Coefficient L	298.15	0.01906	3.750	4.093	313.15	0.01682	3.217	3.688
T/K	Mole fraction x_{N_2O}	Bunsen coefficient α	Ostwald Coefficient L										
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VARIABLES: T/K: 298.15 - 313.15 P/kPa: 101.325 (1 atm)	PREPARED BY: S. A. Johnson												
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<p>VARIABLES:</p>	<p>PREPARED BY:</p> <p>C. L. Young</p>						
<p>EXPERIMENTAL VALUES:</p> <p style="text-align: center;">Mole fraction of nitrous oxide at a partial pressure of 101.325 kPa</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">T/K</th> <th style="text-align: center;">α[*]</th> <th></th> </tr> </thead> <tbody> <tr> <td style="text-align: left;">298.15</td> <td style="text-align: center;">3.19</td> <td style="text-align: right;">0.01851</td> </tr> </tbody> </table>		T/K	α [*]		298.15	3.19	0.01851
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<p>* volume of gas (measured at 101.325 kPa and 273.15 K) dissolved by one volume of hexane.</p>							
<p>AUXILIARY INFORMATION</p>							
<p>METHOD APPARATUS/PROCEDURE:</p> <p>Volumetric method. Pressure measured when known amounts of gas were added, in increments, to a known amount of liquid in a vessel of known dimensions. Corrections were made for the partial pressure of solvent. Details in ref. (1).</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>Purity better than 99 mole per cent as determined by gas chromatography.</p> <p>ESTIMATED ERROR:</p> <p>δT/K = ±0.1; δα = ±4% or less.</p> <p>REFERENCES:</p> <p>1. Bodor, E.; Bor, G. J.; Mohai, B.; Sipos, G. <i>Veszpremi. Vegyip. Egy. Kozl.</i> <u>1957</u>, 1, 55.</p>						

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Heptane; C ₇ H ₁₆ ; [142-82-5]	ORIGINAL MEASUREMENTS: Yen, L. C.; Mcketta, J. J., Jr. <i>J. Chem. Eng. Data</i> <u>1962</u> , <i>7</i> , 288-289.																		
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<p>VARIABLES:</p> <p>T/K: 298.15 - 313.15</p> <p>P/kPa: 101.325 (1 atm)</p>	<p>PREPARED BY:</p> <p>S. A. Johnson</p>												
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COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Octane; C ₈ H ₁₈ ; [111-65-9]	ORIGINAL MEASUREMENTS: Makranczy, J.; Megyery-Balog, K.; Ruzs, L.; Patyi, L. <i>Hung. J. Ind. Chem.</i> <u>1976</u> , 4(2), 269-280.												
VARIABLES: T/K: 298.15 - 313.15 P/kPa: 101.325 (1 atm)	PREPARED BY: S. A. Johnson												
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<p>COMPONENTS:</p> <p>1. Nitrous oxide; N₂O; [10024-97-2]</p> <p>2. Decane; C₁₀H₂₂; [124-18-5]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Makranczy, J.; Megyery-Balog, K.; Rusz, L.; Patyi, L. <i>Hung. J. Ind. Chem.</i> <u>1976</u>, 4(2), 269-280.</p>												
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COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Undecane; C ₁₁ H ₂₄ ; [1120-21-4]	ORIGINAL MEASUREMENTS: Makranczy, J.; Megyery-Balog, K.; Ruzs, L.; Patyi, L. <i>Hung. J. Ind. Chem.</i> <u>1976</u> , 4(2), 269-280.												
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313.15	0.01489	1.573	1.803										
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METHOD / APPARATUS / PROCEDURE: Volumetric method, described in detail in reference (1).	SOURCE AND PURITY OF MATERIALS: Analytical grade reagents of Hungarian and foreign origin were used (both liquids and gases). No further information. ESTIMATED ERROR: $\delta x_{\text{N}_2\text{O}} / x_{\text{N}_2\text{O}} = \pm 0.03.$ REFERENCES: 1. Bodor, E.; Bor, Gy.; Mohai, B.; Sipos, G. <i>Veszprémi Vegyipari Egyetem Közleményei</i> <u>1957</u> , 1, 55; CA 55, 3175h.												

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2]		Makranczy, J.; Megyery-Balog, K.; Rusz, L.; Patyi, L.	
2. Dodecane; C ₁₂ H ₂₆ ; [112-40-3]		<i>Hung. J. Ind. Chem.</i> <u>1976</u> , 4(2), 269-280.	
VARIABLES:		PREPARED BY:	
T/K: 298.15 - 313.15		S. A. Johnson	
P/kPa: 101.325 (1 atm)			
EXPERIMENTAL VALUES:			
T/K	Mole fraction $x_{\text{N}_2\text{O}}$	Bunsen coefficient α	Ostwald coefficient L
298.15	0.01723	1.720	1.877
313.15	0.01472	1.444	1.655
Mole fractions and Bunsen coefficients were calculated by the compiler.			
AUXILIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
Volumetric method, described in detail in reference (1).		Analytical grade reagents of Hungarian and foreign origin were used (both liquids and gases). No further information.	
		ESTIMATED ERROR:	
		$\delta_{\text{N}_2\text{O}}/x_{\text{N}_2\text{O}} = \pm 0.03.$	
		REFERENCES:	
		1. Bodor, E.; Bor, Gy.; Mohai, B.; Sipos, G. <i>Veszprémi Vegyipari Egyetem Közleményei</i> <u>1957</u> , 1, 55; CA 55, 3175h.	

COMPONENTS: 1. Nitrous oxide; N_2O ; [10024-97-2] 2. Tridecane, $C_{13}H_{28}$; [629-50-5]	ORIGINAL MEASUREMENTS: Makranczy, J.; Megyery-Balog, K.; Ruzs, L.; Patyi, L. <i>Hung. J. Ind. Chem.</i> <u>1976</u> , 4(2), 269-280.												
VARIABLES: T/K: 298.15 - 313.15 P/kPa: 101.325 (1 atm)	PREPARED BY: S. A. Johnson												
EXPERIMENTAL VALUES: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">T/K</th> <th style="text-align: left;">Mole fraction x_{N_2O}</th> <th style="text-align: left;">Bunsen coefficient α</th> <th style="text-align: left;">Ostwald coefficient L</th> </tr> </thead> <tbody> <tr> <td>298.15</td> <td>0.01750</td> <td>1.630</td> <td>1.779</td> </tr> <tr> <td>313.15</td> <td>0.01456</td> <td>1.333</td> <td>1.528</td> </tr> </tbody> </table>		T/K	Mole fraction x_{N_2O}	Bunsen coefficient α	Ostwald coefficient L	298.15	0.01750	1.630	1.779	313.15	0.01456	1.333	1.528
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298.15	0.01750	1.630	1.779										
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<p>Mole fractions and Bunsen coefficients were calculated by the compiler.</p>													
AUXILIARY INFORMATION													
METHOD/APPARATUS/PROCEDURE: Volumetric method, described in detail in reference (1).	SOURCE AND PURITY OF MATERIALS: Analytical grade reagents of Hungarian and foreign origin were used (both liquids and gases). No further information. ESTIMATED ERROR: $\delta x_{N_2O} / x_{N_2O} = \pm 0.03.$ REFERENCES: 1. Bodor, E.; Bor, Gy.; Mohai, B.; Sipos, G. <i>Veszprémi Vegyipari Egyetem Közleményei</i> <u>1957</u> , 1, 55; CA 55, 3175h.												

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Tetradecane, C ₁₄ H ₃₀ ; [629-59-4]		Makranczy, J.; Megyery-Balog, K.; Rusz, L.; Patyi, L. <i>Hung. J. Ind. Chem.</i> <u>1976</u> , 4(2), 269-280.	
VARIABLES:		PREPARED BY:	
T/K: 298.15 - 313.15 P/kPa: 101.325 (1 atm)		S. A. Johnson	
EXPERIMENTAL VALUES:			
T/K	Mole fraction $x_{\text{N}_2\text{O}}$	Bunsen coefficient α	Ostwald coefficient L
298.15	0.01718	1.500	1.637
313.15	0.01445	1.239	1.421
Mole fractions and Bunsen coefficients were calculated by the compiler.			
AUXILIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
Volumetric method, described in detail in reference (1).		Analytical grade reagents of Hungarian and foreign origin were used (both liquids and gases). No further information.	
		ESTIMATED ERROR:	
		$\delta x_{\text{N}_2\text{O}}/x_{\text{N}_2\text{O}} = \pm 0.03$	
		REFERENCES:	
		1. Bodor, E.; Bor, Gy.; Mohai, B.; Sipos, G. <i>Veszprémi Vegyipari Egyetem Közleményei</i> <u>1957</u> , 1, 55; CA 55, 3175h.	

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Pentadecane; C ₁₅ H ₃₂ ; [629-62-9]	ORIGINAL MEASUREMENTS: Makranczy, J.; Megyery-Balog, K.; Ruzs, L.; Patyi, L. <i>Hung. J. Ind. Chem.</i> <u>1976</u> , 4(2), 269-280.		
VARIABLES: T/K: 298.15 - 313.15 P/kPa: 101.325 (1 atm)	PREPARED BY: S. A. Johnson		
EXPERIMENTAL VALUES:			
T/K 298.15 313.15	Mole fraction $x_{\text{N}_2\text{O}}$ 0.01729 0.01429	Bunsen coefficient α 1.420 1.154	Ostwald coefficient L 1.550 1.323
Mole fractions and Bunsen coefficients were calculated by the compiler.			
AUXILIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE: Volumetric method, described in detail in reference (1).		SOURCE AND PURITY OF MATERIALS: Analytical grade reagents of Hungarian and foreign origin were used (both liquid and gases). No further information.	
		ESTIMATED ERROR: $\delta x_{\text{N}_2\text{O}}/x_{\text{N}_2\text{O}} = \pm 0.03.$	
		REFERENCES: 1. Bodor, E.; Bor, Gy.; Mohai, B.; Sipos, G. <i>Veszprémi Vegyipari Egyetem Közleményei</i> <u>1957</u> , 1, 55; <i>CA</i> 55, 3175h.	

<p>COMPONENTS:</p> <p>1. Nitrous oxide; N₂O; [10024-97-2]</p> <p>2. Hexadecane; C₁₆H₃₄; [544-76-3]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Makranczy, J.; Megyery-Balog, K.; Rusz, L.; Patyi, L. <i>Hung. J. Ind. Chem.</i> <u>1976</u>, <i>4</i>(2), 269-280.</p>												
<p>VARIABLES:</p> <p>T/K: 298.15 - 313.15</p> <p>P/kPa: 101.325 (1 atm)</p>	<p>PREPARED BY:</p> <p>S. A. Johnson</p>												
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<p>AUXILIARY INFORMATION</p>													
<p>METHOD / APPARATUS / PROCEDURE:</p> <p>Volumetric method, described in detail in reference (1).</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>Analytical grade reagents of Hungarian and foreign origin were used (both liquids and gases). No further information.</p> <p>ESTIMATED ERROR:</p> $\delta x_{\text{N}_2\text{O}} / x_{\text{N}_2\text{O}} = \pm 0.03.$ <p>REFERENCES:</p> <p>1. Bodor, E.; Bor, Gy.; Mohai, B.; Sipos, G. <i>Veszprémi Vegyipari Egyetem Közleményei</i> <u>1957</u>, <i>1</i>, 55; <i>CA</i> <i>55</i>, 3175h.</p>												

<p>COMPONENTS:</p> <p>1. Nitrous oxide; N_2O; [10024-97-2]</p> <p>2. Cyclohexane; C_6H_{12}; [110-82-7]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Patyi, L.; Furmer; I. E.; Makranczy, J.; Sadilenko, A. S.; Stepanova, Z. G.; Berengarten, M. G. <i>Zh. Prikl. Khim.</i> <u>1978</u>, <i>51</i>, 1296-1300.</p>
<p>VARIABLES:</p>	<p>PREPARED BY:</p> <p>C. L. Young</p>
<p>EXPERIMENTAL VALUES:</p>	
<p>T/K</p>	<p>α^* Mole fraction of nitrous oxide at a partial pressure of 101.325 kPa</p>
<p>298.15</p>	<p>1.78 0.00853</p>
<p>* volume of gas (measured at 101.325 kPa and 273.15 K) dissolved by one volume of cyclohexane.</p>	
<p>AUXILIARY INFORMATION</p>	
<p>METHOD APPARATUS/PROCEDURE:</p> <p>Volumetric method. Pressure measured when known amounts of gas were added, in increments, to a known amount of liquid in a vessel of known dimensions. Corrections were made for the partial pressure of solvent. Details in ref. (1).</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>Purity better than 99 mole per cent as determined by gas chromatography.</p> <p>ESTIMATED ERROR:</p> <p>$\delta T/K = \pm 0.1$; $\delta \alpha = \pm 4\%$ or less.</p> <p>REFERENCES:</p> <p>1. Bodor, E.; Bor, G. J.; Mohai, B.; Sipos, G. <i>Veszpremi. Vegyip. Egy. Kozl.</i> <u>1957</u>, <i>1</i>, 55.</p>

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2]		Horiuti, J.	
2. Benzene; C ₆ H ₆ ; [71-43-2]		<i>Sci. Pap. Inst. Phys. Chem. Res. (Japan)</i> [†] 1931/32, 17, 125-256.	
VARIABLES:		PREPARED BY:	
Temperature		M. E. Derrick	
EXPERIMENTAL VALUES: Total pressure is 1 atm for original measurements.			
T/K	10 ⁴ x _{N₂O}	Ostwald coefficient, L *	Bunsen coefficient, α
313.15	109.4	3.123	2.724
298.15	132.9	3.686	3.377
283.15	165.5	4.453	4.296
* original data			
<u>Smoothed Data</u>			
$\Delta G^\circ = -RT \ln x_{N_2O} = (-10178.1 + 70.0506T/K) \text{ J mol}^{-1}$			
Std. dev. $\Delta G^\circ = 2.86 \text{ J mol}^{-1}$. Coef. Corr. = 1.00			
$\Delta H^\circ/\text{J mol}^{-1} = -10178.1$; $\Delta S^\circ/\text{J mol}^{-1} \text{ K}^{-1} = -70.0506$			
T/K	$\Delta G^\circ/\text{J mol}^{-1}$	x_{N_2O}	
283.15	9656.69	0.01654	
288.15	10006.9	0.01535	
293.15	10357.2	0.01427	
298.15	10707.4	0.01331	
303.15	11057.7	0.01244	
308.15	11408.0	0.01165	
313.15	11758.2	0.01093	
AUXILIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
Composed of a gas buret, a solvent reservoir, and an absorption pipet. Volume of pipet is determined at various heights of the meniscus using a weighed quantity of water, measuring the height of the meniscus using a cathetometer. Dry gas is introduced into degassed solvent. System is mixed using a magnetic stirrer until saturation occurs. Care is taken to prevent solvent vapor from mixing with gas in the gas buret. Volume of gas determined from gas buret reading; volume of liquid determined from height of meniscus in the absorption pipet.		1. Nitrous oxide prepared from hydroxylamine sulfate and sodium nitrite both from Kahlbaum (extra pure grade). Gas washed to remove nitric oxide and dried. Fractionated.	
		2. C ₆ H ₆ Extra pure, free from sulfur sample from Merck refluxed with sodium amalgam. B.P. at normal P, 80.18 °C.	
		ESTIMATED ERROR:	
		$\delta T/K = \pm 0.1$.	
		REFERENCES:	
		[†] Also reported in: Horiuti, J. <i>Bull. Inst. Phys. Chem. Rev.</i> , Tokyo 1928, 7(2), 119-172.	

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Benzene, C ₆ H ₆ ; [71-43-2] (Incorrectly given as C ₆ H ₁₂ in original paper.)	ORIGINAL MEASUREMENTS: Yen, L. C.; McKetta, J. J., Jr. <i>J. Chem. Eng. Data</i> <u>1962</u> , 7, 288-289.															
VARIABLES: Temperature	PREPARED BY: W. Gerrard/C. L. Young															
EXPERIMENTAL VALUES: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">T/K</th> <th style="text-align: center;">Bunsen coefficient</th> <th style="text-align: center;">Mole fraction of nitrous oxide, $x_{\text{N}_2\text{O}}$</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">283.16</td> <td style="text-align: center;">4.256</td> <td style="text-align: center;">0.01652</td> </tr> <tr> <td style="text-align: center;">293.16</td> <td style="text-align: center;">3.675</td> <td style="text-align: center;">0.01446</td> </tr> <tr> <td style="text-align: center;">303.16</td> <td style="text-align: center;">3.173</td> <td style="text-align: center;">0.01266</td> </tr> <tr> <td style="text-align: center;">313.16</td> <td style="text-align: center;">2.786</td> <td style="text-align: center;">0.01127</td> </tr> </tbody> </table>		T/K	Bunsen coefficient	Mole fraction of nitrous oxide, $x_{\text{N}_2\text{O}}$	283.16	4.256	0.01652	293.16	3.675	0.01446	303.16	3.173	0.01266	313.16	2.786	0.01127
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<p style="text-align: center;">The partial pressure of the gas was 101.325 kPa.</p> <p style="text-align: center;"><u>Smoothed Data</u></p> $\Delta G^\circ = -RT \ln x_{\text{N}_2\text{O}} = (-9941 + 67.449 \times T/\text{K}) \text{ J mol}^{-1}$ <p style="text-align: center;">(Std. deviation = 5.5 J mol⁻¹)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">T/K</th> <th style="text-align: center;">Mole fraction of nitrous oxide, $x_{\text{N}_2\text{O}}$</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">283.16</td> <td style="text-align: center;">0.01654</td> </tr> <tr> <td style="text-align: center;">293.16</td> <td style="text-align: center;">0.01442</td> </tr> <tr> <td style="text-align: center;">303.16</td> <td style="text-align: center;">0.01269</td> </tr> <tr> <td style="text-align: center;">313.16</td> <td style="text-align: center;">0.01126</td> </tr> </tbody> </table>		T/K	Mole fraction of nitrous oxide, $x_{\text{N}_2\text{O}}$	283.16	0.01654	293.16	0.01442	303.16	0.01269	313.16	0.01126					
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AUXILIARY INFORMATION																
METHOD / APPARATUS / PROCEDURE: Measurement of volume of gas absorbed by a known volume of degassed liquid at a partial pressure of 101.325 kPa. The vapor pressure of the liquid was allowed for. Gas buret and absorption pipet. Modified form of apparatus and technique used by Markham and Kobe (1).	SOURCE AND PURITY OF MATERIALS: <ol style="list-style-type: none"> Gas of 98 per cent purity was purified at 193.16 K. Mass spectrograph then showed purity of 99.5 per cent. J. T. Baker Chemical Co. sample; Baker analyzed grade freshly fractionated. ESTIMATED ERROR: $\delta T/\text{K} = \pm 0.1$; $\delta x_{\text{N}_2\text{O}} = \pm 2\%$ (estimated by compiler).															
REFERENCES: (1) Markham, A. E.; Kobe, K. A. <i>J. Am. Chem. Soc.</i> <u>1941</u> , 63, 449.																

<p>COMPONENTS:</p> <p>1. Nitrous oxide; N₂O; [10024-97-2]</p> <p>2. Benzene; C₆H₆; [71-43-2]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Patyi, L.; Furmer, I. E.; Makranczy, J.; Sadilenko, A. S.; Stepanova, Z. G.; Berengarten, M. G. <i>Zh. Prikl. Khim.</i> <u>1978</u>, 51, 1296-1300.</p>	
<p>VARIABLES:</p>	<p>PREPARED BY:</p> <p>C. L. Young</p>	
<p>EXPERIMENTAL VALUES:</p>		
<p>T/K</p> <p>298.15</p>	<p>α^*</p> <p>3.30</p>	<p>Mole fraction of nitrous oxide at a partial pressure of 101.325 kPa</p> <p>0.01309</p>
<p>* volume of gas (measured at 101.325 kPa and 273.15 K) dissolved by one volume of benzene.</p>		
<p>AUXILIARY INFORMATION</p>		
<p>METHOD APPARATUS/PROCEDURE:</p> <p>Volumetric method. Pressure measured when known amounts of gas were added, in increments, to a known amount of liquid in a vessel of known dimensions. Corrections were made for the partial pressure of solvent. Details in ref. (1).</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>Purity better than 99 mole per cent as determined by gas chromatography.</p> <p>ESTIMATED ERROR:</p> <p>$\delta T/K = \pm 0.1$; $\delta \alpha = \pm 4\%$ or less.</p> <p>REFERENCES:</p> <p>1. Bodor, E.; Bor, G. J.; Mohai, B.; Sipos, G. <i>Veszpremi. Vegyt. Egy. Kozl.</i> <u>1957</u>, 1, 55.</p>	

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Methanol; CH ₃ OH; [67-56-1]		Kunerth, W. <i>Phys. Rev.</i> <u>1922</u> , <i>19</i> , 512-524.	
VARIABLES:		PREPARED BY:	
Temperature		W. Gerrard/C. L. Young	
EXPERIMENTAL VALUES:			
T/K	Ostwald coefficient, L	Temperature coefficient, dL/Ldt	Mole fraction, $x_{\text{N}_2\text{O}}^*$
291.16	3.38	0.0040	0.00572
293.16	3.32	0.0058	0.00560
295.16	3.27	0.0077	0.00549
297.16	3.23	0.0097	0.00540
299.16	3.19	0.0118	0.00531
301.16	3.07	0.0138	0.00508
303.16	2.98	0.0157	0.00491
305.16	2.88	0.0177	0.00473
307.16	-	0.0197	-
309.16	-	0.0217	-
<p>* The $x_{\text{N}_2\text{O}}$ values were calculated by the compiler, the molar volume of N₂O being taken as $22257 \times (T/273.16) \text{ cm}^3$, based on the standard density of 1.9775 g dm^{-3} at 273.16 K and 101.325 kPa (ref. 1). The L values were for a total pressure equal to the prevailing barometric pressure. Kunerth's value for $x_{\text{N}_2\text{O}}$ at 293.16 K was 0.0053. (cont.)</p>			
AUXILIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
The volume of gas absorbed by a measured volume of degassed liquid was measured at a total pressure equal to the prevailing barometric pressure. Based on the technique of McDaniel (ref. 2). Apparatus consisted of a gas buret attached to leveling tube containing mercury, and to pipet. A layer of liquid was held over the mercury layer in the buret to saturate the gas with vapor of the liquid. Buret and pipet were kept at a common temperature by electric coils.		1. Gas (S.S.White Dental Co.) of 99.7 per cent purity was frozen to remove volatile gases before being passed over P ₂ O ₅ . Density was found to be 1.968 g dm^{-3} at 273.16 K and 101.325 kPa. 2. Attested by b.p. and density.	
		ESTIMATED ERROR: $\delta T/K = \pm 0.1$; $\delta x_{\text{N}_2\text{O}} = \pm 2\%$ (estimated by compiler).	
		REFERENCES: 1. Kaye, G. W. C. and Laby, T. H.; <i>Tables of Physical and Chemical Constants</i> , Longmans, London, 1966. 2. McDaniel, A. S.; <i>J. Phys. Chem.</i> <u>1911</u> , <i>15</i> , 587.	

<p>COMPONENTS:</p> <p>1. Nitrous oxide; N₂O; [10024-97-2]</p> <p>2. Methanol; CH₃OH; [67-56-1]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Kunerth, W.</p> <p><i>Phys. Rev.</i> <u>1922</u>, <i>19</i>, 512-524.</p>																
<p>EXPERIMENTAL VALUES:</p> <p style="text-align: center;"><u>Smoothed Data</u></p> <p>$\Delta G^\circ = -RT \ln x_{\text{N}_2\text{O}} = -(120034 - 794.83(T/K) + 1.4615(T/K)^2) \text{ J mol}^{-1}$</p> <p style="text-align: center;">(Std. deviation = 12.50 J mol⁻¹)</p> <p style="text-align: center;">T/K Mole fraction of nitrous oxide, $x_{\text{N}_2\text{O}}$</p>																	
<table style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="text-align: right; width: 50%;">291.16</td> <td style="width: 50%;">0.00569</td> </tr> <tr> <td style="text-align: right;">293.16</td> <td>0.00562</td> </tr> <tr> <td style="text-align: right;">295.16</td> <td>0.00552</td> </tr> <tr> <td style="text-align: right;">297.16</td> <td>0.00540</td> </tr> <tr> <td style="text-align: right;">299.16</td> <td>0.00526</td> </tr> <tr> <td style="text-align: right;">301.16</td> <td>0.00510</td> </tr> <tr> <td style="text-align: right;">303.16</td> <td>0.00492</td> </tr> <tr> <td style="text-align: right;">305.16</td> <td>0.00473</td> </tr> </tbody> </table>		291.16	0.00569	293.16	0.00562	295.16	0.00552	297.16	0.00540	299.16	0.00526	301.16	0.00510	303.16	0.00492	305.16	0.00473
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303.16	0.00492																
305.16	0.00473																
Empty section for experimental values																	

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2]		Hsu, H.; Campbell, D.	
2. Alcohols		Aerosol Age. <u>1964</u> , December, 34.	
VARIABLES:		PREPARED BY:	
		W. Gerrard / C.L. Young	
EXPERIMENTAL VALUES:			
Solvent	T/K	Ostwald coefficient, <i>L</i>	Mole fraction* of nitrous oxide in liquid, x_{N_2O}
Methanol; CH ₄ O; [67-56-1]	294.3	3.20	0.0054
Ethanol; C ₂ H ₆ O; [64-17-5]	294.3	2.96	0.0072
3-Methyl-1-butanol, (<i>iso</i> -amyl alcohol); C ₅ H ₁₂ O; [123-51-3]	294.3	2.3	0.0103
Cyclohexanol; C ₆ H ₁₂ O; [108-93-0]	294.3	0.23	0.0010
1,2,3-Propanetriol, (Glycerol); C ₃ H ₈ O ₃ ; [56-81-5]	294.3	1.2	0.00365
* calculated by compiler as for a partial pressure of gas of 101.325 kPa. Molar volume of gas at 294.26K taken as 23967 cm ³ based on the density (l) 1.9775 g dm ⁻³ at 101.325 kPa and 273.15K.			
AUXILIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
Copper equilibrium cell fitted with Bourdon gauge and thermometer. Total amount of gas needed to attain given but not stated, pressure measure. Ostwald coefficient calculated from knowledge of volume of liquid and container.		No details given.	
		ESTIMATED ERROR:	
		$\delta T/K = \pm 0.5$; $\delta x_{N_2O} = \pm 3\%$. (estimated by compiler).	
		REFERENCES:	
		1. Kaye, G.W.C.; Laby, T.H. <i>Tables of Physical and Chemical Constants</i> , Longmans, London, <u>1966</u>	

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2]		Sada, E.; Kito, S.; Ito, Y.	
2. Alcohols		Eng. Chem. Fundam, <u>1975</u> , 14, 232-237	
VARIABLES:		PREPARED BY:	
		W. Gerrard/C.L. Young	
EXPERIMENTAL VALUES:			
Solvent	T/K	Henry's law constant /atm	Mole fraction* of nitrous oxide in liquid, x_{N_2O}
Methanol; CH ₃ O; [67-56-1]	298.15	190.6	0.00525
Ethanol; C ₂ H ₆ O; [64-17-5]	298.15	145.8	0.00686
1-Propanol; C ₃ H ₈ O; [71-23-8]	298.15	125.8	0.00795
2-Propanol; C ₃ H ₈ O; [67-63-0]	298.15	125.8	0.00795
* Calculated by compiler for a partial pressure of nitrous oxide = 101.325 kPa.			
NOTE: The Henry's law constant appears to have been derived by dividing the observed, but unspecified, pressure in atm by the calculated mole fraction, x_1 , for that pressure.			
The mole fraction, x_1 , was calculated by 1/ (Henry's law constant).			
AUXILIARY INFORMATION			
METHOD:/APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
A gas volumetric method (1) was used. Equilibrium established between a measured volume of gas and a measured amount of gas-free liquid in a cell fitted with a magnetic stirrer.		Nitrous oxide was used from a commercial cylinder (Japan), and stated to be of a purity better than 99.8%, as attested by gas-chromatography. The purity of the alcohol was stated to be satisfactory (2).	
		ESTIMATED ERROR:	
		REFERENCES:	
		(1) Onda, K.; Sada, E.; Kobayashi, T.; Kito, S.; Ito, K. <i>J. Chem. Eng. Jpn.</i> <u>1970</u> , 3,18; 137.	
		(2) Sada, E., Kito, S.; Ito, Y. <i>J. Chem. Eng. Jpn.</i> <u>1974</u> , 7, 57.	

<p>COMPONENTS:</p> <p>1. Nitrous oxide; N₂O; [10024-97-2]</p> <p>2. Methanol; CH₄O; [67-56-1]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Makranczy, J.; Ruzs, L.; Balog-Megyery, K.</p> <p><i>Hung. J. Ind. Chem.</i> <u>1979</u>, 7, 41-6.</p>		
<p>VARIABLES:</p>	<p>PREPARED BY:</p> <p>C.L. Young</p>		
<p>EXPERIMENTAL VALUES:</p>			
<p>T/K</p>	<p>P⁺/kPa</p>	<p>Ostwald coefficient</p>	<p>Mole fraction of nitrous oxide *, x_{N₂O}</p>
<p>298.15</p>	<p>101.3</p>	<p>3.755</p>	<p>0.00626</p> <p>* calculated by compiler using a molar volume of nitrous oxide of 0.02430 m³ at 298.15K</p> <p>+ partial pressure of nitrous oxide.</p>
<p>AUXILIARY INFORMATION</p>			
<p>METHOD APPARATUS/PROCEDURE:</p>		<p>SOURCE AND PURITY OF MATERIALS:</p>	
<p>Volumetric method. The apparatus of Bodor, Bor, Mohai and Sipos (1) was used.</p>		<p>No details given.</p>	
		<p>ESTIMATED ERROR:</p> <p>$\delta x_{N_2O} = \pm 3\%$</p>	
		<p>REFERENCES:</p> <p>1. Bodor, E.; Bor, Gy.; Mohai, B.; Sipos, G. <i>Veszpremi Vegyip. Egy. Kozl.</i> <u>1957</u>, 1, 55. <i>Chem. Abstr.</i> <u>1961</u>, 55, 3175</p>	

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Ethanol, C ₂ H ₅ OH; [64-17-5]	ORIGINAL MEASUREMENTS: Carius, L., <i>Annalen</i> , <u>1855</u> , 94,129-166.																		
VARIABLES: Temperature	PREPARED BY: W. Gerrard																		
EXPERIMENTAL VALUES:																			
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">T/K</th> <th style="text-align: center;">Bunsen coefficient, α</th> <th style="text-align: center;">Mole fraction, x_1 (Calculated by compiler)*</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">275.45</td> <td style="text-align: center;">4.0262</td> <td style="text-align: center;">0.010345</td> </tr> <tr> <td style="text-align: center;">280.15</td> <td style="text-align: center;">3.7069</td> <td style="text-align: center;">0.009575</td> </tr> <tr> <td style="text-align: center;">284.75</td> <td style="text-align: center;">3.4219</td> <td style="text-align: center;">0.008882</td> </tr> <tr> <td style="text-align: center;">291.35</td> <td style="text-align: center;">3.1105</td> <td style="text-align: center;">0.008128</td> </tr> <tr> <td style="text-align: center;">296.15</td> <td style="text-align: center;">2.8861</td> <td style="text-align: center;">0.007581</td> </tr> </tbody> </table>		T/K	Bunsen coefficient, α	Mole fraction, x_1 (Calculated by compiler)*	275.45	4.0262	0.010345	280.15	3.7069	0.009575	284.75	3.4219	0.008882	291.35	3.1105	0.008128	296.15	2.8861	0.007581
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<p>Bunsen coefficient, $\alpha = 4.17805 - 0.0698160 t + 0.0006090 t^2$ (From 273.15 to 298.15 K) $t = T/K - 273.15$.</p> <p>Henrich (1) used Carius's data to give the modified smoothing equation :</p> $\alpha = 4.1902 - 0.074389 t + 0.00078226 t^2$ <p>Note: Henrich did not give any experimental data.</p> <p>* The gas molecular volume of N₂O at 273.15 K and 101.325 kPa was taken to be 22250 cm³, based on the standard density of 1.9775 g/dm³.</p>																			
AUXILIARY INFORMATION																			
METHOD/APPARATUS/PROCEDURE: Measurement of volume by the Bunsen gas buret. Gas placed in an absorption tube and its pressure and volume determined. Liquid was then added, the system shaken until volume constant. Pressure and volume redetermined.	SOURCE AND PURITY OF MATERIALS: 1. Self prepared from pure ammonium nitrate. 2. Distilled "absolute" $d^{20} = 0.792$. ESTIMATED ERROR: REFERENCES: 1. Henrich, F.; <i>Z. Phys. Chem.</i> <u>1892</u> , 9,435.																		

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2]		Kunerth, W.	
2. Ethanol; C ₂ H ₆ O; [64-17-5]		<i>Phys. Rev.</i> <u>1922</u> , <i>19</i> , 512-524.	
VARIABLES:		PREPARED BY:	
Temperature		W. Gerrard/C. L. Young	
EXPERIMENTAL VALUES:			
T/K	Ostwald coefficient, L	Temperature coefficient, dL/Ldt	Mole fraction, x _{N₂O} *
291.16	3.07	0.0116	0.00748
293.16	2.99	0.0123	0.00725
295.16	2.91	0.0132	0.00702
297.16	2.85	0.0140	0.00685
299.16	2.77	0.0148	0.00663
301.16	2.68	0.0157	0.00640
303.16	2.61	0.0167	0.00620
305.16	2.52	0.0174	0.00596
307.16	2.43	0.0184	0.00572
309.16	2.33	0.0190	0.00546
<p>* The x_{N₂O} values were calculated by the compiler, the molar volume of N₂O being taken as 22257 × (T/273.16) cm³, based on the standard density of 1.9775 g dm⁻³ at 273.16 K and 101.325 kPa (ref. 1). The L values were for a total pressure equal to the prevailing barometric pressure. Kunerth's value for x_{N₂O} at 293.16 K was 0.0072. (cont.)</p>			
AUXILIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
<p>The volume of gas absorbed by a measured volume of degassed liquid was measured at a total pressure equal to the prevailing barometric pressure. Based on the technique of McDaniel (ref. 2). Apparatus consisted of a gas buret attached to leveling tube containing mercury, and to pipet. A layer of liquid was held over the mercury layer in the buret to saturate the gas with vapor of the liquid. Buret and pipet were kept at a common temperature by electric coils.</p>		<p>1. Gas (S.S.White Dental Co.) of 99.7 per cent purity was frozen to remove volatile gases before being passed over P₂O₅. Density was found to be 1.968 g dm⁻³ at 273.16 K and 101.325 kPa.</p> <p>2. Attested by b.p. and density</p>	
		DATA CLASS:	
		ESTIMATED ERROR:	
		<p>δT/K = ±0.1; δx_{N₂O} = ±2% (estimated by compiler).</p>	
		REFERENCES:	
		<p>1. Kaye, G. W. C. and Laby, T. H. <i>Tables of Physical and Chemical Constants</i>, Longmans, London, 1966.</p> <p>2. McDaniel, A. S.; <i>J. Phys. Chem.</i> <u>1911</u>, <i>15</i>, 587.</p>	

<p>COMPONENTS:</p> <p>1. Nitrous oxide; N₂O; [10024-97-2]</p> <p>2. Ethanol; C₂H₆O; [64-17-5]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Kunerth, W.</p> <p><i>Phys. Rev.</i> <u>1922</u>, 19, 512-524.</p>																						
<p>EXPERIMENTAL VALUES:</p> <p style="text-align: center;"><u>Smoothed Data</u></p> $\Delta G^\circ = -RT \ln x_{\text{N}_2\text{O}} = -(56414.4 - 376.86(T/K) + 0.7688(T/K)^2)$ <p style="text-align: right;">J mol⁻¹</p> <p style="text-align: center;">(Std. deviation = 7.3 J mol⁻¹)</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">T/K</th> <th style="text-align: left;">Mole fraction of nitrous oxide, $x_{\text{N}_2\text{O}}$</th> </tr> </thead> <tbody> <tr><td>291.16</td><td>0.00745</td></tr> <tr><td>293.16</td><td>0.00726</td></tr> <tr><td>295.16</td><td>0.00706</td></tr> <tr><td>297.16</td><td>0.00685</td></tr> <tr><td>299.16</td><td>0.00663</td></tr> <tr><td>301.16</td><td>0.00641</td></tr> <tr><td>303.16</td><td>0.00618</td></tr> <tr><td>305.16</td><td>0.00595</td></tr> <tr><td>307.16</td><td>0.00571</td></tr> <tr><td>309.16</td><td>0.00548</td></tr> </tbody> </table>		T/K	Mole fraction of nitrous oxide, $x_{\text{N}_2\text{O}}$	291.16	0.00745	293.16	0.00726	295.16	0.00706	297.16	0.00685	299.16	0.00663	301.16	0.00641	303.16	0.00618	305.16	0.00595	307.16	0.00571	309.16	0.00548
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<p>VARIABLES:</p>	<p>PREPARED BY:</p> <p>C.L. Young</p>								
<p>EXPERIMENTAL VALUES:</p> <table border="1" data-bbox="61 439 1175 1187"> <thead> <tr> <th data-bbox="190 521 236 544">T/K</th> <th data-bbox="352 517 439 544">P⁺/kPa</th> <th data-bbox="542 521 700 570">Ostwald coefficient</th> <th data-bbox="786 521 1018 603">Mole fraction of nitrous oxide*, x_{N_2O}</th> </tr> </thead> <tbody> <tr> <td data-bbox="164 662 249 686">298.15</td> <td data-bbox="352 662 426 686">101.3</td> <td data-bbox="584 662 658 686">3.078</td> <td data-bbox="829 662 928 686">0.00738</td> </tr> </tbody> </table> <p>* calculated by compiler using a molar volume of nitrous oxide of 0.02430 m³ at 298.15 K.</p> <p>+ partial pressure of nitrous oxide.</p>		T/K	P ⁺ /kPa	Ostwald coefficient	Mole fraction of nitrous oxide*, x_{N_2O}	298.15	101.3	3.078	0.00738
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<p>AUXILIARY INFORMATION</p>									
<p>METHOD APPARATUS/PROCEDURE:</p> <p>Volumetric method. The apparatus of Bodor, Bor, Mohai, and Sipos (1) was used.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>No details given.</p> <p>ESTIMATED ERROR:</p> <p>$\delta x_{N_2O} = \pm 3\%$</p> <p>REFERENCES:</p> <p>1. Bodor, E.; Bor, Gy.; Mohai, B.; Sipos, G. <i>Veszpremi Vegyip. Egy. Kozl.</i> <u>1957</u>, <i>1</i>, 55. <i>Chem. Abstr.</i> <u>1961</u>, <i>55</i>, 3175h</p>								

<p>COMPONENTS:</p> <p>1. Nitrous oxide; N₂O; [10024-97-2]</p> <p>2. 1-Propanol; C₃H₈O; [71-23-8]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Makranczy, J.; Ruzs, L.; Balog-Megyery, K.</p> <p><i>Hung. J. Ind. Chem.</i> <u>1979</u>, <i>7</i>, 41-6.</p>								
<p>VARIABLES:</p>	<p>PREPARED BY:</p> <p>C.L. Young</p>								
<p>EXPERIMENTAL VALUES:</p> <table border="1" data-bbox="113 459 1222 626"> <thead> <tr> <th>T/K</th> <th>P^+/kPa</th> <th>Ostwald coefficient</th> <th>Mole fraction of nitrous oxide*, x_{N_2O}</th> </tr> </thead> <tbody> <tr> <td>298.15</td> <td>101.3</td> <td>2.740</td> <td>0.008404</td> </tr> </tbody> </table> <p>* calculated by compiler using a molar volume of nitrous oxide of 0.02430 m³ at 298.15 K.</p> <p>+ partial pressure of nitrous oxide.</p>		T/K	P^+ /kPa	Ostwald coefficient	Mole fraction of nitrous oxide*, x_{N_2O}	298.15	101.3	2.740	0.008404
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COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N_2O ; [10024-97-2]		Kunerth, W.	
2. 2-Propanone (Acetone); C_3H_6O ; [67-64-1]		<i>Phys. Rev.</i> <u>1922</u> , 19, 512-524.	
VARIABLES:		PREPARED BY:	
Temperature		W. Gerrard/C. L. Young	
EXPERIMENTAL VALUES:			
T/K	Ostwald coefficient, L	Temperature coefficient, dL/Ldt	Mole Fraction, $x_{N_2O}^*$
291.16	6.30	0.0150	0.0191
293.16	6.03	0.0196	0.0182
295.16	5.78	0.0244	0.0174
297.16	5.50	0.0294	0.0165
299.16	5.21	0.0342	0.0156
301.16	4.84	0.0393	0.0145
303.16	4.46	0.0440	0.0133
305.16	4.07	0.0492	0.0121
307.16	3.66	0.0540	0.0110
309.16	3.23	0.0590	0.0095
<p>* The x_{N_2O} values were calculated by the compiler, the molar volume of N_2O being taken as $22257 \times (T/273.16) \text{ cm}^3$, based on the standard density of 1.9775 g dm^{-3} at 273.16 K and 101.325 kPa (ref. 1). The L values were for a total pressure equal to the prevailing barometric pressure. Kunerth's value for x_{N_2O} at 293.16 K was 0.0185. (cont.)</p>			
AUXILIARY INFORMATION			
METHOD / APPARATUS / PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
<p>The volume of gas absorbed by a measured volume of degassed liquid was measured at a total pressure equal to the prevailing barometric pressure. Based on the technique of McDaniel (ref. 2). Apparatus consisted of a gas buret attached to leveling tube containing mercury, and to pipet. A layer of liquid was held over the mercury layer in the buret to saturate the gas with vapor of the liquid. Buret and pipet were kept at a common temperature by electric coils.</p>		<p>1. Gas (S.S.White Dental Co.) of 99.7 per cent purity was frozen to remove volatile gases before being passed over P_2O_5. Density was found to be 1.968 g dm^{-3} at 273.16 K and 101.325 kPa.</p> <p>2. Attested by b.p. and density.</p>	
		<p>ESTIMATED ERROR: $\delta T/K = \pm 0.1$; $\delta x_{N_2O} = \pm 2\%$ (estimated by compiler).</p>	
		<p>REFERENCES:</p> <p>1. Kaye, G. W. C. and Laby, T. H.; <i>Tables of Physical and Chemical Constants</i>, Longmans, London, 1966.</p> <p>2. McDaniel, A. S.; <i>J. Phys. Chem.</i> <u>1911</u>, 15, 587.</p>	

<p>COMPONENTS:</p> <p>1. Nitrous oxide; N₂O; [10024-97-2]</p> <p>2. 2-Propanone (Acetone); C₃H₆O; [67-64-1]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Kunerth, W.</p> <p><i>Phys. Rev.</i> <u>1922</u>, 19, 512-524.</p>																				
<p>EXPERIMENTAL VALUES:</p> <p style="text-align: center;"><u>Smoothed Data</u></p> $\Delta G^\circ = -RT \ln x_{\text{N}_2\text{O}} = -(299647 - 2055.7(T/K) + 3.639(T/K)^2) \text{ J mol}^{-1}$ <p style="text-align: center;">(Std. deviation = 23.5 J mol⁻¹)</p> <p style="text-align: center;">T/K Mole fraction of nitrous oxide, $x_{\text{N}_2\text{O}}$</p>																					
<table style="width: 100%; border: none;"> <tbody> <tr><td style="text-align: right;">291.16</td><td style="text-align: left;">0.0189</td></tr> <tr><td style="text-align: right;">293.16</td><td style="text-align: left;">0.0183</td></tr> <tr><td style="text-align: right;">295.16</td><td style="text-align: left;">0.0175</td></tr> <tr><td style="text-align: right;">297.16</td><td style="text-align: left;">0.0166</td></tr> <tr><td style="text-align: right;">299.16</td><td style="text-align: left;">0.0156</td></tr> <tr><td style="text-align: right;">301.16</td><td style="text-align: left;">0.0146</td></tr> <tr><td style="text-align: right;">303.16</td><td style="text-align: left;">0.0133</td></tr> <tr><td style="text-align: right;">305.16</td><td style="text-align: left;">0.0121</td></tr> <tr><td style="text-align: right;">307.16</td><td style="text-align: left;">0.0108</td></tr> <tr><td style="text-align: right;">309.16</td><td style="text-align: left;">0.0096</td></tr> </tbody> </table>		291.16	0.0189	293.16	0.0183	295.16	0.0175	297.16	0.0166	299.16	0.0156	301.16	0.0146	303.16	0.0133	305.16	0.0121	307.16	0.0108	309.16	0.0096
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309.16	0.0096																				
Empty section for experimental values																					

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2]		Horiuti, J.	
2. 2-Propanone (Acetone); C ₃ H ₆ O; [67-64-1]		<i>Sci. Pap. Inst. Phys. Chem. Res. (Japan)</i> [†] <u>1931/32</u> , 17, 125-256.	
VARIABLES:		PREPARED BY:	
Temperature		M. E. Derrick	
EXPERIMENTAL VALUES: Total pressure is 1 atm for original measurements.			
T/K	10 ² x _{N₂O}	Ostwald coefficient, L *	Bunsen coefficient, α
313.15	1.371	4.73	4.13
298.15	1.765	5.95	5.45
283.15	2.325	7.64	7.37
271.74	2.888	9.30	9.35
* original data			
<u>Smoothed Data</u>			
$\Delta G^\circ = -RT \ln x_{N_2O} = (-12769.1 + 76.4162T/K) \text{ J mol}^{-1}$			
Std. dev. $\Delta G^\circ = 11.95 \text{ J mol}^{-1}$. Coef. Corr. = 1.00			
$\Delta H^\circ/\text{J mol}^{-1} = -12769.1$; $\Delta S^\circ/\text{J mol}^{-1} \text{ K}^{-1} = -76.4162$			
T/K	$\Delta G^\circ/\text{J mol}^{-1}$	x _{N₂O}	
268.15	7721.94	0.03132	
273.15	8104.02	0.02820	
278.15	8486.10	0.02549	
283.15	8868.18	0.02312	
288.15	9250.27	0.02104	
293.15	9632.34	0.01922	
298.15	10014.4	0.01760	
303.15	10396.5	0.01617	
308.15	10778.6	0.01489	
313.15	11160.7	0.01375	
AUXILIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
Composed of a gas buret, a solvent reservoir, and an absorption pipet. Volume of pipet is determined at various heights of the meniscus using a weighed quantity of water, measuring the height of the meniscus using a cathetometer. Dry gas is introduced into degassed solvent. System is mixed using a magnetic stirrer until saturation occurs. Care is taken to prevent solvent vapor from mixing with gas in the gas buret. Volume of gas determined from gas buret reading; volume of liquid determined from height of meniscus in the absorption pipet.		1. Nitrous oxide prepared from hydroxylamine sulfate and sodium nitrite both from Kahlbaum (extra pure grade). Gas washed to remove nitric oxide and dried. Fractionated.	
		2. C ₃ H ₆ O No. 1, extra pure from Nippon Pure Chem. Co. or Merck, extra pure, recrystallized with sodium sulfite used. Stored over calcium chloride then fractionated. B.P. at normal P, 56.09 °C.	
		ESTIMATED ERROR: δT/K = ±0.1.	
		REFERENCES: [†] Also reported in: Horiuti, J. <i>Bull. Inst. Phys. Chem. Res.</i> , Tokyo <u>1928</u> , 7(2), 119-172.	

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2]		Hsu, H.; Campbell, D.	
2. Aliphatic compounds containing oxygen.		<i>Aerosol Age</i> , <u>1964</u> , December, 34.	
VARIABLES:		PREPARED BY:	
		W. Gerrard/C.L. Young	
EXPERIMENTAL VALUES:			
SOLVENT	T/K	Ostwald coefficient, <i>L</i>	Mole fraction* of nitrous oxide in liquid, x_{N_2O}
2-Propanone, (Acetone); C ₃ H ₆ O; [67-64-1]	294.3	5.92	0.0178
1,1'-Oxybisethane, (diethyl ether); C ₄ H ₁₀ O; [60-29-7]	294.3	7.65	0.0321
* calculated by compiler as for a partial pressure of gas of 101.325 kPa. Molar volume of gas at 294.24K taken as 23967 cm ³ based on the density (1) 1.9775 g dm ⁻³ at 101.325 kPa and 273.15K.			
AUXILIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
Copper equilibrium cell fitted with Bourdon gauge and thermometer. Total amount of gas needed to attain given, but not stated, pressure measured. Ostwald coefficient calculated from knowledge of volume of liquid and container.		No details given.	
		ESTIMATED ERROR:	
		$\delta T/K = \pm 0.5$; $\delta x_{N_2O} = \pm 3\%$. (estimated by compiler).	
		REFERENCES:	
		1. Kaye, G.W.C.; Laby, T.H. <i>Tables of Physical and Chemical Constants</i> , Longmans, London, 1966.	

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2]		Makranczy, J.; Ruzs, L.; Balog-Megyery, K.	
2. 1-Butanol; C ₄ H ₁₀ O; [71-36-3]		<i>Hung. J. Ind. Chem.</i> <u>1979</u> , 7, 41-6.	
VARIABLES:		PREPARED BY:	
		C.L. Young	
EXPERIMENTAL VALUES:			
T/K	P ⁺ /kPa	Ostwald coefficient	Mole fraction of nitrous oxide*, x _{N₂O}
298.15	101.3	2.532	0.009494
* calculated by compiler using a molar volume of nitrous oxide of 0.02430 m ³ at 298.15 K.			
+ partial pressure of nitrous oxide.			
AUXILIARY INFORMATION			
METHOD / APPARATUS / PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
Volumetric method. The apparatus of Bodor, Bor, Mohai, and Sipos (1) was used.		No details given.	
		ESTIMATED ERROR:	
		δx _{N₂O} = ±3%	
		REFERENCES:	
		1. Bodor, E.; Bor, Gy.; Mohai, B.; Sipos, G. <i>Veszpremi Vegyip. Egy. Kozl</i> <u>1957</u> , 1, 55. <i>Chem. Abstr.</i> <u>1961</u> , 55, 3175h	

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N_2O ; [10024-97-2] 2. 3-Methyl-1-butanol, (<i>iso</i> -amyl alcohol); $C_5H_{12}O$; [123-51-3]		Kunerth, W. <i>Phys. Rev.</i> <u>1922</u> , <i>19</i> , 512-524.	
VARIABLES:		PREPARED BY:	
Temperature		W. Gerrard/C. L. Young	
EXPERIMENTAL VALUES:			
T/K	Ostwald coefficient, L	Temperature coefficient, dL/Ldt	Mole fraction, $x_{N_2O}^*$
291.16	2.52	0.010	0.0114
293.16	2.47	0.0098	0.0111
295.16	2.43	0.0097	0.0109
297.16	2.37	0.0096	0.0106
299.16	2.32	0.0096	0.0103
301.16	2.27	0.0095	0.0100
303.16	2.24	0.0095	0.00987
305.16	2.19	0.0094	0.00970
307.16	2.16	0.0094	0.00961
309.16	2.12	0.0093	0.00939
<p>* The x_{N_2O} values were calculated by the compiler, the molar volume of N_2O being taken as $22257 \times (T/273.16) \text{ cm}^3$, based on the standard density of 1.9775 g dm^{-3} at 273.16 K and 101.325 kPa (ref. 1). The L values were for a total pressure equal to the prevailing barometric pressure. Kunerth's value for x_{N_2O} at 293.16 K was 0.0111. (cont.)</p>			
AUXILIARY INFORMATION			
METHOD / APPARATUS / PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
The volume of gas absorbed by a measured volume of degassed liquid was measured at a total pressure equal to the prevailing barometric pressure. Based on the technique of McDaniel (ref. 2). Apparatus consisted of a gas buret attached to leveling tube containing mercury, and to pipet. A layer of liquid was held over the mercury layer in the buret to saturate the gas with vapor of the liquid. Buret and pipet were kept at a common temperature by electric coils.		1. Gas (S.S.White Dental Co.) of 99.7 per cent purity was frozen to remove volatile gases before being passed over P_2O_5 . Density was found to be 1.968 g dm^{-3} at 273.16 K and 101.325 kPa. 2. Attested by b.p. and density.	
		ESTIMATED ERROR:	
		$\delta T/K = \pm 0.1$; $\delta x_{N_2O} = \pm 2\%$ (estimated by compiler).	
		REFERENCES:	
		1. Kaye, G. W. C. and Laby, T. H.; <i>Tables of Physical and Chemical Constants</i> , Longmans, London, 1966. 2. McDaniel, A. S.; <i>J. Phys. Chem.</i> <u>1911</u> , <i>15</i> , 587.	

COMPONENTS:

1. Nitrous oxide; N_2O ; [10024-97-2]
2. 3-Methyl-1-butanol, (*iso*-amyl alcohol); $C_5H_{12}O$; [123-51-3]

ORIGINAL MEASUREMENTS:

Kunerth, W.

Phys. Rev. 1922, *19*, 512-524.

EXPERIMENTAL VALUES:

Smoothed Data

$$\Delta G^\circ = -RT \ln x_{N_2O} = (48775.2 + 336.14 (T/K) - 0.4515 (T/K)^2) \text{ J mol}^{-1}$$

(Std. deviation = 12.1 J mol⁻¹)

T/K Mole fraction of nitrous oxide,
 x_{N_2O}

291.16	0.0114
293.16	0.0111
295.16	0.0108
297.16	0.0106
299.16	0.0103
301.16	0.0101
303.16	0.00989
305.16	0.00971
307.16	0.00955
309.16	0.00941

<p>COMPONENTS:</p> <p>1. Nitrous oxide; N₂O; [10024-97-2]</p> <p>2. 1-Pentanol; C₅H₁₂O; [71-41-0] or 1-Hexanol; C₆H₁₄O; [111-27-3]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Makranczy, J.; Ruzs, L.; Balog-Megyery, K.</p> <p><i>Hung. J. Ind. Chem.</i> <u>1979</u>, 7, 41-6</p>		
<p>VARIABLES:</p>	<p>PREPARED BY:</p> <p>C.L. Young</p>		
<p>EXPERIMENTAL VALUES:</p>			
<p>T/K</p>	<p>P⁺/kPa</p>	<p>Ostwald coefficient</p>	<p>Mole fraction of nitrous oxide *, x_{N₂O}</p>
<p>298.15</p>	<p>101.3</p>	<p>1-Pentanol 2.369</p>	<p>0.01048</p>
<p>298.15</p>	<p>101.3</p>	<p>1-Hexanol 2.270</p>	<p>0.01157</p>
<p>* calculated by compiler using a molar volume of nitrous oxide of 0.02430 m³ at 298.15 K.</p> <p>+ partial pressure of nitrous oxide.</p>			
<p>AUXILIARY INFORMATION</p>			
<p>METHOD APPARATUS/PROCEDURE:</p> <p>Volumetric method. The apparatus of Bodor, Bor, Mohai and Sipos (1) was used.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>No details given</p>		
<p>ESTIMATED ERROR:</p> <p>$\delta x_{N_2O} = \pm 3\%$</p>			
<p>REFERENCES.</p> <p>1. Bodor, E.; Bor, Gy.; Mohai, B.; Sipos, G. <i>Veszpremi Vegyip Egy. Kozl.</i> <u>1957</u>, 1, 55. <i>Chem. Abstr.</i> <u>1961</u>, 55, 3175h</p>			

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Cyclohexanone; C ₆ H ₁₀ O; [108-94-1]			ORIGINAL MEASUREMENTS: Rusz, L.; Makranczy, J.; Balog-Megyery, K.; Patyi, L. <i>Hung. J. Ind. Chem.</i> <u>1977</u> , 5, 225-232.			
VARIABLES: Pressure			PREPARED BY: C.L. Young			
EXPERIMENTAL VALUES:						
T/K	p/atm	p/MPa	Bunsen coefficient, α	Volume ⁺ coefficient,	Mole fraction of nitrous oxide [§] , $x_{\text{N}_2\text{O}}$	
293.15	10.0	1.01	59.1	1.048	0.214	
	20.0	2.03	141.1	1.226	0.394	
	29.5	2.99	253.4	1.431	0.538	
	37.5	3.80	498.0	1.900	0.696	
	47.7	4.83	1179.8	3.400	0.845	
+ $V = \frac{\text{Volume of gas-saturated liquid}}{\text{Volume of pure solvent}}$						
§ calculated by compiler assuming ideal gas molar volume for nitrous oxide.						
AUXILIARY INFORMATION						
METHOD APPARATUS/PROCEDURE: Static glass cell fitted with Teflon-coated magnetic stirrer. Pressure measured by dead-weight gauge and null detector. Volume of saturated liquid measured.			SOURCE AND PURITY OF MATERIALS: No details given.			
			ESTIMATED ERROR: $\delta T/K = \pm 0.1$; $\delta \alpha = \pm 4.0\%$ (estimated by compiler).			
			REFERENCES:			

COMPONENTS: 1. Nitrous oxide; N_2O ; [10024-97-2] 2. Cyclohexanol, $C_6H_{12}O$; [108-93-0]	ORIGINAL MEASUREMENTS: Cauquil, G. J. <i>Chim. Phys.</i> , <u>1927</u> , 24, 53-55.						
VARIABLES:	PREPARED BY: W. Gerrard						
EXPERIMENTAL VALUES: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">T/K</th> <th style="text-align: center;">Ostwald coefficient, L</th> <th style="text-align: center;">Mole fraction* of nitrous oxide x_{N_2O}</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">299.15</td> <td style="text-align: center;">0.741</td> <td style="text-align: center;">0.00322</td> </tr> </tbody> </table> <p style="margin-left: 40px;">Pressure = 101.325 kPa.</p> <p style="margin-left: 40px;">* calculated by compiler on basis of molar volume of nitrous oxide at 273.15 K and 101.325 kPa being 22254 cm³ and density of cyclohexanol being 0.9446 at 299.15 K.</p>		T/K	Ostwald coefficient, L	Mole fraction* of nitrous oxide x_{N_2O}	299.15	0.741	0.00322
T/K	Ostwald coefficient, L	Mole fraction* of nitrous oxide x_{N_2O}					
299.15	0.741	0.00322					
AUXILIARY INFORMATION							
METHOD / APPARATUS / PROCEDURE: Measurement of the initial and final volumes of gas in contact with liquid at 299.15 K and known pressure, nearly 101.325 kPa. Vapor pressure of liquid was ignored. Apparatus appears to be of the Bunsen type, with one absorption vessel.	SOURCE AND PURITY OF MATERIALS: 1. Purity of N_2O not stated. 2. Cyclohexanol, b.p. 334.0 K at 102.125 kPa, degassed and tested to be air free.						
ESTIMATED ERROR:							
REFERENCES:							

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. 1-Heptanol; C ₇ H ₁₆ O; [111-70-6] or 1-Octanol; C ₈ H ₁₈ O; [111-87-5]	ORIGINAL MEASUREMENTS: Makranczy, J.; Ruzs, L.; Balog-Megyery, K. <i>Hung. J. Ind. Chem.</i> <u>1979</u> , <i>7</i> , 41-6.																				
VARIABLES:	PREPARED BY: C.L. Young																				
EXPERIMENTAL VALUES: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">T/K</th> <th style="text-align: center;">P^+/kPa</th> <th style="text-align: center;">Ostwald coefficient</th> <th style="text-align: center;">Mole fraction of nitrous oxide *, x_{N_2O}</th> </tr> </thead> <tbody> <tr> <td colspan="4" style="text-align: center;">1-Heptanol</td> </tr> <tr> <td style="text-align: center;">298.15</td> <td style="text-align: center;">101.3</td> <td style="text-align: center;">2.194</td> <td style="text-align: center;">0.01265</td> </tr> <tr> <td colspan="4" style="text-align: center;">1-Octanol</td> </tr> <tr> <td style="text-align: center;">298.15</td> <td style="text-align: center;">101.3</td> <td style="text-align: center;">2.139</td> <td style="text-align: center;">0.01376</td> </tr> </tbody> </table> <p style="margin-left: 40px;">* calculated by compiler using a molar volume of nitrous oxide of 0.02430 m³ at 298.15 K</p> <p style="margin-left: 40px;">+ partial pressure of nitrous oxide</p>		T/K	P^+ /kPa	Ostwald coefficient	Mole fraction of nitrous oxide *, x_{N_2O}	1-Heptanol				298.15	101.3	2.194	0.01265	1-Octanol				298.15	101.3	2.139	0.01376
T/K	P^+ /kPa	Ostwald coefficient	Mole fraction of nitrous oxide *, x_{N_2O}																		
1-Heptanol																					
298.15	101.3	2.194	0.01265																		
1-Octanol																					
298.15	101.3	2.139	0.01376																		
AUXILIARY INFORMATION																					
METHOD APPARATUS/PROCEDURE: Volumetric method. The apparatus of Bodor, Bor, Mohai, and Sipos (1) was used.	SOURCE AND PURITY OF MATERIALS: No details given ESTIMATED ERROR: $\delta x_{N_2O} = \pm 3\%$ REFERENCES: 1. Bodor, E.; Bor, Gy.; Mohai, B.; Sipos, G. <i>Veszpremi Vegyip. Egy. Kozl.</i> <u>1957</u> , <i>1</i> , 55. <i>Chem. Abstr.</i> <u>1961</u> , <i>55</i> , 3175h																				

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. 1-Nonanol; C ₉ H ₂₀ O; [143-08-8] or 1-Decanol; C ₁₀ H ₂₂ O; [112-30-1]		Makranczy, J.; Rusz, L.; Balog-Megyery, K. <i>Hung. J. Ind. Chem.</i> <u>1979</u> , 7, 41-6.	
VARIABLES:		PREPARED BY:	
		C.L. Young	
EXPERIMENTAL VALUES:			
T/K	P ⁺ /kPa	Ostwald coefficient	Mole fraction of nitrous oxide*, x _{N₂O}
			1-Nonanol; C ₉ H ₂₀ O; [143-08-8]
298.15	101.3	2.096	0.01487
			1-Decanol; C ₁₀ H ₂₂ O; [112-30-1]
298.15	101.3	2.052	0.01591
* calculated by compiler using a molar volume of nitrous oxide of 0.02430 m ³ at 298.15 K. + partial pressure of nitrous oxide.			
AUXILIARY INFORMATION			
METHOD APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
Volumetric method. The apparatus of Bodor, Bor, Mohai and Sipos (1) was used.		No details given.	
		ESTIMATED ERROR:	
		$\delta x_{N_2O} = \pm 3\%$	
		REFERENCES.	
		1. Bodor, E.; Bor, Gy.; Mohai, B.; Sipos, G. <i>Veszpremi Vegyip. Egy. Kozl.</i> <u>1957</u> , 1, 55. <i>Chem. Abstr.</i> <u>1961</u> , 55, 3175h	

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2]		Makranczy, J.; Ruzs, L.;	
2. 1-Dodecanol; C ₁₂ H ₂₆ O; [112-53-8]		Balog-Megyery, K.	
or		<i>Hung. J. Ind. Chem.</i> <u>1979</u> , 7, 41-6.	
1-Undecanol; C ₁₁ H ₂₄ O; [112-42-5]			
VARIABLES:		PREPARED BY:	
		C.L. Young	
EXPERIMENTAL VALUES:			
T/K	P ⁺ /kPa	Ostwald coefficient	Mole fraction of nitrous oxide *, x _{N₂O}
			1-Dodecanol; C ₁₂ H ₂₆ O; [112-53-8]
298.15	101.3	1.987	0.0180
			1-Undecanol; C ₁₁ H ₂₄ O; [112-42-5]
298.15	101.3	2.019	0.0170
		* calculated by compiler using a molar volume of nitrous oxide of 0.02430 m ³ at 298.15 K.	
		+ partial pressure of nitrous oxide.	
AUXILIARY INFORMATION			
METHOD APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
Volumetric method. The apparatus of Bodor, Bor, Mohai and Sipos (1) was used.		No details given.	
		ESTIMATED ERROR:	
		δx _{N₂O} = ±3%	
		REFERENCES:	
		1. Bodor, E.; Bor, Gy.; Mohai, B.; Sipos, G. <i>Veszpremi Vegyip. Egy. Kozl.</i> <u>1957</u> , 1, 55. <i>Chem. Abstr.</i> <u>1961</u> , 55, 3175h	

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2]		Kunerth, W.	
2. Acetic acid; CH ₃ CO ₂ H; [64-19-7]		<i>Phys. Rev.</i> <u>1922</u> , 19, 512-524.	
VARIABLES:		PREPARED BY:	
Temperature		W. Gerrard/C. L. Young	
EXPERIMENTAL VALUES:			
T/K	Ostwald coefficient, L	Temperature coefficient, dL/Ldt	Mole fraction, x _{N₂O} *
291.16	5.00	0.0160	0.0119
293.16	4.85	0.0162	0.0115
295.16	4.70	0.0163	0.0111
297.16	4.55	0.0163	0.0107
299.16	4.39	0.0164	0.0103
301.16	4.25	0.0164	0.0099
303.16	4.11	0.0165	0.0095
305.16	3.98	0.0165	0.0092
307.16	3.84	0.0165	0.0088
309.16	3.75	0.0166	0.0086
<p>* The x_{N₂O} values were calculated by the compiler, the molar volume of N₂O being taken as 22257 × (T/273.16) cm³, based on the standard density of 1.9775 g dm⁻³ at 273.16 K and 101.325 kPa (ref. 1). The L values were for a total pressure equal to the prevailing barometric pressure. Kunerth's value for x_{N₂O} at 293.16 K was 0.0115.</p>			
(cont.)			
AUXILIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
<p>The volume of gas absorbed by a measured volume of degassed liquid was measured at a total pressure equal to the prevailing barometric pressure. Based on the technique of McDaniel (ref. 2). Apparatus consisted of a gas buret attached to leveling tube containing mercury, and to pipet. A layer of liquid was held over the mercury layer in the buret to saturate the gas with vapor of the liquid. Buret and pipet were kept at a common temperature by electric coils.</p>		<p>1. Gas (S.S.White Dental Co.) of 99.7 per cent purity was frozen to remove volatile gases before being passed over P₂O₅. Density was found to be 1.968 g dm⁻³ at 273.16 K and 101.325 kPa.</p> <p>2. Attested by b.p. and density.</p>	
		ESTIMATED ERROR:	
		<p>δT/K = ±0.1; δx_{N₂O} = ±2% (estimated by compiler).</p>	
		REFERENCES:	
		<p>1. Kaye, G. W. D. and Laby, T. H.; <i>Tables of Physical and Chemical Constants</i>, Longmans, London, 1966.</p> <p>2. McDaniel, A. S.; <i>J. Phys. Chem.</i> <u>1911</u>, 15, 587.</p>	

COMPONENTS:

1. Nitrous oxide; N₂O; [10024-97-2]
2. Acetic acid; CH₃CO₂H; [64-19-7]

ORIGINAL MEASUREMENTS:

Kunerth, W.
Phys. Rev. 1922, 19, 512-524.

EXPERIMENTAL VALUES:

Smoothed Data

$$\Delta G^\circ = -RT \ln x_{\text{N}_2\text{O}} = (-13911.9 + 84.578(T/K)) \text{ J mol}^{-1}$$

(Std. deviation = 10.8 J mol⁻¹)

T/K Mole fraction of nitrous oxide,
 $x_{\text{N}_2\text{O}}$

291.16	0.0120
293.16	0.0115
295.16	0.0111
297.16	0.0107
299.16	0.0103
301.16	0.0099
303.16	0.0095
305.16	0.0092
307.16	0.0089
309.16	0.0086

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2]		Hsu, H.; Campbell, D.	
2. Acetic acid and pentyl ester		<i>Aerosol Age</i> , 1964, December, 34.	
VARIABLES:		PREPARED BY:	
		W. Gerrard / C.L. Young	
EXPERIMENTAL VALUES:			
Solvent	T/K	Ostwald coefficient, <i>L</i>	Mole fraction* of nitrous oxide in liquid, x_{N_2O}
Acetic acid; C ₂ H ₄ O ₂ ; [64-19-7]	294.3	4.77	0.0113
Acetic acid, pentyl ester, (amyl acetate); C ₇ H ₁₄ O ₂ ; [628-63-7]	294.3	5.1	0.0305
* calculated by compiler as for a partial pressure of gas of 101.325 kPa. Molar volume of gas at 294.24K taken as 23967 cm ³ based on the density (1) 1.9775 g dm ⁻³ at 101.325 kPa and 273.15K.			
AUXILIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
Copper equilibrium cell fitted with Bourdon gauge and thermometer. Total amount of gas needed to attain given, but not stated, pressure measured. Ostwald coefficient calculated from knowledge of volume of liquid and container.		No details given.	
		ESTIMATED ERROR:	
		$\delta T/K = \pm 0.5$; $\delta x_{N_2O} = \pm 3\%$. (estimated by compiler).	
		REFERENCES:	
		1. Kaye, G.W.C.; Laby, T.H. <i>Tables of Physical and Chemical Constants</i> , Longmans, London, 1966,	

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N_2O ; [10024-97-2] 2. Acetic acid, Methyl ester (Methyl acetate); $C_3H_6O_2$; [79-20-9]		Horiuti, J. <i>Sci. Pap. Inst. Phys. Chem. Res. (Japan)</i> [†] <u>1931/32</u> , 17, 125-256.	
VARIABLES:		PREPARED BY:	
Temperature		M. E. Derrick	
EXPERIMENTAL VALUES: Total pressure is 1 atm for original measurements.			
T/K	$10^2 \alpha_{N_2O}$	Ostwald coefficient, L *	Bunsen coefficient, α
313.15	1.547	4.95	4.32
298.15	2.004	6.27	5.74
283.15	2.635	8.035	7.751
* original data			
<u>Smoothed Data</u>			
$\Delta G^\circ = -RT \ln \alpha_{N_2O} = (-13101.1 + 76.4835T/K) \text{ J mol}^{-1}$ Std. dev. $\Delta G^\circ = 8.52 \text{ J mol}^{-1}$. Coef. Corr = 1.00 $\Delta H^\circ/\text{J mol}^{-1} = -13101.1$; $\Delta S^\circ/\text{J mol}^{-1} \text{ K}^{-1} = -76.4835$			
T/K	$\Delta G^\circ/\text{J mol}^{-1}$	α_{N_2O}	
283.15	8555.17	0.02641	
288.15	8937.59	0.02398	
293.15	9320.00	0.02184	
298.15	9702.42	0.01996	
303.15	10084.8	0.01829	
308.15	10467.3	0.01681	
313.15	10849.7	0.01550	
AUXILIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
Composed of a gas buret, a solvent reservoir, and an absorption pipet. Volume of pipet is determined at various heights of the meniscus using a weighed quantity of water, measuring the height of the meniscus using a cathetometer. Dry gas is introduced into degassed solvent. System is mixed using a magnetic stirrer until saturation occurs. Care is taken to prevent solvent vapor from mixing with gas in the gas buret. Volume of gas determined from gas buret reading; volume of liquid determined from height of meniscus in the absorption pipet.		1. Nitrous oxide prepared from hydroxylamine sulfate and sodium nitrite both from Kahlbaum (extra pure grade). Gas washed to remove nitric oxide and dried. Fractionated. 2. $C_3H_6O_2$ Merck, extra pure used. Treated with phosphorus pentoxide several times and distilled several times. B.P. at normal P, 57.12 °C.	
		ESTIMATED ERROR:	
		$\delta T/K = \pm 0.1$.	
		REFERENCES:	
		[†] Also reported in: Horiuti, J. <i>Bull. Inst. Phys. Chem. Res.</i> , Tokyo <u>1928</u> , 7(2), 119-172.	

<p>COMPONENTS:</p> <p>1. Nitrous oxide; N₂O; [10024-97-2]</p> <p>2. Acetic acid, pentyl ester (Amyl acetate); C₇H₁₄O₂; [628-63-7]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Kunerth, W.</p> <p><i>Phys. Rev.</i> <u>1922</u>, 19, 512-524.</p>		
<p>VARIABLES:</p> <p>Temperature</p>	<p>PREPARED BY:</p> <p>W. Gerrard/C. L. Young</p>		
<p>EXPERIMENTAL VALUES:</p>			
<p>T/K</p>	<p>Ostwald coefficient, L</p>	<p>Temperature coefficient, dL/Ldt</p>	<p>Mole fraction, x_{N₂O}*</p>
<p>291.16 293.16 295.16 297.16 299.16 301.16 303.16 305.16 307.16 309.16</p>	<p>5.24 5.14 5.05 4.93 4.83 4.71 4.60 4.49 4.39 4.30</p>	<p>0.0103 0.0104 0.0105 0.0106 0.0107 0.0109 0.0110 0.0111 0.0112 0.0113</p>	<p>0.0313 0.0306 0.0299 0.0291 0.0285 0.0277 0.0269 0.0262 0.0255 0.0249</p>
<p>* The x_{N₂O} values were calculated by the compiler, the molar volume of N₂O being taken as 22257 × (T/273.16) cm³, based on the standard density of 1.9775 g dm⁻³ at 273.16 K and 101.325 kPa (ref. 1). The L values were for a total pressure equal to the prevailing barometric pressure. Kunerth's value for x_{N₂O} at 293.16 K was 0.0312.</p> <p style="text-align: right;">(cont.)</p>			
<p>AUXILIARY INFORMATION</p>			
<p>METHOD /APPARATUS/PROCEDURE:</p> <p>The volume of gas absorbed by a measured volume of degassed liquid was measured at a total pressure equal to the prevailing barometric pressure. Based on the technique of McDaniel (ref. 2). Apparatus consisted of a gas buret attached to leveling tube containing mercury, and to pipet. A layer of liquid was held over the mercury layer in the buret to saturate the gas with vapor of the liquid. Buret and pipet were kept at a common temperature by electric coils.</p>		<p>SOURCE AND PURITY OF MATERIALS:</p> <p>1. Gas (S.S.White Dental Co.) of 99.7 per cent purity was frozen to remove volatile gases before being passed over P₂O₅. Density was found to be 1.968 g dm⁻³ at 273.16 K and 101.325 kPa.</p> <p>2. Attested by b.p. and density.</p>	
		<p>ESTIMATED ERROR: δT/K = ±0.1; δx_{N₂O} = ±2% (estimated by compiler).</p>	
		<p>REFERENCES:</p> <p>1. Kaye, G. W. C. and Laby, T. H.; <i>Tables of Physical and Chemical Constants</i>, Longmans, London, 1966.</p> <p>2. McDaniel, A. S.; <i>J. Phys. Chem.</i> <u>1911</u>, 15, 587.</p>	

COMPONENTS:

1. Nitrous oxide; N_2O ; [10024-97-2]
2. Acetic acid, pentyl ester (Amyl acetate); $C_7H_{14}O_2$; [628-63-7]

ORIGINAL MEASUREMENTS:

Kunerth, W.

Phys. Rev. 1922, 19, 512-524.

EXPERIMENTAL DATA:

Smoothed Data

$$\Delta G^\circ = -RT \ln x_{N_2O} = (-9670.1 + 61.962(T/K)) \text{ J mol}^{-1}$$

(Std. deviation = 9.40 J mol⁻¹)

T/K Mole fraction of nitrous oxide,
 x_{N_2O}

291.16	0.0315
293.16	0.0307
295.16	0.0298
297.16	0.0291
299.16	0.0283
301.16	0.0276
303.16	0.0269
305.16	0.0262
307.16	0.0256
309.16	0.0250

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2]		Kunerth, W.	
2. Benzaldehyde; C ₇ H ₆ O; [100-52-7]		<i>Phys. Rev.</i> <u>1922</u> , 19, 512-524.	
VARIABLES:		PREPARED BY:	
Temperature		W. Gerrard/C. L. Young	
EXPERIMENTAL VALUES:			
T/K	Ostwald coefficient, L	Temperature coefficient, dL/Ldt	Mole fraction, x _{N₂O} *
291.16	3.23	0.0126	0.0136
293.16	3.15	0.0126	0.0132
295.16	3.07	0.0125	0.0128
297.16	3.00	0.0125	0.0125
299.16	2.93	0.0125	0.0122
301.16	2.85	0.0126	0.0118
303.16	2.78	0.0126	0.0114
305.16	2.72	0.0126	0.0111
307.16	2.65	0.0126	0.0108
309.16	2.59	0.0126	0.0105
<p>* The x_{N₂O} values were calculated by the compiler, the molar volume of N₂O being taken as 22257 × (T/273.16) cm³, based on the standard density of 1.9775 g dm⁻³ at 273.16 K and 101.325 kPa (ref. 1). The L values were for a total pressure equal to the prevailing barometric pressure. Kunerth's value for x_{N₂O} at 293.16 K was 0.0134. (cont.)</p>			
AUXILIARY INFORMATION			
METHOD / APPARATUS / PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
The volume of gas absorbed by a measured volume of degassed liquid was measured at a total pressure equal to the prevailing barometric pressure. Based on the technique of McDaniel (ref. 2). Apparatus consisted of a gas buret attached to leveling tube containing mercury, and to pipet. A layer of liquid was held over the mercury layer in the buret to saturate the gas with vapor of the liquid. Buret and pipet were kept at a common temperature by electric coils.		1. Gas (S.S.White Dental Co.) of 99.7 per cent purity was frozen to remove volatile gases before being passed over P ₂ O ₅ . Density was found to be 1.968 g dm ⁻³ at 273.16 K and 101.325 kPa. 2. Attested by b.p. and density.	
		ESTIMATED ERROR: δT/K = ±0.1; δx _{N₂O} = ±2% (estimated by compiler).	
		REFERENCES: 1. Kaye, G. W. C. and Laby, T. H.; <i>Tables of Physical and Chemical Constants</i> , Longmans, London, 1966. 2. McDaniel, A. S.; <i>J. Phys. Chem.</i> <u>1911</u> , 15, 587.	

COMPONENTS: 1. Nitrous oxide; N_2O ; [10024-97-2] 2. Benzaldehyde; C_7H_6O ; [100-52-7]	ORIGINAL MEASUREMENTS: Kunerth, W. <i>Phys. Rev.</i> <u>1922</u> , <i>19</i> , 512-524.
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EXPERIMENTAL VALUES:	
<u>Smoothed Data</u>	
$\Delta G^\circ = -RT \ln x_{N_2O} = (-10791.5 + 72.774(T/K)) \text{ J mol}^{-1}$	
(Std. deviation = 8.9 J mol^{-1})	
T/K	Mole fraction of nitrous oxide, x_{N_2O}
291.16	0.0136
293.16	0.0132
295.16	0.0128
297.16	0.0125
299.16	0.0121
301.16	0.0118
303.16	0.0114
305.16	0.0111
307.16	0.0108
309.16	0.0105

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N_2O ; [10024-97-2] 2. Aniline, (Benzenamine); $C_6H_5NH_2$; [62-53-3]		Kunerth, W. <i>Phys. Rev.</i> <u>1922</u> , 19, 512-524.	
VARIABLES:		PREPARED BY:	
Temperature		W. Gerrard/C. L. Young	
EXPERIMENTAL VALUES:			
T/K	Ostwald coefficient, L	Temperature coefficient, dL/Ldt	Mole fraction, $x_{N_2O}^*$
291.16	1.50	0.0083	0.00573
293.16	1.48	0.0084	0.00562
295.16	1.45	0.0085	0.00548
297.16	1.42	0.0087	0.00534
299.16	1.40	0.0089	0.00523
301.16	1.37	0.0090	0.00510
303.16	1.35	0.0091	0.00500
305.16	1.32	0.0093	0.00487
307.16	1.31	0.0094	0.00480
309.16	1.28	0.0096	0.00467
<p>* The x_{N_2O} values were calculated by the compiler, the molar volume of N_2O being taken as $22257 \times (T/273.16) \text{ cm}^3$, based on the standard density of 1.9775 g dm^{-3} at 273.16 K and 101.325 kPa (ref. 1). The L values were for a total pressure equal to the prevailing barometric pressure. Kunerth's value for x_{N_2O} at 293.16 K was 0.0053.</p> <p style="text-align: right;">(cont.)</p>			
AUXILIARY INFORMATION			
METHOD / APPARATUS / PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
<p>The volume of gas absorbed by a measured volume of degassed liquid was measured at a total pressure equal to the prevailing barometric pressure. Based on the technique of McDaniel (ref. 2). Apparatus consisted of a gas buret attached to leveling tube containing mercury, and to pipet. A layer of liquid was held over the mercury layer in the buret to saturate the gas with vapor of the liquid. Buret and pipet were kept at a common temperature by electric coils.</p>		1. Gas (S.S.White Dental Co.) of 99.7 per cent purity was frozen to remove volatile gases before being passed over P_2O_5 . Density was found to be 1.968 g dm^{-3} at 273.16 K and 101.325 kPa. 2. Attested by b.p. and density.	
		ESTIMATED ERROR:	
		$\delta T/K = \pm 0.1$; $\delta x_{N_2O} = \pm 2\%$ (estimated by compiler).	
		REFERENCES:	
		1. Kaye, G. W. C. and Laby, T. H.; <i>Tables of Physical and Chemical Constants</i> , Longmans, London, 1966. 2. McDaniel, A. S.; <i>J. Phys. Chem.</i> <u>1911</u> , 15, 587.	

COMPONENTS:

1. Nitrous oxide; N_2O ; [10024-97-2]
2. Aniline, (Benzenamine); $C_6H_5NH_2$; [62-53-3]

ORIGINAL MEASUREMENTS:

Kunerth, W.
Phys. Rev. 1922, *19*, 512-524.

EXPERIMENTAL VALUES:

Smoothed Data

$$\Delta G^\circ = -RT \ln x_{N_2O} = (-8524.16 + 72.178(T/K)) \text{ J mol}^{-1}$$

(Std. deviation = 5.9 J mol⁻¹)

T/K Mole fraction of nitrous oxide,
 x_{N_2O}

291.16	0.00574
293.16	0.00561
295.16	0.00574
297.16	0.00535
299.16	0.00523
301.16	0.00511
303.16	0.00500
305.16	0.00489
307.16	0.00478
309.16	0.00468

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N_2O ; [10024-97-2]		Kunerth, W.	
2. Pyridine; C_5H_5N ; [110-86-1]		<i>Phys. Rev.</i> <u>1922</u> , <i>19</i> , 512-524.	
VARIABLES:		PREPARED BY:	
Temperature		W. Gerrard/C. L. Young	
EXPERIMENTAL VALUES:			
T/K	Ostwald coefficient, L	Temperature coefficient, dL/dt	Mole fraction, $x_{N_2O}^*$
293.16	3.58	0.0111	0.0119
295.16	3.50	0.0114	0.0116
297.16	3.45	0.0117	0.0114
299.16	3.34	0.0120	0.0110
301.16	3.25	0.0123	0.0106
303.16	3.17	0.0126	0.0103
305.16	3.10	0.0129	0.0101
307.16	3.02	0.0132	0.00975
309.16	2.94	0.0136	0.0095
<p>* The x_{N_2O} values were calculated by the compiler, the molar volume of N_2O being taken as $22257 \times (T/273.16) \text{ cm}^3$, based on the standard density of 1.9775 g dm^{-3} at 273.16 K and 101.325 kPa (ref. 1). The L values were for a total pressure equal to the prevailing barometric pressure. Kunerth's value for x_{N_2O} at 293.16 K was 0.0120.</p> <p style="text-align: right;">(cont.)</p>			
AUXILIARY INFORMATION			
METHOD / APPARATUS / PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
<p>The volume of gas absorbed by a measured volume of degassed liquid was measured at a total pressure equal to the prevailing barometric pressure. Based on the technique of McDaniel (ref. 2). Apparatus consisted of a gas buret attached to leveling tube containing mercury, and to pipet. A layer of liquid was held over the mercury layer in the buret to saturate the gas with vapor of the liquid. Buret and pipet were kept at a common temperature by electric coils.</p>		<p>1. Gas (S.S.White Dental Co.) of 99.7 per cent purity was frozen to remove volatile gases before being passed over P_2O_5. Density was found to be 1.968 g dm^{-3} at 273.16 K and 101.325 kPa.</p> <p>2. Attested by b.p. and density.</p>	
		ESTIMATED ERROR:	
		$\delta T/K = \pm 0.1$; $\delta x_{N_2O} = \pm 2\%$ (estimated by compiler).	
		REFERENCES:	
		<p>1. Kaye, G. W. D. and Laby, T. H.; <i>Tables of Physical and Chemical Constants</i>, Longmans, London, 1966.</p> <p>2. McDaniel, A. S.; <i>J. Phys. Chem.</i> <u>1911</u>, <i>15</i>, 587.</p>	

COMPONENTS:

1. Nitrous oxide; N_2O ; [10024-97-2]
2. Pyridine; C_5H_5N ; [110-86-1]

ORIGINAL MEASUREMENTS:

Kunerth, W.

Phys. Rev. 1922, *19*, 512-524.

EXPERIMENTAL VALUES:

Smoothed Data

$$\Delta G^\circ = -RT \ln x_{N_2O} = (10870.5 + 73.869(T/K)) \text{ J mol}^{-1}$$

(Std. deviation = 13.5 J mol^{-1})

T/K Mole fraction of nitrous oxide,
 x_{N_2O}

293.16	0.0120
295.16	0.0116
297.16	0.0113
299.16	0.0110
301.16	0.0106
303.16	0.0103
305.16	0.0101
307.16	0.00978
309.16	0.00951

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2]		Horiuti, J.	
2. Tetrachloromethane; (Carbon tetrachloride); CCl ₄ ; [56-23-5]		<i>Sci. Pap. Inst. Phys. Chem. Res. (Japan)</i> [†] <u>1931/32</u> , 17, 125-256.	
VARIABLES:		PREPARED BY:	
Temperature		M. E. Derrick	
EXPERIMENTAL VALUES: Total pressure is 1 atm for original measurements.			
T/K	10 ² x _{N₂O}	Ostwald coefficient, L *	Bunsen coefficient, α
313.15	1.354	3.565	3.110
308.15	1.446	3.775	3.346
303.15	1.549	4.005	3.609
298.15	1.672	4.285	3.926
293.15	1.801	4.57	4.26
288.15	1.947	4.89	4.64
283.15	2.111	5.26	5.07
* original data			
<u>Smoothed Data</u>			
$\Delta G^\circ = -RT \ln x_{N_2O} = (-10953.3 + 70.7618T/K) \text{ J mol}^{-1}$			
Std. dev. $\Delta G^\circ = 3.43 \text{ J mol}^{-1}$. Coef. Corr. = 1.00			
$\Delta H^\circ/\text{J mol}^{-1} = -10953.3$; $\Delta S^\circ/\text{J mol}^{-1} \text{ K}^{-1} = -70.7618$			
T/K	$\Delta G^\circ/\text{J mol}^{-1}$	x_{N_2O}	
283.15	9082.88	0.02111	
288.15	9436.69	0.01947	
293.15	9790.50	0.01801	
298.15	10144.3	0.01670	
303.15	10498.1	0.01553	
308.15	10851.9	0.01447	
313.15	11205.7	0.01352	
AUXILIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
Composed of a gas buret, a solvent reservoir, and an absorption pipet. Volume of pipet is determined at various heights of the meniscus using a weighed quantity of water, measuring the height of the meniscus using a cathetometer. Dry gas is introduced into degassed solvent. System is mixed using a magnetic stirrer until saturation occurs. Care is taken to prevent solvent vapor from mixing with gas in the gas buret. Volume of gas determined from gas buret reading; volume of liquid determined from height of meniscus in the absorption pipet.		1. Nitrous oxide prepared from hydroxylamine sulfate and sodium nitrite both from Kahlbaum (extra pure grade). Gas washed to remove nitric oxide and dried. Fractionated.	
		2. CCl ₄ sample from Kahlbaum, dried and distilled. B.P. at normal P, 76.74 °C.	
		ESTIMATED ERROR:	
		$\delta T/K = \pm 0.1$.	
		REFERENCES:	
		[†] Also reported in: Horiuti, J. <i>Bull. Inst. Phys. Chem. Res., Tokyo</i> <u>1928</u> , ?(2), 119-172.	

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Tetrachloromethane; (Carbon tetrachloride); CCl ₄ ; [56-23-5]	ORIGINAL MEASUREMENTS: Yen, L. C.; McKetta, J. J., Jr. <i>J. Chem. Eng. Data</i> <u>1962</u> , <i>7</i> , 288-289.																														
VARIABLES: Temperature	PREPARED BY: W. Gerrard/C. L. Young																														
EXPERIMENTAL VALUES: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">T/K</th> <th style="text-align: center;">Bunsen coefficient</th> <th style="text-align: center;">Mole fraction of nitrous oxide, $x_{\text{N}_2\text{O}}$</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">273.16</td> <td style="text-align: center;">6.071</td> <td style="text-align: center;">0.02506</td> </tr> <tr> <td style="text-align: center;">283.16</td> <td style="text-align: center;">5.096</td> <td style="text-align: center;">0.02137</td> </tr> <tr> <td style="text-align: center;">293.16</td> <td style="text-align: center;">4.262</td> <td style="text-align: center;">0.01815</td> </tr> <tr> <td style="text-align: center;">303.16</td> <td style="text-align: center;">3.634</td> <td style="text-align: center;">0.01570</td> </tr> <tr> <td style="text-align: center;">313.16</td> <td style="text-align: center;">3.111</td> <td style="text-align: center;">0.01364</td> </tr> </tbody> </table> <p style="text-align: center;">The partial pressure of the gas was 101.325 kPa.</p> <p style="text-align: center;"><u>Smoothed Data</u></p> $\Delta G^\circ = -RT \ln x_{\text{N}_2\text{O}} = (-10858 + 70.366 \times T/\text{K}) \text{ J mol}^{-1}$ <p style="text-align: center;">(Std. deviation = 8.4 J mol⁻¹)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">T/K</th> <th style="text-align: center;">Mole fraction of nitrous oxide, $x_{\text{N}_2\text{O}}$</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">273.16</td> <td style="text-align: center;">0.02516</td> </tr> <tr> <td style="text-align: center;">283.16</td> <td style="text-align: center;">0.02125</td> </tr> <tr> <td style="text-align: center;">293.16</td> <td style="text-align: center;">0.01816</td> </tr> <tr> <td style="text-align: center;">303.16</td> <td style="text-align: center;">0.01568</td> </tr> <tr> <td style="text-align: center;">313.16</td> <td style="text-align: center;">0.01366</td> </tr> </tbody> </table>		T/K	Bunsen coefficient	Mole fraction of nitrous oxide, $x_{\text{N}_2\text{O}}$	273.16	6.071	0.02506	283.16	5.096	0.02137	293.16	4.262	0.01815	303.16	3.634	0.01570	313.16	3.111	0.01364	T/K	Mole fraction of nitrous oxide, $x_{\text{N}_2\text{O}}$	273.16	0.02516	283.16	0.02125	293.16	0.01816	303.16	0.01568	313.16	0.01366
T/K	Bunsen coefficient	Mole fraction of nitrous oxide, $x_{\text{N}_2\text{O}}$																													
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303.16	0.01568																														
313.16	0.01366																														
AUXILIARY INFORMATION																															
METHOD / APPARATUS / PROCEDURE: Measurement of volume of gas absorbed by a known volume of degassed liquid at a partial pressure of 101.325 kPa. The vapor pressure of the liquid was allowed for. Gas buret and absorption pipet. Modified form of apparatus and technique used by Markham and Kobe (1).	SOURCE AND PURITY OF MATERIALS: <ol style="list-style-type: none"> Gas of 98 per cent purity was purified at 193.16 K. Mass spectrograph then showed purity of 99.5 per cent. J. T. Baker Chemical Co., Baker analyzed grade freshly fractionated. ESTIMATED ERROR: $\delta T/\text{K} = \pm 0.1$; $\delta x_{\text{N}_2\text{O}} = \pm 2\%$ (estimated by compiler).																														
	REFERENCES: (1) Markham, A. E.; Kobe, K. A.; <i>J. Am. Chem. Soc.</i> <u>1941</u> , <i>63</i> , 449.																														

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2]		Hsu, H.; Campbell, D.	
2. Halogenated hydrocarbons		<i>Aerosol Age</i> , <u>1964</u> , December, 34.	
VARIABLES:		PREPARED BY:	
		W. Gerrard / C.L. Young	
EXPERIMENTAL VALUES:			
Solvent	T/K	Ostwald coefficient, L	Mole fraction* of nitrous oxide in liquid, x_{N_2O}
Tetrachloromethane; (Carbon tetrachloride); CCl ₄ , [56-23-5]	294.3	2.5	0.00997
Trichloromethane; (Chloroform); CHCl ₃ ; [67-66-3]	294.3	5.54	0.0182
1,2-Dichloroethane; C ₂ H ₄ Cl ₂ ; [107-06-2]	294.3	3.2	0.0104
1,2-Dibromoethane; C ₂ H ₄ Br ₂ ; [106-93-4]	294.3	2.7	0.00962
"Chlorothene"	294.3	4.96	-
* calculated by compiler as for a partial pressure of gas of 101.325 kPa. Molar volume of gas at 294.26 K taken as 23967 cm ³ based on the density (l) 1.9775 g dm ⁻³ at 101.325 kPa and 273.15K.			
AUXILIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
Copper equilibrium cell fitted with Bourdon gauge and thermometer. Total amount of gas needed to attain given, but not stated, pressure measured. Ostwald coefficient calculated from knowledge of volume of liquid and container.		No details given.	
		ESTIMATED ERROR:	
		$\delta T/K = \pm 0.5$; $\delta x_{N_2O} = \pm 3\%$. (estimated by compiler).	
		REFERENCES:	
		1. Kaye, G.W.C.; Laby, T.H. <i>Tables of Physical and Chemical Constants</i> , Longmans, London, 1966.	

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Trichloromethane; (Chloroform); CHCl ₃ ; [67-66-3]		Kunerth, W. <i>Phys. Rev.</i> <u>1922</u> , 19, 512-524.	
VARIABLES:		PREPARED BY:	
Temperature		W. Gerrard/C. L. Young	
EXPERIMENTAL VALUES:			
T/K	Ostwald coefficient, L	Temperature coefficient, dL/Ldt	Mole fraction, $x_{\text{N}_2\text{O}}^*$
291.16	5.70	0.0066	0.0189
293.16	5.60	0.0103	0.0184
295.16	5.51	0.0140	0.0181
297.16	5.26	0.0180	0.0172
299.16	5.07	0.0220	0.0165
301.16	4.83	0.0258	0.0157
303.16	4.57	0.0298	0.0148
305.16	4.29	0.0335	0.0138
307.16	4.03	0.0370	0.0130
309.16	3.70	0.0407	0.0119
<p>* The $x_{\text{N}_2\text{O}}$ values were calculated by the compiler, the molar volume of N₂O being taken as $22257 \times (T/273.16) \text{ cm}^3$, based on the standard density of 1.9775 g dm^{-3} at 273.16 K and 101.325 kPa (ref. 1). The L values were for a total pressure equal to the prevailing barometric pressure. Kunerth's value for $x_{\text{N}_2\text{O}}$ at 293.16 K was 0.0182. (cont.)</p>			
AUXILIARY INFORMATION			
METHOD /APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
The volume of gas absorbed by a measured volume of degassed liquid was measured at a total pressure equal to the prevailing barometric pressure. Based on the technique of McDaniel (ref. 2). Apparatus consisted of gas buret attached to leveling tube containing mercury, and to pipet. A layer of liquid was held over the mercury layer in the buret to saturate the gas with vapor of the liquid. Buret and pipet were kept at a common temperature by electric coils.		1. Gas (S.S.White Dental Co.) of 99.7 per cent purity was frozen to remove volatile gases before being passed over P ₂ O ₅ . Density was found to be 1.968 g dm^{-3} at 283.16 K and 101.325 kPa. 2. Attested by b.p. and density.	
		ESTIMATED ERROR: $\delta T/K = \pm 0.1$; $\delta x_{\text{N}_2\text{O}} = \pm 2\%$ (estimated by compiler).	
		REFERENCES: 1. Kaye, G. W. C. and Laby, T. H.; <i>Tables of Physical and Chemical Constants</i> , Longmans, London, 1966. 2. McDaniel, A. S.; <i>J. Phys. Chem.</i> <u>1911</u> , 15, 587.	

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. 1,2-Dibromoethane; CH ₂ BrCH ₂ Br; [106-93-4]		Kunerth, W. <i>Phys. Rev.</i> <u>1922</u> , <i>19</i> , 512-524.	
VARIABLES:		PREPARED BY:	
Temperature		W. Gerrard/C. L. Young	
EXPERIMENTAL VALUES:			
T/K	Ostwald coefficient, L	Temperature coefficient, dL/Ldt	Mole fraction, x _{N₂O} *
291.16	2.87	0.0106	0.0103
293.16	2.81	0.0106	0.0100
295.16	2.75	0.0107	0.00977
297.16	2.69	0.0108	0.00952
299.16	2.64	0.0109	0.00930
301.16	2.58	0.0110	0.00904
303.16	2.52	0.0111	0.00879
305.16	2.46	0.0112	0.00855
307.16	2.42	0.0113	0.00837
309.16	2.37	0.0114	0.00816
<p>* The x_{N₂O} values were calculated by the compiler, the molar volume of N₂O being taken as 22257 × (T/273.16) cm³, based on the standard density of 1.9775 g dm⁻³ at 273.16 K and 101.325 kPa (ref. 1). The L values were for a total pressure equal to the prevailing barometric pressure. Kunerth's value for x_{N₂O} at 293.16 K was 0.0100. (cont.)</p>			
AUXILIARY INFORMATION			
METHOD / APPARATUS / PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
<p>The volume of gas absorbed by a measured volume of degassed liquid was measured at a total pressure equal to the prevailing barometric pressure. Based on the technique of McDaniel (ref. 2). Apparatus consisted of a gas buret attached to leveling tube containing mercury, and to pipet. A layer of liquid was held over the mercury layer in the buret to saturate the gas with vapor of the liquid. Buret and pipet were kept at a common temperature by electric coils.</p>		1. Gas (S.S.White Dental Co.) of 99.7 per cent purity was frozen to remove volatile gases before being passed over P ₂ O ₅ . Density was found to be 1.968 g dm ⁻³ at 273.16 K and 101.325 kPa.	
		2. Attested by b.p. and density.	
		ESTIMATED ERROR: δT/K = ±0.1; δx _{N₂O} = ±2% (estimated by compiler).	
		REFERENCES: 1. Kaye, G. W. C. and Laby, T. H.; <i>Tables of Physical and Chemical Constants</i> , Longmans, London, 1966. 2. McDaniel, A. S.; <i>J. Phys. Chem.</i> <u>1911</u> , <i>15</i> , 587.	

<p>COMPONENTS:</p> <p>1. Nitrous oxide; N₂O; [10024-97-2]</p> <p>2. 1,2-Dibromoethane; CH₂BrCH₂Br; [106-93-4]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Kunerth, W.</p> <p><i>Phys. Rev.</i> <u>1922</u>, 19, 512-524.</p>																				
<p>EXPERIMENTAL VALUES:</p> <p style="text-align: center;"><u>Smoothed Data</u></p> <p style="text-align: center;">$\Delta G^\circ = -RT \ln x_{\text{N}_2\text{O}} = (-9702.7 + 71.360(T/K)) \text{ J mol}^{-1}$</p> <p style="text-align: center;">(Std. deviation = 5.5 J mol⁻¹)</p> <p style="text-align: center;">T/K Mole fraction of nitrous oxide, $x_{\text{N}_2\text{O}}$</p>																					
<table style="width: 100%; border-collapse: collapse;"> <tbody> <tr><td style="text-align: right; padding-right: 20px;">291.16</td><td>0.0103</td></tr> <tr><td style="text-align: right; padding-right: 20px;">293.16</td><td>0.0100</td></tr> <tr><td style="text-align: right; padding-right: 20px;">295.16</td><td>0.00976</td></tr> <tr><td style="text-align: right; padding-right: 20px;">297.16</td><td>0.00951</td></tr> <tr><td style="text-align: right; padding-right: 20px;">299.16</td><td>0.00926</td></tr> <tr><td style="text-align: right; padding-right: 20px;">301.16</td><td>0.00902</td></tr> <tr><td style="text-align: right; padding-right: 20px;">303.16</td><td>0.00880</td></tr> <tr><td style="text-align: right; padding-right: 20px;">305.16</td><td>0.00858</td></tr> <tr><td style="text-align: right; padding-right: 20px;">307.16</td><td>0.00837</td></tr> <tr><td style="text-align: right; padding-right: 20px;">309.16</td><td>0.00816</td></tr> </tbody> </table>		291.16	0.0103	293.16	0.0100	295.16	0.00976	297.16	0.00951	299.16	0.00926	301.16	0.00902	303.16	0.00880	305.16	0.00858	307.16	0.00837	309.16	0.00816
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305.16	0.00858																				
307.16	0.00837																				
309.16	0.00816																				
Empty section for experimental values																					

COMPONENTS:		ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Chlorobenzene; C ₆ H ₅ Cl; [108-90-7]		Horiuti, J. <i>Sci. Pap. Inst. Phys. Chem. Res.</i> (<i>Jpn</i>) [†] , 1931/32, 17, 125-256.			
VARIABLES:		PREPARED BY:			
Temperature		M. E. Derrick			
EXPERIMENTAL VALUES: Total pressure is 1 atm for original measurements.					
T/K	10 ² x _{N₂O}	Ostwald Coefficient, L* Bunsen Coefficient, α			
328.15	0.8837	2.279	1.897		
323.15	0.9399	2.400	2.029		
318.15	0.9969	2.520	2.164		
313.15	1.059	2.650	2.311		
308.15	1.131	2.801	2.483		
303.15	1.216	2.981	2.686		
298.15	1.309	3.174	2.908		
293.15	1.410	3.382	3.151		
288.15	1.533	3.636	3.447		
283.15	1.659	3.891	3.754		
* original data					
<u>Smoothed Data</u>					
$\Delta G^\circ/\text{J mol}^{-1} = -RT \ln x_{\text{N}_2\text{O}} = -10821.7 + 72.3315T/\text{K}$					
Std. dev. $\Delta G^\circ/\text{J mol}^{-1} = \pm 10.73$ $\Delta H^\circ/\text{J mol}^{-1} = -10821.7$					
Coeff. Corr. = 1.00 $\Delta S^\circ/\text{J mol}^{-1} \text{K}^{-1} = -72.3315$					
T/K	$\Delta G^\circ/\text{J mol}^{-1}$	x _{N₂O}	T/K	$\Delta G^\circ/\text{J mol}^{-1}$	x _{N₂O}
283.15	9658.91	0.01653	308.15	11467.2	0.01138
288.15	10020.6	0.01526	313.15	11828.9	0.01064
293.15	10382.2	0.01413	318.15	12190.5	0.009966
298.15	10743.9	0.01311	323.15	12552.2	0.009355
303.15	11105.5	0.01220	328.15	12913.8	0.008798
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
Composed of a gas buret, a solvent reservoir, and an absorption pipet. Volume of pipet is determined at various heights of the meniscus using a weighed quantity of water, measuring the height of the meniscus using a cathetometer. Dry gas is introduced into degassed solvent. System is mixed using a magnetic stirrer until saturation occurs. Care is taken to prevent solvent vapor from mixing with gas in the gas buret. Volume gas detn. from gas buret reading: volume of liquid determined from height of meniscus in the adsorption pipet.			N ₂ O: Prepared from hydroxylamine sulfate and sodium nitrite both from Kahlbaum (extra pure grade). Gas washed to remove nitric oxide and dried. Fractionated.		
			C ₆ H ₅ Cl: Sample from Kahlbaum, dried, and distilled. B.P. at normal P, 131.96 °C.		
			ESTIMATED ERROR:		
			δT/K = ±0.1.		
			REFERENCES:		
			† also reported in: Horiuti, J.; <i>bull. Inst. Phys. Chem. Res. Tokyo</i> , 1928, 7(2), 119-172.		

<p>COMPONENTS:</p> <ol style="list-style-type: none"> Nitrous oxide; N₂O; [10024-97-2] Biological fluids. 	<p>EVALUATOR:</p> <p>Colin L. Young School of Chemistry University of Melbourne Parkville, Victoria, 3052 <u>AUSTRALIA:</u> June, 1981</p>
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CRITICAL EVALUATION:

In study of gas solubility in biological fluids it is evitable that some variation in solubility arises from the source of the sample and its treatment before being used. Therefore careful characterisation of the sample is necessary. As has been pointed out by Kozam *et al* (1) and may be inferred from the early work of Siebeck (2) it appears that some of the discrepancies between the results of various workers for the solubility of nitrous oxide in blood are probably due to the fraction of red cells in the sample. Thorough degassing of the sample is rarely achieved with biological fluids and there is some indication that this also gives rise to a significant additional variation in the reported solubilities

Many gas solubilities in biological fluids have been determined using a Van Slyke apparatus and are therefore not of the highest accuracy. See reference 3 for a discussion of the reliability of this technique. The gas chromatographic (GC) method used by Kozam *et al* (1) appears to be capable of fairly accurate results although, at present, not widely used Jay *et al* (4) have carried out a comparison between GC and the Van Slyke method. The GC method can be used to study the solubility of mixtures of gases. The Scholander microgasometric method (5) has been applied to solubilities in biological fluids by Saidman *et al* (6) and the results appear to be more reliable than those determined by the Van Slyke method.

In general, when more attention is paid to a detailed characterisation of the sample it appears that it will be desirable to further develop techniques which are more accurate than the Van Slyke method. The method is quick but, unless carried out with great care, is not as accurate as the Scholander technique.

It is very difficult to establish which solubility measurements are more reliable in the present context. The measurements of Saidman *et al* (6) are probably the most accurate for human blood.

In addition to measurements given in the compiled tables the solubility of nitrous oxide in bovine serum albumen and bovine globulin have been reported by Muehlbaeher *et al* (7). The results were presented in graphical form and little information was given as to the method employed. This workers also quoted Bunsen coefficient for water and blood but it was not clear whether these coefficients were "average" values from the literature or new experimental values. The results are summarized in the table below.

T/°C = 37	
<u>SOLVENT</u>	<u>BUNSEN COEFFICIENT</u>
Water	0.440
Blood	0.466
Bovine serum albumen in sodium phosphate buffer pH = 5.6-6.3	0.42
Bovine β-globulin in sodium phosphate buffer pH = 6.3-6.6	0.41
Bovine δ-globulin in sodium phosphate buffer pH = 6.3-6.6	0.42
Bovine hemoglobin in sodium phosphate buffer pH = 6.3-6.6	0.43

continued....

COMPONENTS: <ol style="list-style-type: none">1. Nitrous oxide; N₂O; [10024-97-2]2. Biological fluids.	EVALUATOR: <p>Colin L. Young School of Chemistry University of Melbourne Parkville, Victoria, 3052 <u>AUSTRALIA</u> June, 1981</p>
CRITICAL EVALUATION: <u>REFERENCES:</u> <ol style="list-style-type: none">1. Kozam, R.L.; Landau, S.M.; Cubina, J.M.; Lukas, D.S. <i>J. Appl. Physiol.</i> <u>1970</u>, <i>29</i>, 593.2. Siebeck, R.; <i>Skand. Arch. Physiol.</i> <u>1909</u>, <i>21</i>, 368.3. Markham, A.E.; Kobe, K.A. <i>Chem. Revs.</i> <u>1941</u>, <i>28</i>, 519.4. Jay, B.E.; Wilson, R.H.; Doty, V.; Pingree, H.; Hargis, B. <i>Anal. Chem.</i> <u>1962</u>, <i>34</i>, 414.5. Douglas, E.; <i>J. Phys. Chem.</i> <u>1964</u>, <i>68</i>, 169.6. Saidman, L.J.; Eger, E.I.; Manson, E.S.; Severinghaus, J.W. <i>Anesthesiology</i>, <u>1966</u>, <i>27</i>, 180.7. Muehlbaeher, C.; DeBon, F.L.; Featherstone, R.M.; <i>Intern. Anesth. Clinics.</i> <u>1963</u>, <i>1</i>, 937.	

COMPONENTS:		ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N ₂ O; [10024-97-2]		Siebeck, R.			
2. Ox blood and red blood cells		<i>Skand. Arch. Physiol.</i> 1909, 21, 368-382.			
VARIABLES:		PREPARED BY:			
Temperature, pressure		C. L. Young			
EXPERIMENTAL VALUES:					
T/°C	T/K	Partial pressure of nitrous oxide p/mmHg	Partial pressure of nitrous oxide p/kPa	Ratio of volume of absorbed gas (reduced to 273.15 K and 101.3 kPa to volume of solution)	Bunsen coefficient, α
<u>Ox Blood</u>					
23.1	296.3	707.28	94.296	0.5486	0.5895
23.2	296.4	714.22	95.221	0.5532	0.5887
22.5	295.7	543.90	72.514	0.4212	0.5885
23.1	296.3	174.10	23.211	0.1253	0.5470
<u>Red blood cells "solution"</u>					
22.9 [*]	296.1	663.50	88.459	0.5520	0.6323
23.2 [§]	296.4	706.60	94.206	0.5727	0.6160
37.9 [†]	311.1	500.44	66.720	0.2705	0.4108
38.0 [†]	311.2	645.70	86.086	0.3630	0.4273
37.7 [†]	310.9	581.50	77.527	0.3159	0.4129
38	311.2	202.65	27.018	0.1023	0.3837
38	311.2	357.60	47.676	0.1911	0.4061
38	311.2	702.45	93.652	0.3741	0.4047
* sample contained 66.0 mg of Fe per 100 g solution.					
§ sample contained 59.7 mg of Fe per 100 g solution.					
† sample contained 39.7 mg of Fe per 100 g solution.					
AUXILIARY INFORMATION					
METHOD APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
Solvent placed in a 3 dm ³ glass cylinder. Cylinder flushed with nitrous oxide to remove air and then solvent equilibrated with gas at known pressure. Samples of solvent removed and gas extracted under reduced pressure and estimated volumetrically.			No details given.		
ESTIMATED ERROR:					
δ _α /α = ±4% (estimated by compiler).					
REFERENCES:					

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Ox blood and ox serum		ORIGINAL MEASUREMENTS: Findlay, A.; Creighton, H. J. M. <i>Biochem. J.</i> <u>1910</u> , 5, 294-305.		
VARIABLES: Pressure		PREPARED BY: C. L. Young		
EXPERIMENTAL VALUES:				
T/K	Density of soln. /g cm ⁻³	p _{N₂O} /mmHg	p _{N₂O} /MPa	Solubility, S [†]
<u>Blood</u>				
298.15	1.065	745	0.099	0.521
		854	0.114	0.530
		1012	0.135	0.539
		1152	0.154	0.544
		1277	0.170	0.547
		1408	0.188	0.548
<u>Serum</u>				
298.15	1.025	737	0.098	0.517
		846	0.113	0.509
		925	0.123	0.513
		1036	0.138	0.519
		1169	0.156	0.524
		1402	0.187	0.528
[†] Solubility, S, given as $\frac{\text{Concentration of gas in the liquid phase}}{\text{Concentration of gas in the gas phase}}$.				
AUXILIARY INFORMATION				
METHOD / APPARATUS / PROCEDURE: Gas buret and adsorption pipet similar to that of Geffcken (1) except that the manometer tube was longer to give the higher pressures.		SOURCE AND PURITY OF MATERIALS: 1. Obtained by heating pure ammonium nitrate, purified by passing through solutions of potassium hydroxide and ferrous sulfate. 2. As obtained from slaughter house: not degassed.		
		ESTIMATED ERROR: δT/K = ±0.1; δS/S = ±2% (estimated by compiler)		
		REFERENCES: 1. Geffcken, G. <i>Z. Phys. Chem.</i> <u>1904</u> , 49, 257.		

<p>COMPONENTS:</p> <p>1. Nitrous oxide; N₂O; [10024-97-2]</p> <p>2. Blood.</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Orcutt, F.S.; Seevers, M.H., <i>J. Biol.Chem.</i> <u>1937</u>, 117, 509-15.</p>						
<p>VARIABLES:</p>	<p>PREPARED BY:</p> <p>W. Gerrard</p>						
<p>EXPERIMENTAL VALUES:</p> <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th data-bbox="242 572 284 598">T/K</th> <th data-bbox="455 572 731 618">Bunsen coefficient, α</th> <th data-bbox="847 572 1138 618">Ostwald coefficient, L</th> </tr> </thead> <tbody> <tr> <td data-bbox="213 681 297 707">310.65</td> <td data-bbox="529 681 602 707">0.416</td> <td data-bbox="950 681 1023 707">0.454</td> </tr> </tbody> </table>		T/K	Bunsen coefficient, α	Ostwald coefficient, L	310.65	0.416	0.454
T/K	Bunsen coefficient, α	Ostwald coefficient, L					
310.65	0.416	0.454					
<p>AUXILIARY INFORMATION</p>							
<p>METHOD /APPARATUS/PROCEDURE:</p> <p>Van Slyke-Neill (1) manometric apparatus. Gas extracted from the solution. Pressure of extracted gas was measured, allowance being made for the gas not extracted.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>Not specified.</p> <p>ESTIMATED ERROR:</p> <p>REFERENCES:</p> <p>1. Van Slyke, D.D., Neill, J.M. <i>J. Biol. Chem.</i> <u>1924</u>, 61, 523.</p>						

COMPONENTS:					ORIGINAL MEASUREMENTS:		
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Human blood					Cullen, S. C.; Cook, E. V. <i>J. Biol. Chem.</i> <u>1943</u> , 147, 23-26.		
VARIABLES:					PREPARED BY:		
Pressure					C. L. Young		
EXPERIMENTAL VALUES: T/°C = 37.5; T/K = 310.7							
Sample No.	Equilibrated gas, mole per cent composition				Total pressure /mmHg	Partial pressure of N ₂ O, P _{N₂O} /mmHg	Solubility [†]
	CO ₂	O ₂	N ₂	N ₂ O			
1	5.95	9.48	0	84.5	740	583	30.9
2	6.15	4.21	0	89.6	737	616	33.2
3	6.30	1.04	4.16	88.5	738	609	34.0
4	5.75	17.40	0	76.8	740	531	28.7
5	6.10	5.33	21.30	66.3	740	458	25.2
6	5.30	46.80	0	47.9	738	330	17.8
7	5.60	9.50	38.00	46.9	738	323	17.7
8	5.80	1.66	0	92.5	740	639	34.0
9	1.23	0.60	0	98.1	740	678	37.4
10	5.80	33.70	0	60.5	738	417	22.0
11	5.70	7.50	30.00	56.8	737	391	21.8
12	5.25	75.80	0	19.0	736	131	7.4
13	5.38	15.60	62.40	16.6	736	114	6.6
14	0.42	0.40	0	99.1	736	681	37.6
15	5.45	16.25	65.00	13.3	738	92	4.8
16	5.33	63.80	0	30.8	742	213	11.7
17	0.57	0.28	0	99.1	745	690	37.9
18	5.53	53.60	0	40.8	738	281	15.1
19	6.44	11.00	44.00	38.5	738	265	14.2
20	5.71	39.60	0	54.7	737	376	19.9
21	5.63	8.12	32.48	53.7	736	369	20.9
[†] Solubility is the volume (reduced to 273.2 K and 1 atmosphere pressure) dissolved by 100 cm ³ of blood. Bunsen coefficient = 0.415. Ostwald coefficient at 1 atmosphere pressure = 0.472.							
AUXILIARY INFORMATION							
METHOD APPARATUS/PROCEDURE:					SOURCE AND PURITY OF MATERIALS:		
Blood equilibrated with gas of stated composition. Samples analyzed by the Van Slyke manometric procedure. Details in source and ref. (1).					1. No details given. 2. Oxalated venous blood.		
					ESTIMATED ERROR:		
					$\delta T/K = \pm 0.1$; $\delta \alpha/\alpha = \pm 3\%$ (estimated by compiler).		
					REFERENCES:		
					1. Cullen, S. C.; Cook, E. V. <i>Am. J. Physiol.</i> <u>1942</u> , 137, 238.		

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2]		Kety, S.S.; Harmel, M.H., Broomell, H.T., Rhode, C.B.	
2. Blood.		<i>J. Biol. Chem.</i> <u>1948</u> , 173, 487-496.	
VARIABLES:		PREPARED BY:	
		W. Gerrard	
EXPERIMENTAL VALUES:			
	Dog, 6 animals	Man Red blood cell hematocrit	
	α^*		α^*
	0.419	28.8	0.400
	0.419	34.2	0.408
	0.433	41.0	0.410
	0.421	44.0	0.414
	0.435	51.5	0.425
	0.421	-	-
Mean:	0.425		0.412
Standard error:	0.003		0.004
α^* Bunsen coefficient for 310.15 K defined as cm ³ of N ₂ O (reduced to 273.15 K and 101.325 kPa) dissolved by 1 cm ³ of blood when equilibrated at a nitrous oxide pressure of 101.325 kPa.			
AUXILIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
Blood is equilibrated with nitrous oxide in a 50 cm ³ glass syringe, closed and shaken at 310.15 K. Gas was removed and the nitrous oxide content of the liquid was determined using a Van Slyke-Neill manometric apparatus.		1. Not stated.	
		2. Freshly shed heparinised whole blood.	
		ESTIMATED ERROR:	
		REFERENCES:	

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Blood	ORIGINAL MEASUREMENTS: Hattox, J. S.; Saari, J. M.; Faulconer, A. <i>Anesthesiology</i> <u>1953</u> , 14, 584-590.																																				
VARIABLES:	PREPARED BY: C. L. Young																																				
EXPERIMENTAL VALUES: <p style="text-align: center;">T = 37 °C</p>																																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Sample No.</th> <th style="text-align: center;">Distribution coefficient,[†] D</th> <th colspan="2" style="text-align: center;">Concentration[§]/mg cm⁻³</th> </tr> <tr> <td></td> <td></td> <th style="text-align: center;">(a)</th> <th style="text-align: center;">(b)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">0.453</td> <td style="text-align: center;">0.713</td> <td style="text-align: center;">0.373</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">0.451</td> <td style="text-align: center;">0.706</td> <td style="text-align: center;">0.354</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">0.454</td> <td style="text-align: center;">0.689</td> <td style="text-align: center;">0.364</td> </tr> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">0.460</td> <td style="text-align: center;">0.716</td> <td style="text-align: center;">0.367</td> </tr> <tr> <td style="text-align: center;">5</td> <td style="text-align: center;">-</td> <td style="text-align: center;">0.684</td> <td style="text-align: center;">0.372</td> </tr> <tr> <td style="text-align: center;">Mean</td> <td style="text-align: center;">0.455</td> <td style="text-align: center;">0.702</td> <td style="text-align: center;">0.366</td> </tr> <tr> <td style="text-align: center;">Standard deviation</td> <td></td> <td style="text-align: center;">0.0145</td> <td style="text-align: center;">0.0075</td> </tr> </tbody> </table>	Sample No.	Distribution coefficient, [†] D	Concentration [§] /mg cm ⁻³				(a)	(b)	1	0.453	0.713	0.373	2	0.451	0.706	0.354	3	0.454	0.689	0.364	4	0.460	0.716	0.367	5	-	0.684	0.372	Mean	0.455	0.702	0.366	Standard deviation		0.0145	0.0075	
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<p>† Ostwald coefficient.</p> <p>§ Concentration calculated assuming Ostwald coefficient independent of pressure in milligrams of N₂O per cubic centimetre of blood (a) partial pressure of N₂O = 1 atmosphere (b) partial pressure of N₂O = 0.5 atmosphere.</p>																																					
AUXILIARY INFORMATION																																					
METHOD/APPARATUS/PROCEDURE: Mass spectrometric method based on the relative height of argon and nitrous oxide peaks at 40 and 30 respectively. Solubility of argon in blood assumed to be same as in water.	SOURCE AND PURITY OF MATERIALS: <p style="text-align: center;">No details given.</p> <hr/> ESTIMATED ERROR: $\delta T/K = \pm 0.5; \delta D = \pm 2\%$ <hr/> REFERENCES:																																				

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Human blood	ORIGINAL MEASUREMENTS: Jay, B.E.; Wilson, R.H.; Doty, V.; Pingree, H.; Hargis, B. <i>Anal. Chem.</i> <u>1962</u> , <i>34</i> , 414-418
VARIABLES:	PREPARED BY: C.L. Young
EXPERIMENTAL VALUES:	
T/K 309.2	Ostwald coefficient, ^a L 0.405 ± 0.004
^a Average of 14 values. Incorrectly called Bunsen coefficient in source.	
AUXILIARY INFORMATION	
METHOD APPARATUS/PROCEDURE: Saturated blood samples were analysed using GC with an activated charcoal or activated silica gel stationary phase. Thermal conductivity detector used and helium was used as carrier gas. Results checked against Van Slyke method.	SOURCE AND PURITY OF MATERIALS: 1. Matheson Gas Co. sample. 2. Hemoglobin content 14g per 100 cm ³ of solution. ESTIMATED ERROR: $\delta T/K = \pm 0.5$ REFERENCES:

<p>COMPONENTS:</p> <p>1. Nitrous oxide; N₂O; [10024-97-2]</p> <p>2. Dog blood (<i>in vivo</i>)</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Sy, W. P.; Hasbrouck, J. D. <i>Anesthesiology</i> <u>1964</u>, 25, 59-63.</p>																	
<p>VARIABLES:</p>	<p>PREPARED BY:</p> <p>C. L. Young</p>																	
<p>EXPERIMENTAL VALUES:</p> <table border="1"> <thead> <tr> <th data-bbox="100 491 142 517">T/K</th> <th data-bbox="213 486 705 540">Partial pressure[†] of nitrous oxide P/mmHg</th> <th data-bbox="777 491 1053 517">Ostwald coefficient</th> </tr> </thead> <tbody> <tr> <td data-bbox="104 615 190 640" rowspan="6">310.65</td> <td data-bbox="432 609 503 635" rowspan="6">499.1</td> <td data-bbox="893 609 967 635">0.400</td> </tr> <tr> <td data-bbox="893 635 967 660">0.395</td> </tr> <tr> <td data-bbox="893 660 967 686">0.396</td> </tr> <tr> <td data-bbox="893 686 967 711">0.392</td> </tr> <tr> <td data-bbox="893 711 967 736">0.393</td> </tr> <tr> <td data-bbox="893 736 967 762">0.395</td> </tr> <tr> <td colspan="3" data-bbox="503 799 967 825" style="text-align: center;">Mean Ostwald coefficient = 0.395</td> </tr> <tr> <td colspan="3" data-bbox="589 834 967 860" style="text-align: center;">Standard deviation = 0.002</td> </tr> </tbody> </table>		T/K	Partial pressure [†] of nitrous oxide P/mmHg	Ostwald coefficient	310.65	499.1	0.400	0.395	0.396	0.392	0.393	0.395	Mean Ostwald coefficient = 0.395			Standard deviation = 0.002		
T/K	Partial pressure [†] of nitrous oxide P/mmHg	Ostwald coefficient																
310.65	499.1	0.400																
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Standard deviation = 0.002																		
<p>[†] calculated by subtracting vapor pressure of water, partial pressure of oxygen and partial pressure of carbon dioxide from atmospheric pressure.</p>																		
<p>AUXILIARY INFORMATION</p>																		
<p>METHOD/APPARATUS/PROCEDURE:</p> <p>Healthy dog anesthetized with sodium pentobarbital, trachea intubated and lungs mechanically ventilated with a mixture of 80 per cent nitrous oxide and 20 per cent oxygen. End expiratory partial pressure of carbon dioxide maintained at 39.5-40.5 mmHg. After 75 minutes samples of arterial blood taken and analysed with van Slyke apparatus. Details in source.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p style="text-align: center;">No details given.</p> <hr/> <p>ESTIMATED ERROR:</p> <p style="text-align: center;">$\delta T/K = \pm 0.1$; $\delta P/mmHg = \pm 0.1$</p> <hr/> <p>REFERENCES:</p>																	

COMPONENTS:			ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2]			Saidman, L. J.; Eger, E. I.;	
2. Human blood			Munson, E. S.; Severinghaus, J. W.	
			<i>Anesthesiology</i> <u>1966</u> , 27, 180-184.	
VARIABLES:			PREPARED BY:	
			C. L. Young	
EXPERIMENTAL VALUES:				
			Ostwald coefficient	
T/°C	T/K	No. of samples	Mean	Standard deviation
37	310.2	5	0.462	0.007
25	298.2	5	0.602	0.007
AUXILIARY INFORMATION				
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:	
Modified Scholander apparatus used. Known amount of blood equilibrated with a known volume of gas and change in volume used to estimate Ostwald coefficient. Details of apparatus in source and ref. 1. Correction made for nitrogen in sample.			1. No details given.	
			2. Nitrogen bubbled through sample to remove other gases. Mean hemoglobin 14 per cent.	
			ESTIMATED ERROR:	
			δT/K = ±0.1 (estimated by compiler).	
			REFERENCES:	
			1. Douglas, E. J. <i>Phys. Chem.</i> <u>1964</u> , 68, 169.	

COMPONENTS:			ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2]			Saidman, L. J.; Eger, E. I.;	
2. Dog blood			Manson, E. S.; Severinghaus, J. W. <i>Anesthesiology</i> <u>1966</u> , <i>27</i> , 180-184.	
VARIABLES:			PREPARED BY:	
			C. L. Young	
EXPERIMENTAL VALUES:				
T/°C	T/K	No. of samples	Mean	Ostwald coefficient Standard deviation
37	310.2	5	0.472	0.009
25	298.2	3	0.618	0.015
AUXILIARY INFORMATION				
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:	
Modified Scholander apparatus used. Known amount of blood equilibrated with a known volume of gas and change in volume used to estimate Ostwald coefficient. Details of apparatus in source and ref. 1.			1. No details given.	
			2. Nitrogen bubbled through sample to remove other gases.	
			ESTIMATED ERROR:	
			$\delta T/K = \pm 0.1$ (estimated by compiler).	
			REFERENCES:	
			1. Douglas, E. J. <i>Phys. Chem.</i> <u>1964</u> , <i>68</i> , 169.	

COMPONENTS:		ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N ₂ O; [10024-97-2]		Ostiguy, G. L.; Becklake, M. R. <i>J. Appl. Physiol.</i> <u>1966</u> , <i>21</i> , 1397-1399.			
2. Human blood					
VARIABLES:		PREPARED BY:			
		C. L. Young			
EXPERIMENTAL VALUES:		T/°C = 37			
	No. of samples	Cholesterol range 10 ³ g m ⁻³	Total lipids 10 ³ g m ⁻³	Ostwald coefficient Mean	SD*
Normal subjects (both sexes)	40			0.465	0.0095
Thyrotoxic subjects	4	1.04-2.84		0.461	0.0093
Subjects with hyperlipidemia	4	2.41-4.54	10.75-17.95	0.472	0.0200
* standard deviation					
AUXILIARY INFORMATION					
METHOD /APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:			
Venous blood taken in heparinized syringes from 40 normal healthy subjects and from 4 thyrotoxic subjects with hyperlipidemia. Blood equilibrated with gas mixture (8% N ₂ O, 20% O ₂ and 72% He) in flow system. Samples then analysed by extracting in stream of oxygen and using infra-red analyser. Details in source and ref. 1.		See method.			
		ESTIMATED ERROR:			
		δT/K = ±0.1.			
		REFERENCES:			
		1. Lawther, P. J.; Bates, D. V. <i>Clin. Sci.</i> <u>1953</u> , <i>12</i> , 91.			

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2]		Ostiguy, G. L.; Becklake, M. R. <i>J. Appl. Physiol.</i> <u>1966</u> , <i>21</i> , 1397-1399.	
2. Human blood			
VARIABLES:		PREPARED BY:	
		C. L. Young	
EXPERIMENTAL VALUES:		T/°C = 37	
		<u>Men</u>	
Age/yr	No. of samples	Mean	Ostwald coefficient Range
Under 20	3	0.472*	0.461 - 0.491
20-29	4	0.456	0.450 - 0.460
30-39	6	0.461	0.458 - 0.466
40-49	3	0.465	0.460 - 0.468
50-59	3	0.464	0.448 - 0.473
60-69	2	0.465	0.462 - 0.468
70 and over	3	0.461	0.459 - 0.462
Total	24	0.463 ± 0.0083 (standard deviation)	
		<u>Women</u>	
20-29	3	0.463	0.457 - 0.468
30-39	3	0.458	0.449 - 0.463
40-49	3	0.468	0.463 - 0.473
50-59	4	0.475 [†]	0.455 - 0.490
60-69	3	0.476 [†]	0.473 - 0.477
Total	16	0.468 ± 0.0105 (standard deviation)	
* Authors claim this high mean was due to one high value. No obvious cause for this high value was discovered.			
† Authors claim values for women aged 50-69 yr were significantly different from those for women aged 20-49 yr.			
AUXILIARY INFORMATION			
METHOD /APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
Venous blood taken in heparinized syringes from normal healthy men and women. Blood equilibrated with gas mixture (8% N ₂ O, 20% O ₂ and 72% He) in flow system. Samples then analysed by extracting nitrous oxide in stream of oxygen and using infrared analyser. Details in source and ref. 1.		See method.	
		ESTIMATED ERROR:	
		δT/K = ±0.1	
		REFERENCES:	
		1. Lawther, P. J.; Bates, D. V. <i>Clin. Sci.</i> <u>1953</u> , <i>12</i> , 91.	

COMPONENTS:			ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N ₂ O; [10024-97-2]			Mapleson, W. W.; Evans, D. E.;			
2. Rabbit Tissue and Blood			Flook, V.			
			<i>Brit. J. Anaesth.</i> <u>1970</u> , <i>42</i> , 1033-1041.			
VARIABLES:			PREPARED BY:			
			C. L. Young			
EXPERIMENTAL VALUES:			T = 37.5 °C			
			Ostwald coefficients			
			Brain		Heart	
Sample No.	<i>vivo</i>	<i>vitro</i>	<i>vivo</i>	<i>vitro</i>	<i>vivo</i>	<i>vitro</i>
1	0.51	0.48	0.44	0.46	0.34	-
2	0.47	0.42	0.48	0.46	0.44	0.48
3	0.47	0.44	0.34	0.44	0.39	0.35
4	0.45	0.46	0.45	0.48	0.42	0.31
5	0.47	0.47	0.37	0.44	0.41	0.43
6	0.46	0.46	0.49	0.50	0.43	0.48
			Liver		Muscle	
	<i>vivo</i>	<i>vitro</i>	<i>vivo</i>	<i>vitro</i>	<i>vivo</i>	<i>vitro</i>
1	0.45	0.52	0.39	0.48	0.42	0.40
2	0.38	0.40	0.46	0.51	0.27	0.35
3	0.36	0.40	0.35	0.39	0.31	0.22
4	0.39	0.40	0.37	0.37	0.31	0.38
5	0.41	0.38	0.43	0.45	0.43	0.44
6	0.39	0.42	0.41	0.45	0.38	0.40
AUXILIARY INFORMATION						
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:			
Samples taken from rabbits of a variety of strains. Details in source. Nitrous oxide extracted from samples using van Slyke apparatus. Loss of nitrous oxide during handling of <i>in vivo</i> samples estimated at about 3 per cent.			1. No details given.			
			2. Details of sample preparation given in source.			
			ESTIMATED ERROR:			
			Detailed analysis of error given in paper.			
			REFERENCES:			

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Human blood components	ORIGINAL MEASUREMENTS: Kozam, R. L.; Landau, S. M.; Cubina, J. M.; Lukas, D. S. <i>J. Appl. Physiol.</i> <u>1970</u> , <i>29</i> , 593-597.																																													
VARIABLES:	PREPARED BY: C. L. Young																																													
EXPERIMENTAL VALUES: <p style="text-align: center;">T/°C = 37</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Substance</th> <th rowspan="2">No. of samples</th> <th rowspan="2">No. of analyses</th> <th colspan="3">Bunsen coefficient, α</th> </tr> <tr> <th>Mean</th> <th>SD*</th> <th>SE*</th> </tr> </thead> <tbody> <tr> <td>Water</td> <td>6</td> <td>19</td> <td>0.433</td> <td>0.008</td> <td>0.002</td> </tr> <tr> <td>0.156 M NaCl</td> <td>5</td> <td>33</td> <td>0.398</td> <td>0.003</td> <td>0.001</td> </tr> <tr> <td>Plasma</td> <td>13</td> <td>62</td> <td>0.400</td> <td>0.008</td> <td>0.002</td> </tr> <tr> <td>Hyperlipidemic plasma</td> <td>2</td> <td>8</td> <td>0.436</td> <td>0.002</td> <td>0.001</td> </tr> <tr> <td>Red blood cells</td> <td>14</td> <td>75</td> <td>0.450</td> <td>0.021</td> <td>0.002</td> </tr> <tr> <td>Red cell membrane</td> <td>1</td> <td>8</td> <td>0.412</td> <td>0.002</td> <td>0.001</td> </tr> </tbody> </table>		Substance	No. of samples	No. of analyses	Bunsen coefficient, α			Mean	SD*	SE*	Water	6	19	0.433	0.008	0.002	0.156 M NaCl	5	33	0.398	0.003	0.001	Plasma	13	62	0.400	0.008	0.002	Hyperlipidemic plasma	2	8	0.436	0.002	0.001	Red blood cells	14	75	0.450	0.021	0.002	Red cell membrane	1	8	0.412	0.002	0.001
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METHOD / APPARATUS / PROCEDURE: Blood samples taken from five normal subjects. Details of sample preparation in source. Samples equilibrated by bubbling nitrous oxide through mixture and then allowing to stand. Nitrous oxide then estimated by gas chromatography.	SOURCE AND PURITY OF MATERIALS: 1. Nitrous oxide-USP Pure sample. 2. Water-distilled: details of other samples in source. ESTIMATED ERROR: $\delta T/K = \pm 0.2.$ REFERENCES:																																													

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Brain, homogenized in distilled water.	ORIGINAL MEASUREMENTS: Kety, S.S.; Harmel, M.H. Broomell, H.T.; and Rhode, C.B. <i>J. Biol. Chem.</i> <u>1948</u> , <i>173</i> , 487-496.																																								
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EXPERIMENTAL VALUES: <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Dog (7 animals)</th> <th style="text-align: center;">α</th> <th style="text-align: left;">Man (7 deceased patients)</th> <th style="text-align: center;">α</th> </tr> </thead> <tbody> <tr><td></td><td style="text-align: center;">0.434</td><td></td><td style="text-align: center;">0.428</td></tr> <tr><td></td><td style="text-align: center;">0.406</td><td></td><td style="text-align: center;">0.434</td></tr> <tr><td></td><td style="text-align: center;">0.430</td><td></td><td style="text-align: center;">0.437</td></tr> <tr><td></td><td style="text-align: center;">0.420</td><td></td><td style="text-align: center;">0.425</td></tr> <tr><td></td><td style="text-align: center;">0.458</td><td></td><td style="text-align: center;">0.438</td></tr> <tr><td></td><td style="text-align: center;">0.455</td><td></td><td style="text-align: center;">0.432</td></tr> <tr><td></td><td style="text-align: center;">0.454</td><td></td><td style="text-align: center;">0.464</td></tr> <tr><td style="text-align: right;">Mean</td><td style="text-align: center;">0.437</td><td></td><td style="text-align: center;">0.437</td></tr> <tr><td style="text-align: right;">Standard error</td><td style="text-align: center;">0.008</td><td></td><td style="text-align: center;">0.005</td></tr> </tbody> </table> Bunsen coefficient, α, for 310.15 K defined as cm ³ of N ₂ O (reduced to 273.15 K and 101.325 kPa) dissolved by 1 gram of brain when equilibrated at 310.15 K and at a nitrous oxide pressure of 101.325 kPa. Given by : $\alpha_h = \frac{\frac{w_b}{1.05} + V_w - V_w \alpha_w}{w_b}$ α _h = α for 1 cm ³ of homogenate; α for 1 cm ³ of water; w _b = weight of brain sample; V _w = cm ³ of water; 1.05 = specific gravity of brain.		Dog (7 animals)	α	Man (7 deceased patients)	α		0.434		0.428		0.406		0.434		0.430		0.437		0.420		0.425		0.458		0.438		0.455		0.432		0.454		0.464	Mean	0.437		0.437	Standard error	0.008		0.005
Dog (7 animals)	α	Man (7 deceased patients)	α																																						
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	0.458		0.438																																						
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	0.454		0.464																																						
Mean	0.437		0.437																																						
Standard error	0.008		0.005																																						
AUXILIARY INFORMATION																																									
METHOD APPARATUS/PROCEDURE: Homogenate was equilibrated with nitrous oxide in a 50 cm ³ glass syringe, capped and shaken at 310.15 K. Undissolved gas removed and the nitrous oxide content of the liquid was determined using a Van Slyke-Neill manometric apparatus.	SOURCE AND PURITY OF MATERIALS: N ₂ O: Not stated. ESTIMATED ERROR: REFERENCES:																																								

<p>COMPONENTS:</p> <p>1. Nitrous oxide; N₂O; [10024-97-2]</p> <p>2. Human lung tissue-blood free homogenate.</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Cander, L.; <i>J. Appl. Physiol.</i> <u>1959</u> <u>14</u>, 538-540.</p>																						
<p>VARIABLES:</p>	<p>PREPARED BY:</p> <p>W. Gerrard.</p>																						
<p>EXPERIMENTAL VALUES:</p> <table data-bbox="296 480 895 862"> <thead> <tr> <th>From 5 deceased patients.</th> <th>α*</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.433</td> </tr> <tr> <td>2</td> <td>0.371</td> </tr> <tr> <td></td> <td>0.390</td> </tr> <tr> <td></td> <td>0.384</td> </tr> <tr> <td>3</td> <td>0.403</td> </tr> <tr> <td></td> <td>0.413</td> </tr> <tr> <td>4</td> <td>0.414</td> </tr> <tr> <td>5</td> <td>0.429</td> </tr> <tr> <td></td> <td>0.423</td> </tr> <tr> <td>Mean</td> <td>0.407 \pm 7%</td> </tr> </tbody> </table> <p>* Bunsen coefficient, α, for 310.15 K defined as cm³ of N₂O (reduced to 273.15 K, and 101.325 kPa) dissolved by 1 cm³ of lung tissue in equilibrium with N₂O gas assumed to be at 101.325 kPa, and 310.15 K.</p>		From 5 deceased patients.	α *	1	0.433	2	0.371		0.390		0.384	3	0.403		0.413	4	0.414	5	0.429		0.423	Mean	0.407 \pm 7%
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<p>AUXILIARY INFORMATION</p>																							
<p>METHOD/APPARATUS/PROCEDURE:</p> <p>5 cm³ of homogenate deaerated and transferred to a 50 cm³ syringe containing nitrous oxide. After equilibration at 310.15 K (1), the undissolved gas removed and the nitrous oxide content of the liquid phase was determined using a Van Slyke manometric apparatus.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>1. 98.0% pure.</p> <p>2. Lung samples from deceased patients with no history of acute or chronic lung disease.</p> <p>ESTIMATED ERROR:</p> <p>$\delta T/K = \pm 0.5; \delta \alpha = \pm 2-9\%$ (estimated by compiler).</p> <p>REFERENCES:</p> <p>1. Kety, S.S.; Harmel, M.H., Broomell, H.T.; and Rhode, C.B. <i>J. Biol. Chem.</i> <u>1948</u>, <u>173</u>, 487.</p>																						

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Human Fetal and Uterine Tissues	ORIGINAL MEASUREMENTS: Assali, N. S.; Ross, M. <i>Soc. Exp. Biol. Med. Proc.</i> <u>1959</u> , 100, 497-498.																										
VARIABLES:	PREPARED BY: C. L. Young																										
EXPERIMENTAL VALUES: T = 37 °C Pressure = 1 atmosphere = 1.01325 bar <table border="1" data-bbox="238 556 933 944"> <thead> <tr> <th>Tissue</th> <th>Kuenen Coefficient,[†] S</th> </tr> </thead> <tbody> <tr><td>Spleen</td><td>0.589</td></tr> <tr><td>Skeletal muscle</td><td>0.473</td></tr> <tr><td>Skin</td><td>0.458</td></tr> <tr><td>Liver</td><td>0.377</td></tr> <tr><td>Brain</td><td>0.439</td></tr> <tr><td>Heart</td><td>0.496</td></tr> <tr><td>Lung</td><td>0.432</td></tr> <tr><td>Scalp</td><td>0.327</td></tr> <tr><td>Placenta</td><td>0.331</td></tr> <tr><td>Umbilical cord</td><td>0.333</td></tr> <tr><td>Uterine muscle</td><td>0.472</td></tr> <tr><td>Mean</td><td>0.430</td></tr> </tbody> </table> <p data-bbox="238 1023 1081 1083">† Incorrectly called Bunsen coefficient per gram of tissue in original paper.</p>		Tissue	Kuenen Coefficient, [†] S	Spleen	0.589	Skeletal muscle	0.473	Skin	0.458	Liver	0.377	Brain	0.439	Heart	0.496	Lung	0.432	Scalp	0.327	Placenta	0.331	Umbilical cord	0.333	Uterine muscle	0.472	Mean	0.430
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Mean	0.430																										
AUXILIARY INFORMATION																											
METHOD / APPARATUS / PROCEDURE: Samples homogenized and equilibrated with nitrous oxide. No details of apparatus given. Five to eight determinations made for each type of tissue.	SOURCE AND PURITY OF MATERIALS: 1. No details given. 2. Samples of fetal material taken from one to five month immature fetus (therapeutic abortion) and one 8 months premature fetus and one full term fetus who died shortly after delivery. Myometrial tissue obtained from patients undergoing cesarean section. Placental tissues collected from spontaneously delivered pregnancies. ESTIMATED ERROR: $\delta T/K = \pm 0.5$; $\delta S = \pm 1\%$. REFERENCES:																										

COMPONENTS:		ORIGINAL MEASUREMENTS:				
1. Nitrous oxide; N ₂ O; [10024-97-2]		Kozam, R. L.; Landau, S. M.; Cubina, J. M.; Lukas, D. S. <i>J. Appl. Physiol.</i> <u>1970</u> , <i>29</i> , 593-597.				
2. Human myocardium						
VARIABLES:		PREPARED BY:				
		C. L. Young				
EXPERIMENTAL VALUES:		T/°C = 37				
Nature of sample	No. of samples	No. of analyses	Mean density 10 ⁶ g m ⁻³	Bunsen coefficient, α		
				Mean	SD*	SE*
<u>Normal</u>						
Left ventricle	5	30	1.055	0.395	0.016	0.003
Right ventricle	3	22	1.056	0.462	0.038	0.008
<u>Hypertrophy</u>						
Left ventricle	3	20	1.046	0.396	0.029	0.007
Right ventricle	3	19	1.048	0.448	0.023	0.005
<u>ASHD and MI[†]</u>						
Left ventricle	2	13		0.382	0.013	0.004
Right ventricle	1	8		0.449	0.010	0.004
<u>Cardiomyopathy</u>						
Left ventricle	1	9	1.053	0.409	0.012	0.004
Right ventricle	1	7	1.039	0.468	0.102	0.005
* SD - standard deviation; SE - standard error						
† Arteriosclerotic heart disease and myocardial infarction						
AUXILIARY INFORMATION						
METHOD / APPARATUS / PROCEDURE:			SOURCE AND PURITY OF MATERIALS:			
All large vascular structures and segments of connective tissues removed from left and right ventricular myocardium. Density determined by displacement of water. Muscle minced and homogenized. Details of sample preparation in source. Samples equilibrated by bubbling nitrous oxide through mixture. Allowed to stand and then nitrous oxide estimated by gas chromatography.			1. Nitrous oxide - USP Pure sample.			
			2. Obtained at autopsy from subjects 5-12 hr after death (some samples stored at -15 °C).			
			ESTIMATED ERROR:			
			δT/K = ±0.2.			
			REFERENCES:			

COMPONENTS:				ORIGINAL MEASUREMENTS:		
1. Nitrous oxide; N ₂ O; [10024-97-2]				Kozam, R. L.; Landau, S. M.;		
2. Dog myocardium				Cubina, J. M.; Lukas, D. S.		
VARIABLES:				PREPARED BY:		
				C. L. Young		
EXPERIMENTAL VALUES:						
T/°C = 37						
Nature of sample	No. of samples	No. of analyses	Mean density 10 ⁶ g m ⁻³	Bunsen coefficient, α		
				Mean	SD*	SE*
Left ventricle	7	40	1.037	0.386	0.022	0.008
Right ventricle	1	4	1.037 [†]	0.374		
* SD - standard deviation; SE - standard error						
† estimated						
AUXILIARY INFORMATION						
METHOD/APPARATUS/PROCEDURE:				SOURCE AND PURITY OF MATERIALS:		
All large vascular structures and segments of connective tissues removed from left and right ventricular myocardium. Density determined by displacement of water. Muscle minced and homogenized. Details of sample preparation in source. Samples equilibrated by bubbling nitrous oxide through mixture. Allowed to stand and then nitrous oxide estimated by gas chromatography.				1. Nitrous oxide-USP Pure sample.		
				2. Myocardium samples obtained from freshly killed dogs.		
				ESTIMATED ERROR:		
				δT/K = ±0.2.		
				REFERENCES:		

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2]		Campos Carles, A.; Kawashiro, T.; Piiper, J.	
2. Rat abdominal muscle		<i>Pflugers Arch.</i> <u>1975</u> , <i>359</i> , 209-218.	
VARIABLES:		PREPARED BY:	
T/K: 310.15		A.L. Cramer H.L. Clever	
EXPERIMENTAL VALUES:			
T/K	Solubility coefficient $\mu\text{mol dm}^{-3} \text{ torr}^{-1}$	Corrected ² Solubility coefficient $\mu\text{mol dm}^{-3} \text{ torr}^{-1}$	Bunsen Coefficient, α
310.15	24.6 ± 0.7	27.7	0.471
<p>¹ Mean value ± standard error of 12 measurements.</p> <p>² Corrected for unextracted gas in the sample, and for gas lost during transfer of the sample.</p> <p>Another report from this laboratory gives Krogh's diffusion constant, $K = (20.0 \pm 0.4) \times 10^{-9} \text{ m mol m}^{-1} \text{ cm}^{-1} \text{ torr}^{-1}$, and the diffusion coefficient, $D = 12.1 \times 10^{-6} \text{ cm}^2 \text{ s}^{-1}$, for nitrous oxide in rat abdominal muscle at 310.15 K (1).</p> <p>The sample is a non-homogenised solid, not a liquid.</p>			
AUXILIARY INFORMATION			
METHOD APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
<p>The nitrous oxide gas was pre-saturated with water vapor, then passed through an equilibration chamber containing the muscle sample resting on a screen to expose all sides. The gas was passed through the equilibration chamber for one hour at a rate of $8 \text{ cm}^3 \text{ m}^{-1}$.</p> <p>The muscle was transferred to an extraction chamber filled with air for the same length of time as equilibration. The gas in the extraction chamber was then forced into a gas chromatograph by mercury entering the chamber.</p>		<p>1. Nitrous oxide. Source not given. Stated to be 99.9 per cent pure.</p> <p>2. Rat abdominal muscle. Flat abdominal wall muscle layer of about 1.6 g, 1.4 mm thick, and surface area of 10 cm^2 on one side. Sample taken from 250-430g rat.</p>	
		ESTIMATED ERROR:	
		REFERENCES:	
		<p>1. Kawashiro, T.; Campos Carles, A.; Perry, S.F.; Piiper, J.</p> <p><i>Pflugers Arch.</i> <u>1975</u>, <i>359</i>, 219.</p>	

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water, H ₂ O; [7732-18-5] 3. Serum albumen (colloidal)	ORIGINAL MEASUREMENTS: Findlay, A.; Creighton, H.J.M. <i>J. Chem. Soc.</i> <u>1910</u> , 97, 536 - 561																																																				
VARIABLES: Pressure, concentration	PREPARED BY: W. Gerrard																																																				
EXPERIMENTAL VALUES: Solubility, S , given as $\frac{\text{concentration of the gas in the liquid phase}}{\text{concentration of the gas in the gaseous phase}}$ $T/K = 298.16$. <table border="1" data-bbox="69 612 1188 1029"> <thead> <tr> <th>Conc. of colloid / 10^{-2}g cm^{-3}</th> <th>Density of solution</th> <th>Pressure of gas /kPa</th> <th>Solubility, S</th> </tr> </thead> <tbody> <tr><td>0.32</td><td>0.998</td><td>99.457</td><td>0.583</td></tr> <tr><td>0.32</td><td>0.998</td><td>116.388</td><td>0.581</td></tr> <tr><td>0.32</td><td>0.998</td><td>130.387</td><td>0.579</td></tr> <tr><td>0.32</td><td>0.998</td><td>150.118</td><td>0.586</td></tr> <tr><td>0.32</td><td>0.998</td><td>167.850</td><td>0.588</td></tr> <tr><td>0.32</td><td>0.998</td><td>185.981</td><td>0.591</td></tr> <tr><td>1.40</td><td>1.001</td><td>99.057</td><td>0.537</td></tr> <tr><td>1.40</td><td>1.001</td><td>112.255</td><td>0.538</td></tr> <tr><td>1.40</td><td>1.001</td><td>121.721</td><td>0.545</td></tr> <tr><td>1.40</td><td>1.001</td><td>139.719</td><td>0.550</td></tr> <tr><td>1.40</td><td>1.001</td><td>163.717</td><td>0.558</td></tr> <tr><td>1.40</td><td>1.001</td><td>185.048</td><td>0.562</td></tr> </tbody> </table>		Conc. of colloid / 10^{-2}g cm^{-3}	Density of solution	Pressure of gas /kPa	Solubility, S	0.32	0.998	99.457	0.583	0.32	0.998	116.388	0.581	0.32	0.998	130.387	0.579	0.32	0.998	150.118	0.586	0.32	0.998	167.850	0.588	0.32	0.998	185.981	0.591	1.40	1.001	99.057	0.537	1.40	1.001	112.255	0.538	1.40	1.001	121.721	0.545	1.40	1.001	139.719	0.550	1.40	1.001	163.717	0.558	1.40	1.001	185.048	0.562
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METHOD / APPARATUS / PROCEDURE: Gas buret and absorption pipet similar to that of Geffcken (1), except that the manometer tube was longer to give the higher pressures.	SOURCE AND PURITY OF MATERIALS: 1. Self prepared and purified; not attested. 2. Neutral serum-albumen was obtained from fresh ox-blood by a method described.																																																				
ESTIMATED ERROR: $\delta S/S$ Stated to be $\pm 0.25\%$.																																																					
REFERENCES: 1. Geffcken, G. <u>Z. Phys. Chem.</u> <u>1904</u> , 49, 257.																																																					

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. Serum albumen (colloidal) solution.	ORIGINAL MEASUREMENTS: Shkol'nikova, R.I. <i>Uchenye Zapiski Leningrad. Gosudart</i> , <u>1959</u> , No. 18, Part 272, 64-86.																																																																																
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METHOD / APPARATUS / PROCEDURE: <p>The volume of N₂O absorbed was measured by the use of a gas buret and absorption pipet.</p> <p>Reproducibility stated to be within $\pm 0.2\%$.</p> <p>Heat of solution, U, appeared to be based on :</p> $\frac{d \log L}{dT} = - \frac{U}{RT^2}$	SOURCE AND PURITY OF MATERIALS: (1) Nitrous oxide stated to be of a purity of 99.6 - 99.7%; 0.4 to 0.3% N ₂ . (2) Water may be taken as of satisfactory purity. (3) Obtained by "salting out from the serum of horse blood by ammonium sulfate." Dialyzed																																																																																
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COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. Serum albumen (colloidal) solution.		Shkol'nikova, R.I. <i>Uchenye Zapiski Leningrad Gosudart</i> , 1959, No. 18, Part 272, 64-86.	
EXPERIMENTAL VALUES:			
T/K	Concn. of colloid %	α	L
293.15	1.99	0.4120	0.4421
298.15		0.4021	0.4390
303.15		0.3920	0.4347
308.15		0.3091	0.3487
313.15		0.2190	0.2510
<p>α = the bunsen absorbtion coefficient.</p> <p>L = $\alpha \times T/K / 273$, but defined as the ratio of the concentration of the gas in the liquid phase to that in the gas phase. Partial pressure of gas taken to be 760 mmHg. 760mmHg = 1 atm = 101.325 kPa.</p>			
<u>Heat of solution / cal mol⁻¹</u>			
Concn. of colloid	α	L	
0.575%	4190	3580	
1.15 %	5430	4830	
1.68 %	7460	6860	
1.99 %	5770	5160	

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Water; H ₂ O; [7732-18-5] 3. Egg-albumen (colloid)	ORIGINAL MEASUREMENTS: Findlay, A.; Howell, O. R. <i>J. Chem. Soc.</i> <u>1914</u> , 105, 291-8.																																																								
VARIABLES: Pressure, concentration	PREPARED BY: W. Gerrard																																																								
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<p>COMPONENTS:</p> <p>1. Nitrous oxide; N₂O; [10024-97-2]</p> <p>2. Olive oil.</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Meyer, K.H.; Gottlieb-Billroth, H.;</p> <p><i>Z. Phys. Chem.</i> <u>1921</u>, 112,55.</p>										
<p>VARIABLES:</p>	<p>PREPARED BY:</p> <p>W. Gerrard</p>										
<p>EXPERIMENTAL VALUES:</p> <p style="text-align: center;">T/K Ostwald coefficient, <i>L</i>, taken as</p> <p style="text-align: center;"><u>Concn. of gas in the liquid phase</u> Concn. of gas in the gaseous phase</p> <p style="text-align: center;">(Final pressures, accurately measured, were about 0.79 x 101.325 kPa.)</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding-right: 20px;">310.16</td> <td style="padding-right: 20px;">1.44</td> <td></td> </tr> <tr> <td></td> <td>1.47</td> <td rowspan="3" style="padding-left: 20px;">Mean 1.40 ±0.06</td> </tr> <tr> <td></td> <td>1.34</td> </tr> <tr> <td></td> <td>1.34</td> </tr> </table>		310.16	1.44			1.47	Mean 1.40 ±0.06		1.34		1.34
310.16	1.44										
	1.47	Mean 1.40 ±0.06									
	1.34										
	1.34										
<p>AUXILIARY INFORMATION</p>											
<p>METHOD/APPARATUS/PROCEDURE:</p> <p>Cylindrical absorption pipet attached to buret and levelling tube assembly. Measurement of concentration of gas in the liquid and in the gas phase by measurement of volume and pressure, and by the assumption of the ideal gas laws.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p style="text-align: center;">Not specified.</p> <hr/> <p>ESTIMATED ERROR:</p> <hr/> <p>REFERENCES:</p>										

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Petroleum.	ORIGINAL MEASUREMENTS: Gniewosz, S.; Walfisz, A. <i>Z. Physik. Chem.</i> <u>1887</u> . 1,70-72.									
VARIABLES: Temperature	PREPARED BY: M.E. Derrick.									
EXPERIMENTAL VALUES: <p>No pressures given; however work carried out at atmospheric pressure. Gas is assumed to be ideal and Henry's Law, to be obeyed.</p> <table border="1" data-bbox="296 623 1059 813"> <thead> <tr> <th>T/K</th> <th>Ostwald coefficient <i>L</i></th> <th>Bunsen coefficient,* α</th> </tr> </thead> <tbody> <tr> <td>293.15</td> <td>2.26</td> <td>2.11</td> </tr> <tr> <td>283.15</td> <td>2.58</td> <td>2.49</td> </tr> </tbody> </table> <p>* original data.</p>		T/K	Ostwald coefficient <i>L</i>	Bunsen coefficient,* α	293.15	2.26	2.11	283.15	2.58	2.49
T/K	Ostwald coefficient <i>L</i>	Bunsen coefficient,* α								
293.15	2.26	2.11								
283.15	2.58	2.49								
AUXILIARY INFORMATION										
METHOD/APPARATUS/PROCEDURE: Composed of an absorption flask connected to a gas buret using a flexible lead capillary. System is thermostated in a large water bath. Volume of gas absorbed in a volume of degassed liquid measured using a gas buret.	SOURCE AND PURITY OF MATERIALS: Gas: no information given. Petroleum: Russian petroleum used. Cleaned by boiling in a large copper flask.									
ESTIMATED ERROR:										
REFERENCES:										

COMPONENTS:			ORIGINAL MEASUREMENTS:			
1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Nitrogen dioxide; NO ₂ ; [10102-44-0]			Rocker, A.W. <i>Anal. Chem.</i> <u>1952</u> , 24, 1322-1324.			
VARIABLES:			PREPARED BY:			
Temperature, pressure			W. Gerrard			
EXPERIMENTAL VALUES:						
T/K	Partial pressure P _{N₂O} /kPa	Solubility weight N ₂ O, %	Mole fraction* x ₁			
			based on NO ₂ observed	101.325 kPa	based on N ₂ O ₄ observed	101.325kPa
263.0	82.66	1.28	0.0134	0.0164	0.0268	0.0328
263.1	83.99	1.33	0.0139	0.0167	0.0278	0.0334
263.1	83.99	1.52	0.0159	0.0191	0.0318	0.0382
268.	75.99	1.21	0.0126	0.0167	0.0252	0.0334
268	75.99	1.27	0.0133	0.0177	0.0266	0.0354
273.2	67.99	1.11	0.0116	0.0172	0.0232	0.0344
273.0	67.99	1.04	0.0109	0.0162	0.0218	0.0324
278.2	58.66	0.81	0.00853	0.0146	0.0169	0.0292
278.4	57.33	0.82	0.00857	0.0152	0.0171	0.0304
283.0	49.33	0.65	0.00679	0.0140	0.0136	0.0280
283.1	46.66	0.59	0.00617	0.0136	0.0123	0.0272
283.1	45.33	0.63	0.00658	0.0146	0.0132	0.0292
* Calculated by compiler						
The mole fractions, x ₁ , for p _{N₂O} = 101.325 kPa are based on the assumption that x ₁ changes linearly with p _{N₂O} up to 101.325 kPa.						
AUXILIARY INFORMATION						
METHOD /APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:			
Used a modified Ostwald apparatus. The gas buret was a Fisher precision model 100 cm ³ , graduated in 0.1 cm ³ . The absorption tube was graduated in 0.1 cm ³ to 50 cm ³ . Connections were by plastic tube. Glass joints were lubricated by fluorogrease. The gas buret was fitted with a levelling tube containing mercury. A slight positive difference of gas pressure was maintained on the buret side to hinder the flowback of nitrogen dioxide.			1. The nitrous oxide was of commercial grade, 99.2% purity, or better.			
			2. The nitrogen dioxide was commercial grade, 97.8-99% pure.			
			ESTIMATED ERROR:			
			REFERENCES:			

COMPONENTS: 1. Nitrous oxide; N ₂ O; [10024-97-2] 2. Carbon disulfide; CS ₂ ; [75-15-0]	ORIGINAL MEASUREMENTS: Yen, L. C.; McKetta, J. J., Jr. <i>J. Chem. Eng. Data</i> <u>1962</u> , 7, 288-289.										
VARIABLES: Temperature	PREPARED BY: W. Gerrard/ C. L. Young										
EXPERIMENTAL VALUES:											
T/K 263.16 273.16 283.16 293.16	Bunsen coefficient 3.409 2.801 2.349 2.124	Mole fraction of nitrous oxide, $x_{\text{N}_2\text{O}}$ 0.008842 0.007359 0.006250 0.005721									
<p>The partial pressure of the gas was 101.325 kPa.</p> <p style="text-align: center;"><u>Smoothed Data</u></p> $\Delta G^\circ = -RT \ln x_{\text{N}_2\text{O}} = (-9394 + 75.146 \times T/K) \text{ J mol}^{-1}$ <p style="text-align: center;">(Std. deviation = 53 J mol⁻¹)</p> <table data-bbox="228 950 905 1136"> <thead> <tr> <th>T/K</th> <th>Mole fraction of nitrous oxide, $x_{\text{N}_2\text{O}}$</th> </tr> </thead> <tbody> <tr> <td>263.16</td> <td>0.008697</td> </tr> <tr> <td>273.16</td> <td>0.007432</td> </tr> <tr> <td>283.16</td> <td>0.006422</td> </tr> <tr> <td>293.16</td> <td>0.005605</td> </tr> </tbody> </table>		T/K	Mole fraction of nitrous oxide, $x_{\text{N}_2\text{O}}$	263.16	0.008697	273.16	0.007432	283.16	0.006422	293.16	0.005605
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263.16	0.008697										
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283.16	0.006422										
293.16	0.005605										
AUXILIARY INFORMATION											
METHOD/APPARATUS/PROCEDURE: Measurement of volume of gas absorbed by a known volume of degassed liquid at a partial pressure of 101.325 kPa. The vapor pressure of the liquid was allowed for. Gas buret and absorption pipet. Modified form of apparatus and technique used by Markham and Kobe (1).	SOURCE AND PURITY OF MATERIALS: <ol style="list-style-type: none"> Gas of 98 per cent purity was purified at 193.16 K. Mass spectrograph then showed purity of 99.5 per cent. Allied Chemical and Dye Corp. ACS grade, freshly fractionated. ESTIMATED ERROR: $\delta T/K = \pm 0.1$; $\delta x_{\text{N}_2\text{O}} = \pm 2\%$ (estimated by compiler).										
REFERENCES: (1) Markham, A. E.; Kobe, K. A. <i>J. Am. Chem. Soc.</i> <u>1941</u> , 63, 449.											

COMPONENTS:

1. Nitric oxide; NO; [10102-43-9]
2. Water; H₂O; [7732-18-5]

EVALUATOR

Rubin Battino,
Department of Chemistry,
Wright State University,
Dayton, Ohio, 45431,
U.S.A.

CRITICAL EVALUATION:

Only the data determined by Winkler (1) was considered to be of sufficient accuracy to use in the smoothing equation. We used all nine of his data points. The standard deviation of the fit was 0.76%. The fitting equation is :

$$\ln x_1 = 62.8086 + 82.3420/(T/100K) + 22.8155 \ln (T/100K) \quad (1)$$

where x_1 is the mole fraction solubility at 101.325 kPa (1 atm) partial pressure of gas. Table 1 gives smoothed values of the mole fraction (at 101.325 kPa) and the Ostwald coefficient at 5K intervals. Table 1 also gives values of the thermodynamic functions $\Delta\bar{G}_1^\circ$, $\Delta\bar{H}_1^\circ$, $\Delta\bar{S}_1^\circ$ and $\Delta\bar{C}_{p,1}^\circ$ for the transfer of the gas from the vapor phase at 101.325 kPa partial gas pressure to the (hypothetical) solution phase of unit mole fraction.

The earlier paper by Winkler (2) contains an identical set of data. Although Usher's datum point was quite close to the smoothed values it was not used in the fitting equation so that the data from one consistent set could be used alone (3). Armor's single value was considerably further off and this may be due to the chemical method used for analysis (4).

REFERENCES:

1. Winkler, L.W.; *Ber.* 1901, *34*, 1408-22.
2. Winkler, L.W., *Z. Physik. Chem.* 1892, *9*, 171-5.
3. Usher, F.L., *Z. Physik. Chem.* 1908, *62*, 622-5.
4. Armor, J.N., *J. Chem. Eng. Data.* 1974, *19*, 82-4.

(Table 1 on next page)

Table 1. Smoothed values of nitric oxide solubility in water and thermodynamic functions^a using equation (1) at 101.325 kPa (1 atm) partial pressures of gas.

T/K	$x_1 \times 10^5$ ^b	L x 10 ² ^c	ΔG_1^d	ΔH_1^d	ΔS_1^e
273.15	5.905	7.346	22.11	-16.65	-141.9
278.15	5.196	6.583	22.81	-15.70	-138.6
283.15	4.625	5.964	23.50	-14.75	-135.1
288.15	4.163	5.460	24.17	-13.80	-131.8
293.15	3.786	5.047	24.82	-12.85	-128.5
298.15	3.477	4.708	25.45	-11.90	-125.3
303.15	3.222	4.430	26.07	-10.96	-122.1
308.15	3.012	4.203	26.67	-10.01	-119.0
313.15	2.838	4.017	27.26	-9.06	-116.0
318.15	2.695	3.867	27.83	-8.11	-113.0
323.15	2.577	3.748	28.39	-7.16	-110.0
328.15	2.481	3.656	28.93	-6.21	-107.1
333.15	2.404	3.587	29.46	-5.26	-104.3
338.15	2.343	3.539	29.97	-4.32	-101.4
343.15	2.297	3.511	30.47	-3.37	-98.6
348.15	2.264	3.500	30.96	-2.42	-95.9
353.15	2.242	3.506	31.43	-1.47	-93.2
358.15	2.232	3.527	31.89	-0.52	-90.5

- a. $\Delta \bar{C}_{p1}^\circ$ was independent of temperature and had the value of 190 J K⁻¹ mol⁻¹.
- b. Mole fraction solubility at 101.325 kPa partial pressure of gas.
- c. Ostwald coefficient.
- d. Units are J mol⁻¹. cal_{th} = 4.184 J.
- e. Units are J K⁻¹ mol⁻¹.

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5]	ORIGINAL MEASUREMENTS: Winkler, L.W., <i>Ber.</i> , <u>1901</u> , 34, 1408-22.																																								
VARIABLES: T/K: 273-353	PREPARED BY: R. Battino																																								
EXPERIMENTAL VALUES: <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>T/K^a</th> <th>$x_1 \times 10^5$^b</th> <th>$L \times 10^2$^c</th> <th>$\alpha \times 10^2$^d</th> </tr> </thead> <tbody> <tr><td>273.22</td><td>5.922</td><td>7.369</td><td>7.367</td></tr> <tr><td>283.17</td><td>4.587</td><td>5.915</td><td>5.706</td></tr> <tr><td>293.17</td><td>3.787</td><td>5.049</td><td>4.704</td></tr> <tr><td>303.16</td><td>3.231</td><td>4.443</td><td>4.003</td></tr> <tr><td>313.11</td><td>2.842</td><td>4.022</td><td>3.509</td></tr> <tr><td>323.19</td><td>2.562</td><td>3.727</td><td>3.151</td></tr> <tr><td>333.09</td><td>2.414</td><td>3.601</td><td>2.954</td></tr> <tr><td>343.20</td><td>2.311</td><td>3.532</td><td>2.809</td></tr> <tr><td>353.00</td><td>2.231</td><td>3.487</td><td>2.698</td></tr> </tbody> </table> <p>a. Temperature reported to 0.01°C.</p> <p>b. Mole fraction solubility at 101.325 Pa (1 atm) partial pressure of gas. Calculated by compiler.</p> <p>c. Ostwald coefficient calculated by compiler.</p> <p>d. Bunsen coefficient.</p>		T/K ^a	$x_1 \times 10^5$ ^b	$L \times 10^2$ ^c	$\alpha \times 10^2$ ^d	273.22	5.922	7.369	7.367	283.17	4.587	5.915	5.706	293.17	3.787	5.049	4.704	303.16	3.231	4.443	4.003	313.11	2.842	4.022	3.509	323.19	2.562	3.727	3.151	333.09	2.414	3.601	2.954	343.20	2.311	3.532	2.809	353.00	2.231	3.487	2.698
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METHOD/APPARATUS/PROCEDURE: Using his "absorptionmeter" method.	SOURCE AND PURITY OF MATERIALS: 1. Nitric oxide - prepared and purified chemically by author.																																								
ESTIMATED ERROR: $\delta\alpha/\alpha = 0.01$ (compiler's estimate)																																									
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<p>COMPONENTS:</p> <p>1. Nitric oxide; NO; [10102-43-9]</p> <p>2. Water; H₂O; [7732-18-5]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Usher, F.L.</p> <p><i>Z. Physik. Chem.</i>, <u>1908</u>, 62, 622-5.</p>																																								
<p>VARIABLES:</p>	<p>PREPARED BY:</p> <p>R. Battino</p>																																								
<p>EXPERIMENTAL VALUES:</p> <table border="1" data-bbox="239 518 1143 757"> <thead> <tr> <th>T/K^a</th> <th>$\alpha \times 10^2$^b</th> <th>T/K</th> <th>$x_1 \times 10^5$^c</th> <th>L x 10²^d</th> </tr> </thead> <tbody> <tr> <td>293.15</td> <td>4.51</td> <td>293.15</td> <td>3.74</td> <td>4.98</td> </tr> <tr> <td></td> <td>4.49</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>4.48</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>4.68</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>4.71</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>4.73</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>4.87</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Avg. = 4.64 ± 0.15</p> <p>a. Temperature reported to 1°C.</p> <p>b. Bunsen coefficient.</p> <p>c. Mole fraction solubility at 101.325 Pa (1 atm) partial) pressure of gas calculated by compiler.</p> <p>d. Ostwald coefficient calculated by compiler.</p>		T/K ^a	$\alpha \times 10^2$ ^b	T/K	$x_1 \times 10^5$ ^c	L x 10 ² ^d	293.15	4.51	293.15	3.74	4.98		4.49					4.48					4.68					4.71					4.73					4.87			
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<p>AUXILIARY INFORMATION</p>																																									
<p>METHOD/APPARATUS/PROCEDURE:</p> <p>Used the "Ostwald" apparatus.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>1. Nitric oxide - chemically prepared and purified.</p> <p>2. Water - no comment by author.</p> <p>ESTIMATED ERROR:</p> <p>$\delta\alpha/\alpha = 0.03$ (compiler's estimate)</p> <p>REFERENCES:</p>																																								

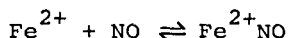
<p>COMPONENTS:</p> <p>1. Nitric oxide; NO; [10102-43-9]</p> <p>2. Water; H₂O; [7732-18-5]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Armor, J.N.</p> <p><i>J. Chem. Eng. Data</i>, <u>1974</u>, <i>19</i>, 82-4.</p>								
<p>VARIABLES:</p>	<p>PREPARED BY:</p> <p>R. Battino</p>								
<p>EXPERIMENTAL VALUES:</p> <table data-bbox="296 566 1006 665" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">T/K^a</th> <th style="text-align: center;">$x_1 \times 10^5^b$</th> <th style="text-align: center;">$L \times 10^2^c$</th> <th style="text-align: center;">$M \times 10^3^d$</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">298.15</td> <td style="text-align: center;">3.523</td> <td style="text-align: center;">4.770</td> <td style="text-align: center;">1.95</td> </tr> </tbody> </table> <p>a. Temperature reported to 0.1 K.</p> <p>b. Mole fraction solubility at 101.325 Pa (1 atm) partial pressure of gas. Calculated by compiler.</p> <p>c. Ostwald coefficient. Calculated by compiler.</p> <p>d. M is the solubility in molarity or moles per litre of solution.</p> <p>e. The author also reports solubilities in buffered solutions at various pHs, and salt solutions, all at 25°C.</p>		T/K^a	$x_1 \times 10^5^b$	$L \times 10^2^c$	$M \times 10^3^d$	298.15	3.523	4.770	1.95
T/K^a	$x_1 \times 10^5^b$	$L \times 10^2^c$	$M \times 10^3^d$						
298.15	3.523	4.770	1.95						
<p>AUXILIARY INFORMATION</p>									
<p>METHOD/APPARATUS/PROCEDURE:</p> <p>Pure water was saturated for at least 30 min in a reaction vessel. A 5 cm³ aliquot was removed and injected into 80 cm³ of oxygen saturated water. This solution was analysed spectrophotometrically for NO₂⁻.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>1. Nitric oxide - from Matheson Gas Products. "Vigorously" scrubbed to remove NO₂.</p> <p>2. Water - distilled water redistilled from alkaline permanganate.</p> <p>ESTIMATED ERROR:</p> <p>$\delta M/M = 0.03$ (author's estimate) $\delta T = 0.1$ K (author's estimate)</p> <p>REFERENCES:</p>								

<p>COMPONENTS:</p> <ol style="list-style-type: none"> Nitric oxide; [10102-43-9] Solutions of metallic salts 	<p>EVALUATOR:</p> <p>W. Gerrard The Polytechnic of North London Holloway, London, N7 8DB UK March 1980</p>
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CRITICAL EVALUATION:

Ferrous salts:

Caution should be exercised in looking at all the published data from the aspect of the solubility of nitric oxide in aqueous and nonaqueous solutions of ferrous salts; because the main, if not the only purpose, of the measurements has been to show that the equilibrium



occurs up to a maximum ratio of one NO to one Fe^{2+} . Thus Manchot *et al.*'s [1,2] technique was to measure the volume of nitric oxide absorbed by the iron solution in excess of that volume, not reported, required to saturate the liquid before the addition of the ferrous salt. The maximum volume of nitric oxide absorbed for one mole of ferrous salt was taken to be approximately 22.4 dm^3 , achieved at a sufficiently low T/K and high pressure. The evaluator deems it inadvisable to attempt a detailed evaluation, especially as there is a wide variation in concentration of the ferrous iron in the different sets of data. This means that the volume of nitric oxide due to the presence of liquid, water or organic liquid, which is holding the ferrous salt is ignored. When looking at a set of data, readers should ask "what volume of nitric oxide would the stated volume of solution of ferrous salt absorb if the iron salt were not present?"

Gay's [3] measurements appear to have been carefully conducted on a comprehensive scale. Thomas's work [4,5,6] is deemed to be less satisfactory. The work of Manchot *et al.* appears to be of satisfactory accuracy for the purpose of the measurements [i.e. to fix the constitution of the 1:1 complex of Fe^{2+}NO]. It must be kept in mind, however, that the reported volume of nitric oxide appears to be that in excess of the volume required to saturate the iron-free liquid. Although the data of Kohnschutter and Kutscheroff [7] should be compared with those of Manchot *et al.*, the presentation of these is deemed to be unsatisfactory for the present purpose. Ganz and Mamon [8] were concerned with the absorption of nitric oxide from gaseous mixtures containing that gas. From the aspect of the solubility of nitric oxide their presentation of data is also deemed unsatisfactory. A similarly conclusion was reached by Battino and Clever [9]. Data by Pozin *et al.* [10] on aqueous solutions of ferrous salts should be read alongside those of Manchot *et al.* The Pozin *et al.* data were for several concentrations of ferrous salt and for several temperatures. However a table was given showing the relative absorbing powers of the aqueous solutions of the following salts at 293 K: ferrous sulfate, ferrous chloride, sodium sulfite plus sodium hydroxide, cuprous chloride plus ammonia, nickel sulfate, manganese sulfate, cobalt sulfate, copper sulfate, cupric chloride, and phosphoric acid. The main concern of Pozin *et al.* appears to have been the absorption of nitric oxide in technical operations;

COMPONENTS:

1. Nitric oxide; [10102-43-9]
2. Solutions of metallic salts

EVALUATOR:

W. Gerrard

CRITICAL EVALUATION: Continued

and reference only is now given to the two papers which followed [11,12]. It may, however, be stated that those authors concluded that aqueous solutions of cuprous ammonium chloride, sodium sulfite, and the ferrous salts named in the foregoing were the most efficient absorbing media.

Ferric salts

The data of Manchot [13] on ferric sulfate in aqueous solutions containing each of several concentrations of sulfuric acid should be accepted with caution as gas-liquid solubilities. Thus 1 dm³ of solution containing 0.01 gram-ion of Fe³⁺, also contained 18.3 moles of H₂SO₄, and absorbed 44.7 dm³ of nitric oxide "per gram-atom of iron". This means that 100 dm³ of solution containing 1 gram-atom of iron and 1832 moles of H₂SO₄ absorbs 44.7 dm³ [about 2 moles] of nitric oxide. A similar remark applies to the data of Griffith, Lewis, and Wilkinson [14] on an ethanolic solution of ferric chloride. For a molarity of 0.017 of ferric chloride, 21.3 dm³ of nitric oxide were absorbed "per mole" presumably of ferric chloride. That is, 58.8 dm³ of solution absorbs 21.3 dm³ of nitric oxide; whereas 58.8 dm³ of ethanol itself would absorb about 16.8 dm³ of the gas.

Cupric salts

The data on cupric salts in ethanol furnished by Manchot [15] and by Griffith *et al.* [14] should be looked at from the aspect of the volume of solution and not from the aspect of the volume of nitric oxide per mole of copper salt. This adjustment of attitude is required also in the scrutiny of the data on the solution of cupric salts in several different organic liquids as given by Kohlschutter and Kutscheroff [16].

Salts of nickel, cobalt and manganese

Hüfner [17] declared that aqueous solutions of these salts absorb "notable quantities" of nitric oxide; but Usher [18] disagreed with Hüfner, and declared that these salts diminished the solubility in water. The evaluator is dubious about the form of presentation of the Hüfner results; and the short paper by Usher is of no consequence. It must be left with readers to draw their own conclusions from the data sheets.

Sodium salts

The Ostwald coefficients based on the data by Kohlschutter and Kutscheroff [7] are less than that for water itself under the same conditions, and are probably approximately of the acceptable magnitude.

COMPONENTS:

1. Nitric oxide; [10102-43-9]
2. Solutions of metallic salts

EVALUATOR:

W. Gerrard

CRITICAL EVALUATION: Continued

REFERENCES:

1. Manchot, W.; Zechentmayer, K. *Annalen*, 1906, 350, 368
2. Manchot, W.; Huttner, F. *Annalen*, 1910, 372, 153
3. Gay, J. *Ann. Chim. Phys.* 1885, [6], 5, 145
4. Thomas, V. *Compt. rend.* 1896, 123, 943
5. Thomas, V. *Compt. rend.* 1897, 124, 366
6. Thomas, V. *Bull. Soc. Chim. (France)* 1898, [3], 19, 343, 419
7. Kohlschutter, V.; Kutscheroff, M. *Ber.* 1907, 40, 873
8. Ganz, S.N.; Mamon, L.I. *J. Applied Chem. [USSR]*, 1953, 26, 927
9. Battino, R.; Clever, H.L. *Chem. Rev.* 1966, 66, 395
10. Pozin, M.E.; Zubov, V.V.; Tereshchenko, L. Ya.; Tarat, E. Ya.; Panomarev, Yu. L. *Izv. Vysshikh. Uchebn. Zavedenii, Khim. i Khim. Tekhnol.* 1963, 6 [4], 608
11. Pozin, M.E.; Tarat, E.Ya.; Zubov, V.V.; Tereshchenko, L.Ya. *Izv. Vysshikh. Uchebn. Zavedenii, Khim. i Khim.* 1963 6 [6], 974
12. Pozin, M.E.; Tarat, E.Ya.; Tereshchenko, L.Ya.; Zubov, V.V.; Treushchenko, N.N. *Izv. Vyashikh Uchebn. Zavedenii, Khim. i Khim. Tekhnol.* 1965, 8 [4], 628
13. Manchot, W. *Annalen*, 1910, 372, 179
14. Griffith, W.P.; Lewis, J.; Wilkinson, G. *J. Chem. Soc.* 1958, 3993
15. Manchot, W. *Ber.*, 1914. 47, 1601
16. Kohlschutter, V.; Kutcheroff, M. *Ber.* 1904, 37, 3044
17. Hüfner, G. *Z. Phys. Chem.* 1907, 59, 416
18. Usher, F.L. *Z. Phys. Chem.* 1908, 62, 622

COMPONENTS:		ORIGINAL MEASUREMENTS:			
1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Iron chloride, (ferrous chloride); FeCl ₂ ; [7758-94-3]		Gay, J., <i>Ann. Chim. Phys.</i> <u>1885</u> , (6), 5, 145.			
VARIABLES:		PREPARED BY:			
Temperature, pressure and concentration.		W. Gerrard.			
EXPERIMENTAL VALUES:					
T/K	p _{NO} /kPa	V _{NO} /cm ³	Bunsen coefficient α	Conc* /gl ⁻¹	
277.66	89.724	993.8	44.87	150.04	
276.96	79.432	961.6	49.06		
276.76	64.260	905.7	57.12		
276.46	60.407	881.1	59.10		
276.66	55.861	831.2	60.28		
277.46	53.355	812.0	61.68		
277.66	46.622	789.4	68.61		
280.26	45.329	697.9	62.29		
281.56	44.076	653.9	60.10		
281.56	38.489	612.9	63.05		
281.46	34.783	571.9	66.63		
281.46	30.530	530.1	70.34		
281.76	27.197	486.7	72.50		
281.56	24.544	446.9	73.78		
282.46	22.131	400.3	73.29		
283.16	17.772	305.8	69.73		
282.36	14.079	266.4	76.67		
285.46	14.132	225.5	64.66		
285.56	11.199	187.2	67.73		
285.16	8.079	142.7	71.56		
285.16	5.533	101.9	74.63		
285.16	3.373	57.3	68.82		
285.36	1.680	13.8	33.28		
283.56	64.260	446.4	29.32	90.84	
cont.					
AUXILIARY INFORMATION					
METHOD /APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
<p>p_{NO} is the pressure of NO over the solution. V_{NO} is the volume of NO (adjusted to 101.325 kPa and 273.16K) absorbed by the stated volume of aqueous solution of salt.</p> <p>α = 101.325 V_{NO}/p_{NO} × (vol. of soln. of iron salt). The V_{NO} value was determined by extraction of NO in a manometer assembly; diagram given.</p>			<p>NO: Not stated.</p> <p>Water was distilled. The concentration of salt was checked by titration with permanganate.</p>		
			DATA CLASS:		
			ESTIMATED ERROR:		
			REFERENCES:		

COMPONENTS		ORIGINAL MEASUREMENTS:		
1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Iron chloride, (ferrous chloride); FeCl ₂ ; [7758-94-3]		Gay, J., <i>Ann. Chim. Phys.</i> <u>1885</u> , (6) 5,145.		
EXPERIMENTAL VALUES:				
T/K	P _{NO} /kPa	V _{NO} /cm ³	Bunsen coefficient α	Conc* /gl ⁻¹
283.76	51.662	420.9	34.39	90.84
283.76	45.422	391.2	36.35	
281.96	36.423	371.6	43.06	
282.16	32.983	350.1	44.81	
282.16	28.051	312.4	46.99	
282.66	24.358	277.2	48.04	
281.96	19.491	239.0	51.74	
282.16	16.598	204.3	51.96	
281.36	10.812	155.0	60.51	
280.16	7.439	118.0	66.94	
280.56	5.039	78.4	65.68	
280.86	2.866	39.2	57.73	
281.16	1.467	14.5	41.74	
285.56	62.567	410.9	33.25	73.76
284.96	52.395	391.9	37.89	
284.96	47.302	362.6	38.83	
284.96	43.689	326.9	37.89	
284.96	37.383	293.0	39.71	
284.96	30.930	257.8	42.22	
284.96	25.197	222.5	44.73	
284.46	18.891	184.6	49.47	
284.56	13.572	143.1	53.39	
284.66	9.026	101.5	56.96	
284.66	4.840	60.0	62.77	
273.66	1.653	14.5	44.38	

* g of Fe in 1.0 l of soln.

COMPONENTS:				ORIGINAL MEASUREMENTS:			
1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Iron(II) sulfate, (ferrous sulfate); FeSO ₄ ; [7720-78-7]				Gay, J., <i>Ann. Chim. Phys.</i> <u>1885</u> , (6), 5, 145.			
VARIABLES:				PREPARED BY:			
Temperature, concentration				W. Gerrard.			
EXPERIMENTAL VALUES:							
T/K	g Fe in 100 cm ³ solution	g NO per 28 g Fe	Mole NO* per mole Fe salt	T/K	g Fe in 100 cm ³ solution	g NO per 28 g Fe	Mole NO* per mole Fe salt
Gravimetric determination				Volumetric determination			
273.16	8.7	10.7	0.713	281.16	5.2	10.6	0.707
279.16	5.0	9.5	0.633	281.16	5.2	10.4	0.693
283.16	3.61	10.8	0.720	281.16	5.2	9.5	0.633
283.16	7.57	9.2	0.613	285.66	5.2	10.6	0.707
285.16	8.48	7.34	0.489	286.66	8.1	7.6	0.507
288.16	4.22	7.6	0.507	287.16	7.4	7.3	0.487
288.16	2.23	7.9	0.527	298.66	9.45	4.72	0.315
289.16	4.54	7.6	0.507	298.66	9.45	4.74	0.316
290.16	3.22	7.4	0.493				
298.16	9.45	4.6	0.307				
299.16	8.73	4.7	0.313				
299.16	8.73	5.4	0.360				
299.16	8.73	5.1	0.340				
299.16	8.73	4.9	0.327				
299.65	8.7	5.8	0.387				
299.65	2.0	6.2	0.413				
299.65	4.0	5.6	0.373				
300.16	10.0	4.0	0.267				
300.96	10.0	4.5	0.300				
300.96	8.8	4.3	0.287				
* Calculated by compiler.							
AUXILIARY INFORMATION							
METHOD /APPARATUS/PROCEDURE:				SOURCE AND PURITY OF MATERIALS:			
(a) Determined weight of NO absorbed by known weight of solution containing the ferrous salt. Water entrained by passage of NO was absorbed by anhydrous CaCl ₂ . Pressure appeared to be 101.325 kPa.				NO, not stated.			
(b) Volume of NO absorbed was determined by "extraction" in a manometer assembly. The volume was adjusted to 273.16K and 101.325 kPa.				The water was distilled, and the concentration was checked by titration with permanganate.			
				ESTIMATED ERROR:			
				REFERENCES:			

COMPONENTS:			ORIGINAL MEASUREMENTS:		
1. Nitric oxide; NO; [10102-43-9]			Gay, J., <i>Ann. Chim. Phys.</i> <u>1885</u> , (6) 5,		
2. Water; H ₂ O; [7732-18-5]			145.		
3. Iron chloride, (ferrous chloride); FeCl ₂ ; [7758-94-3]					
VARIABLES:			PREPARED BY:		
Temperature, concentration			W. Gerrard.		
EXPERIMENTAL VALUES:					
T/K	g Fe per 100 cm ³ of solution.	g NO per 28 g Fe	T/K	g Fe per 100 cm ³ of solution	g NO per 28 g Fe
Gravimetric determination			Volumetric determination		
294.66	23.9	7.03	277.16	15.0	9.96
294.66	23.9	6.85	285.16	6.56	9.52
294.66	23.9	7.26	289.16	21.4	7.3
294.66	23.9	6.95	289.16	21.4	7.7
298.16	11.0	5.95	289.16	21.4	7.6
298.16	11.0	6.01	289.16	26.5	7.45
298.16	11.0	5.80	292.66	18.2	7.4
298.16	11.0	6.33	292.66	18.2	7.6
298.16	15.6	5.96	295.16	15.6	7.3
298.16	15.6	6.04	298.16	2.6	5.7
298.16	15.6	6.02	298.16	2.6	5.1
298.16	15.6	5.88	298.16	2.6	5.1
AUXILIARY INFORMATION					
METHOD /APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
(a) Determined weight of NO absorbed by known weight of solution containing the ferrous salt. Water entrained by passage of NO was absorbed by anhydrous CaCl ₂ . Pressure appeared to be atmospheric.			NO, not stated. Distilled water was used, and the concentration of salt was checked by titration with permanganate.		
(b) Volume of NO absorbed was determined by "extraction" in a manometer assembly (diagram given) over several days. The volume was adjusted to that at 273.16K and 101.325 kPa.					
			ESTIMATED ERROR:		
			REFERENCES:		

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Iron(II) ammonium sulfate; Fe(NH ₄) ₂ (SO ₄) ₂ ; [10045-89-3]	ORIGINAL MEASUREMENTS: Gay, J. <i>Ann. Chim. Phys.</i> <u>1885</u> , 5 (6), 145.	
VARIABLES: Temperature, pressure, concentration	PREPARED BY: W. Gerrard	
EXPERIMENTAL VALUES:		
T/K	g Fe/100 cm ³ soln.	g NO/28 g Fe
Gravimetric determination		
273.16	1.15	10.2
273.16	5.7	9.8
279.16	3.5	11.1
288.16	1.15	7.45
299.66	5.7	5.9
299.66	2.8	5.6
Volumetric determination		
295.66	4.7	4.8
298.66	4.5	5.7
(cont.)		
AUXILIARY INFORMATION		
METHOD APPARATUS/PROCEDURE: P_{NO} is the pressure of NO over the solution. V_{NO} is the volume of NO (adjusted to 101.325 kPa and 273.16 K) absorbed by the stated volume of aqueous solution of ferrous salt containing the stated weight of ferrous iron (Fe). The volume of NO was determined by extraction during several days. The weight of NO was that absorbed at the atmospheric pressure. Entrained water was absorbed in anhydrous CaCl ₂ .	SOURCE AND PURITY OF MATERIALS: 1. NO: not stated. 2. Water was distilled. 3. The salt was pure crystalline standard; the solution was titrated by permanganate.	
ESTIMATED ERROR:	REFERENCES.	

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Iron(II) ammonium sulfate; Fe(NH ₄) ₂ (SO ₄) ₂ ; [10045-89-3]	ORIGINAL MEASUREMENTS: Gay, J. <i>Ann. Chim. Phys.</i> <u>1885</u> , 5 (6), 145.
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EXPERIMENTAL VALUES:				
Solution	T/K	P_{NO}/kPa	V_{NO}/cm^3	α
0.440 g Fe in 20 cm ³ solution	273.16	91.324	109.1	6.05
		65.820	104.9	8.07
		46.182	90.7	9.95
		29.450	75.0	12.90
		14.000	50.3	18.20
		5.506	18.0	16.56
1.250 g Fe in 25 cm ³ solution	285.16 284.96 285.16 284.77 284.66 284.56	65.380	229.2	11.28
		55.634	211.1	15.38
		47.195	181.9	15.62
		38.943	157.2	16.35
		29.557	126.1	17.30
		20.971	95.8	18.51
		12.759	62.1	19.73
4.653	24.1	21.00		
2.786	5.0	7.26		
0.685 g Fe in 25 cm ³ solution	284.16 284.66 284.56 283.56 283.96	74.939	137.8	7.45
		60.061	119.0	8.02
		43.862	98.6	9.12
		29.597	79.6	10.88
		21.131	61.5	11.79
		13.599	42.0	12.49
3.040	7.8	10.40		

$$\alpha = V_{NO} / (\text{Volume of solution} \times \text{partial pressure})$$

COMPONENTS:		ORIGINAL MEASUREMENTS:		
1. Nitric oxide; NO; [10102-43-9]		Thomas, V. <i>Bull. Soc. Chim.</i> <u>1898</u> , 19, (3), 343.		
2. Water; H ₂ O; [7732-18-5]		See also Ref. (1), (3).		
3. Iron bromide (ferrous bromide); FeBr ₂ ; [7789-46-0]				
VARIABLES:		PREPARED BY:		
Temperature, concentration		W. Gerrard		
EXPERIMENTAL VALUES:				
Weight of ferrous Fe in 1 cm ³ of solution g.	Volume of solution /cm ³	T/K	Volume of NO absorbed /cm ³	Mole of NO per mole of salt*
0.05978	2	279.16	30	0.628
0.05978	9.1	283.16	97	0.446
0.05978	2.8	268.16	53	0.792
0.05978	2.8	279.16	45	0.673
0.05978	3.5	284.16	38.5	0.460
0.05978	3.7	281.16	47	0.532
0.05978	2.3	281.16	25	0.455
0.05978	4.1	275.16	65	0.663
0.05978	3.5	281.16	38.8	0.465
0.05978	2.9	283.16	29.9	0.431
0.05978	3	283.16	29.5	0.412
0.05978	2	273.16	36.5	0.764
0.59978	1.5	277.16	25.4	0.0706
0.59978	3.5	293.66	22.7	0.0205
0.59978	3.5	277.16	50.7	0.0604
0.59978	2.5	280.16	41	0.0684
* Calculated by compiler.				
AUXILIARY INFORMATION				
METHOD APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:		
The liquid was contained in a simple glass vessel furnished with an inlet tube leading into the liquid, and an exit tube. Nitric oxide was slowly passed into the liquid, and entrained water vapor was collected and weighed. It was simply stated that the quantity of absorbed gas was determined. The pressure was not mentioned.		NO: Not mentioned; but presumably prepared from mercury and nitric acid as in ref. (2)		
In the calculation of the mole ratio, NO/Fe, the compiler has assumed the correction to 273.16 K, and the pressure, p _{NO} , to be 101.325 kPa.		DATA CLASS:		
		ESTIMATED ERROR:		
		REFERENCES:		
		(1) Thomas, V., <i>Compt. rend.</i> , <u>1896</u> , 123, 943.		
		(2) Thomas, V., <i>Bull. Soc. Chim.</i> , <u>1898</u> , (3), 19, 419.		
		(3) Thomas, V., <i>Ann. Chim. Phys.</i> <u>1898</u> , 13, (7), 145.		

COMPONENTS:		ORIGINAL MEASUREMENTS:		
1. Nitric oxide; NO; [10102-43-9]		Thomas, V.; <i>Bull. Soc. Chim.</i> , <u>1898</u> , 19, (3), 343.		
2. Water; H ₂ O; [7732-18-5]		Thomas, V., <i>Ann. Chim. Phys.</i> <u>1898</u> , 13, (7), 145.		
3. Iron iodide, (ferrous iodide); FeI ₂ ; [7783-86-0]				
VARIABLES:		PREPARED BY:		
Temperature, concentration		W. Gerrard		
EXPERIMENTAL VALUES:				
Weight of ferrous iron, Fe, g, in cm ³ of solution.	Volume of solution of salt /cm ³	T/K	Volume of NO, absorbed /cm ³	Mole NO/56 g Fe*
3.171	12.2	289.16	58	0.375
3.171	9.6	286.16	45	0.367
2.926	8.5	270.16	36	0.362
2.926	5.8	291.16	19	0.280
2.926	8.3	286.16	37	0.381
* The calculated mole ratio calculated by the compiler, NO/Fe, is based on the assumption that the volume of NO observed was adjusted to that at 273.16 K, and that the pressure, P _{NO} was 101.325 kPa.				
AUXILIARY INFORMATION				
METHOD: /APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:		
The liquid was contained in a simple glass vessel furnished with an inlet tube passing right into the liquid, and an exit tube. Nitric oxide was slowly passed into the liquid, the entrained water vapor being collected and weighed. It was stated that the quantity of absorbed gas was determined. The pressure was not mentioned.		NO: Not mentioned; but presumably it was prepared from mercury and nitric acid (1).		
		ESTIMATED ERROR:		
		REFERENCES:		
		1. Thomas, V., <i>Bull. Soc. Chim.</i> <u>1898</u> , 19, (3), 419.		

COMPONENTS: 1. Nitric oxide; NO; [10102-45-9] 2. Water; H ₂ O; [7732-18-5] 3. Iron(II) sulfate (ferrous sulfate) FeSO ₄ ; [7780-78-7] 4. Sodium sulfate; Na ₂ SO ₄ ; [7757-82-6] or Ammonium sulfate; (NH ₄) ₂ SO ₄ ; [10043-02-4]	ORIGINAL MEASUREMENTS: Manchot, W.; Zechentmayer, K. <i>Annalen</i> <u>1906</u> , 350, 368-389.																								
VARIABLES:	PREPARED BY: W. Gerrard																								
EXPERIMENTAL VALUES: <p style="text-align: center;">T/K = 289.35</p> <p>1 cm³ of ferrous sulfate solution contained 0.1013 g of ferrous iron.</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; vertical-align: bottom;">The solution was made up of:</th> <th style="text-align: center; vertical-align: bottom;">Molarity of ferrous sulfate /mol dm⁻³</th> <th style="text-align: center; vertical-align: bottom;">Pressure of nitric oxide /kPa</th> <th style="text-align: center; vertical-align: bottom;">Volume, V₁, of nitric oxide for 1 mole of ferrous salt /dm³</th> </tr> </thead> </table>		The solution was made up of:	Molarity of ferrous sulfate /mol dm ⁻³	Pressure of nitric oxide /kPa	Volume, V ₁ , of nitric oxide for 1 mole of ferrous salt /dm ³																				
The solution was made up of:	Molarity of ferrous sulfate /mol dm ⁻³	Pressure of nitric oxide /kPa	Volume, V ₁ , of nitric oxide for 1 mole of ferrous salt /dm ³																						
40 cm ³ of a saturated solution of sodium sulfate, 10 cm ³ of water, and 20 cm ³ of ferrous iron. } 20 cm ³ of a saturated solution of ammonium sulfate, 5 cm ³ of water, and 40 cm ³ of ferrous sulfate solution. }	<table style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 10%;"></td> <td style="width: 35%;">0.0257</td> <td style="width: 25%;">98.390</td> <td style="width: 30%;">10.5</td> </tr> <tr> <td></td> <td>0.0257</td> <td>107.989</td> <td>10.6</td> </tr> <tr> <td></td> <td>0.0257</td> <td>116.122</td> <td>10.7</td> </tr> <tr> <td></td> <td>0.0402</td> <td>89.058</td> <td>8.9</td> </tr> <tr> <td></td> <td>0.0402</td> <td>95.990</td> <td>9.3</td> </tr> <tr> <td></td> <td>0.0402</td> <td>113.055</td> <td>10.3</td> </tr> </tbody> </table>		0.0257	98.390	10.5		0.0257	107.989	10.6		0.0257	116.122	10.7		0.0402	89.058	8.9		0.0402	95.990	9.3		0.0402	113.055	10.3
	0.0257	98.390	10.5																						
	0.0257	107.989	10.6																						
	0.0257	116.122	10.7																						
	0.0402	89.058	8.9																						
	0.0402	95.990	9.3																						
	0.0402	113.055	10.3																						
AUXILIARY INFORMATION																									
METHOD APPARATUS/PROCEDURE: Volumetric apparatus. A three-way tube was connected to a gas buret and absorption pipet; the third port was used for exhausting the apparatus and for adding gas. The pressure and volume of gas in the buret could be measured using a levelling tube containing mercury.	SOURCE AND PURITY OF MATERIALS: 1. Nitric oxide was prepared from sodium nitrite and dilute sulfuric acid and washed with alkali. Stated to be 100% pure. 3 and 4. Appear to be of acceptable purity.																								
ESTIMATED ERROR:																									
REFERENCES:																									

COMPONENTS: 1. Nitric oxide; NO; [10102-45-9] 2. Water; H ₂ O; [7732-18-5] 3. Iron(II) ammonium sulfate; FeSO ₄ (NH ₄) ₂ SO ₄ ; 6H ₂ O; [10045-89-3]	ORIGINAL MEASUREMENTS: Manchot, W.; Zechentmayer, K. <i>Annalen</i> <u>1906</u> , 350, 368-389.	
VARIABLES:	PREPARED BY: W. Gerrard	
EXPERIMENTAL VALUES:		
T/K = 272.65		
SERIES A		
A known weight of salt was dissolved in 50 cm ³ of water plus 2 cm ³ of sulfuric acid (17%). The molarity is stated in the table. The volume of nitric oxide absorbed refers to the volume of liquid containing 1 mole of ferrous salt.		
Molarity of salt /mol dm ⁻³	Pressure of nitric oxide /kPa	Volume, V ₁ , of nitric oxide for 1 mole salt /dm ³
0.0242 0.0222 0.0222 0.0328 0.0363 0.0337 0.033 0.033 0.033 0.033 0.033 0.033 0.033 0.033 0.033 0.033 0.033	6.426 11.839 13.572 25.704 26.000 41.729 61.994 76.792 81.325 89.724 97.537 109.322 128.920 140.386 164.384 177.982	3.8 5.3 5.8 11.6 11.7 13.6 15.5 16.2 17.0 17.4 18.1 18.8 19.2 19.5 20.4 21.5
(cont.)		
AUXILIARY INFORMATION		
METHOD APPARATUS/PROCEDURE: Volumetric apparatus. A three-way tube was connected to a gas buret and absorption pipet; the third port was used for exhausting the apparatus and for adding gas. The pressure and volume of the gas in the buret could be measured using a levelling tube containing mercury.	SOURCE AND PURITY OF MATERIALS: 1. Nitric oxide was prepared from sodium nitrite and dilute sulfuric acid and washed with alkali. Stated to be 100% pure. 2 and 3. Appear to be of acceptable purity.	
ESTIMATED ERROR:		
REFERENCES:		

COMPONENTS:		ORIGINAL MEASUREMENTS:				
1. Nitric oxide; NO; [10102-45-9]		Manchot, W.; Zechentmayer, K.				
2. Water; H ₂ O; [7732-18-5]		Annalen				
3. Iron(II) ammonium sulfate; FeSO ₄ (NH ₄) ₂ SO ₄ ; 6H ₂ O; [10045-89-3]		1906, 350, 368-389.				
EXPERIMENTAL VALUES:						
SERIES A (cont.)						
Molarity of salt /mol dm ⁻³	Pressure of nitric oxide /kPa	Volume, V ₁ , of nitric oxide for 1 mole salt /dm ³				
0.033	159.584	20.2				
0.033	177.316	21.0				
0.033	189.581	21.2				
0.033	202.113	21.2				
(; *)	258.774	21.5				
0.034	258.507	20.9				
0.0298	205.046	21.0				
0.0329	236.910	21.8				
0.0332	253.975	21.7				
0.0332	257.574	22.3				
0.0382	298.370	21.8				
* Was given in error as 0.0033						
SERIES B						
T/K	Weight of salt /g	Volume of water /cm ³	Volume of acid* /cm ³	Molarity of salt mol dm ⁻³	Pressure, nitric oxide /kPa	Volume, V ₁ , of nitric oxide for 1 mole of salt /dm ³
270.65	0.6680	100	4	0.0164	246.775	20.9
270.65	0.6868	100	10	0.0159	246.375	21.5
270.65	0.6868	100	10	0.0159	265.973	21.5
268.15	0.1321	100	100	-	239.976	20.6
268.15	0.8015	40	60	0.0204	273.573	20.7
272.65	0.3255	100	-	0.0083	258.774	21.2
* 17% sulfuric acid.						
SERIES C						
The stated weight of salt was dissolved in 50 cm ³ of water plus 2 cm ³ sulfuric acid.						
T/K	Weight of salt /g	Pressure of nitric oxide /kPa	Volume, V ₁ , of nitric oxide for 1 mole of salt /dm ³			
272.65	0.6748	97.537	18.15			
275.75	0.6766	99.483	17.11			
277.96	0.6820	98.670	16.26			
281.65	0.6530	100.497	15.15			
285.05	0.6851	98.857	14.27			
287.05	0.6704	98.657	13.39			
290.05	0.6604	97.617	12.01			
291.76	0.7763	97.230	11.40			
292.65	0.6899	97.244	10.98			
292.75	0.6770	97.977	10.88			
298.65	0.6873	96.257	8.64			
304.55	0.6728	93.417	6.22			
317.45	0.6842	88.698	2.34			
In all series of measurements V ₁ was reduced to 273.15 K and 101.3 kPa.						

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitric oxide; NO; [10102-43-9]		Manchot, W.; Zechentmayer, K.	
2. Water; H ₂ O; [7732-18-5]		Annalen, <u>1906</u> , 350, 368-389.	
3. Iron II sulfate, (ferrous sulfate); FeSO ₄ ; [7720-78-7]			
VARIABLES:		PREPARED BY:	
Temperature		W. Gerrard	
EXPERIMENTAL VALUES:			
T/K	Molarity of salt / mol dm ⁻³	Pressure of gas /kPa	Volume of nitric oxide absorbed by volume of solution containing 1 mole of salt /dm ³ (101.325 kPa, 273.15K)
289.25-289.45	0.0257	92.257	12.4
	0.0257	96.790	12.8
	0.0257	109.06	13.4
	0.0257	116.26	14.0
	0.0257	128.25	14.4
	0.0257	143.32	15.6
275.25	0.0257	99.19	17.3
	0.0257	115.32	18.0
	0.0257	129.72	18.3
	0.0257	143.85	18.9
	0.0257	161.72	19.4
AUXILIARY INFORMATION			
METHOD /APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
Volumetric apparatus. A three-way tube was connected to a gas buret and an absorption pipet; the third member of the connection was used for exhausting the apparatus, and for passing in the gas. By means of a levelling tube containing mercury, the pressure and volume of gas in the buret could be regulated. Water, and a small tube containing the salt were put into the absorption pipet. The volume of gas absorbed by the water was first determined; the small tube was broken, and the absorption for the solution was measured.		1. Nitric oxide was prepared from sodium nitrate and diluted sulfuric acid, and washed with alkali. Stated to be 100% pure.	
Drops of dilute sulfuric acid were added to the ferrous sulfate solution.		2. and 3. Appeared to be of acceptable purity.	
		ESTIMATED ERROR:	
		REFERENCES:	

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Iron chloride (Ferrous chloride); FeCl ₂ ; [7758-94-3]	ORIGINAL MEASUREMENTS: Manchot, W.; Zechentmayer, K. <i>Annalen</i> , <u>1906</u> , 350, 368-389.																								
VARIABLES:	PREPARED BY: W. Gerrard																								
EXPERIMENTAL VALUES: <p style="text-align: center;">T/K = 273.65. The solution of ferrous chloride was made up by adding the stated weight of ferrous chloride, FeCl₂, to 50 cm³ of water plus 2 cm³ of hydrochloric acid (14% HCl)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Weight of FeCl₂ /g</th> <th style="text-align: center;">Molarity of FeCl₂ / mol dm⁻³</th> <th style="text-align: center;">Pressure of nitric oxide. /kPa</th> <th style="text-align: center;">Volume, V₁, of nitric oxide absorbed per 1 mole of FeCl₂, /dm³ (101.325 kPa)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">0.2528</td> <td style="text-align: center;">0.0383</td> <td style="text-align: center;">34.530</td> <td style="text-align: center;">12.1</td> </tr> <tr> <td style="text-align: center;">*0.229</td> <td style="text-align: center;">0.034</td> <td style="text-align: center;">98.977</td> <td style="text-align: center;">17.3</td> </tr> <tr> <td style="text-align: center;">*0.1795</td> <td style="text-align: center;">0.027</td> <td style="text-align: center;">100.310</td> <td style="text-align: center;">17.1</td> </tr> <tr> <td style="text-align: center;">*0.1639</td> <td style="text-align: center;">0.0248</td> <td style="text-align: center;">232.377</td> <td style="text-align: center;">21.2</td> </tr> <tr> <td style="text-align: center;">0.2542</td> <td style="text-align: center;">(0.0385)**</td> <td style="text-align: center;">267.440</td> <td style="text-align: center;">21.8</td> </tr> </tbody> </table> <p>*Stated to contain 40.9% Fe. **Incorrectly given in the original table as 0.0538. For a solution made up by adding 0.1974 g of FeCl₂ to 52 cm³ of hydrochloric acid (14% HCl), V₁ was 17.1 dm³ at T/K = 273.65 and for 100.097 kPa. For a solution made up by adding 0.1954 g of FeCl₂ to 50 cm³ of water, V₁ was 17.7 dm³ at T/K = 273.65 and for 100.097 kPa.</p>		Weight of FeCl ₂ /g	Molarity of FeCl ₂ / mol dm ⁻³	Pressure of nitric oxide. /kPa	Volume, V ₁ , of nitric oxide absorbed per 1 mole of FeCl ₂ , /dm ³ (101.325 kPa)	0.2528	0.0383	34.530	12.1	*0.229	0.034	98.977	17.3	*0.1795	0.027	100.310	17.1	*0.1639	0.0248	232.377	21.2	0.2542	(0.0385)**	267.440	21.8
Weight of FeCl ₂ /g	Molarity of FeCl ₂ / mol dm ⁻³	Pressure of nitric oxide. /kPa	Volume, V ₁ , of nitric oxide absorbed per 1 mole of FeCl ₂ , /dm ³ (101.325 kPa)																						
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0.2542	(0.0385)**	267.440	21.8																						
AUXILIARY INFORMATION																									
METHOD /APPARATUS/PROCEDURE: Volumetric apparatus. A three-way tube was connected to a gas buret and an absorption pipet; the third member was used for exhausting the apparatus, and for passing in the gas. By means of a levelling tube containing mercury, the pressure and volume of gas in the buret could be regulated.	SOURCE AND PURITY OF MATERIALS: 1. Nitric oxide was prepared from sodium nitrite and dilute sulfuric acid, and washed with alkali. Stated to be 100% pure. 3. Prepared by action of hydrogen chloride on heated sheet iron. Contained 43.96-44.06% Fe.																								
DATA CLASS:																									
ESTIMATED ERROR:																									
REFERENCES:																									

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Iron II sulfate, (ferrous sulfate); FeSO ₄ ; [7720-78-7]	ORIGINAL MEASUREMENTS: Hufner, G. <i>Z. Phys. Chem.</i> <u>1907</u> , <i>59</i> , 416-423.
VARIABLES: Concentration of salt	PREPARED BY: W. Gerrard
EXPERIMENTAL VALUES: <p>The form in which the data were given requires a detailed analysis by the compiler.</p> <p>The volume of the solution of ferrous salt was the same (205.69 cm³) for each series.</p> <p>W = weight of ferrous iron in 205.69 cm³ of solution.</p> <p>P = pressure of nitric oxide.</p> <p>V₁ = volume of nitric oxide, cm³, absorbed by 205.69 cm³ of solution at the stated pressure.</p> <p>By a certain argument, the author derived the following equation:</p> <p>V₁ = $\underline{a} + \underline{b}P$, where \underline{a} is a constant, believed to represent the chemically combined part; and \underline{b} is a constant representing the "simply" absorbed part. A number referred to as the "absorption coefficient, α," was obtained by the operation: $(\underline{b}/205.69) \times 760$; but this is not the quantity which is usually understood by the term "absorption coefficient". There is consequent confusion in the reviews:</p> <p style="text-align: right;">(cont.)</p>	
AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE: The volume of nitric oxide absorbed by a fixed volume of solution was measured at the observed pressure of gas.	SOURCE AND PURITY OF MATERIALS: 1. Nitric oxide was prepared from hydrogen iodide and nitric acid (Winkler, 1). 3. Attested by titration with permanganate. ESTIMATED ERROR: REFERENCES: 1. Winkler, L.W, <i>Ber.</i> <u>1901</u> , <i>34</i> , 1408.

COMPONENTS:				ORIGINAL MEASUREMENTS:	
1. Nitric oxide; NO; [10102-43-9]				Hufner, G.	
2. Water; H ₂ O; [7732-18-5]				Z. Phys. Chem. <u>1907</u> , 59, 416-423.	
3. Iron II sulfate, (ferrous sulfate); FeSO ₄ ; [7720-78-7]					
EXPERIMENTAL VALUES:					
Additional columns in the table are : V ₃ * = volume, dm ³ , of solution containing 56 g of ferrous iron. V ₁ * = volume of NO/dm ³ , absorbed by V ₃ * of solution, as for 101.325 kPa. V _w (NO) = volume of NO/dm ³ , absorbed by V ₃ * of water itself.					
T/K	W/g	P/mmHg	V ₁ /cm ³		
293.25	0.0221	760.0	15.33**	a	= 2.8466
293.25		704.9	14.42	b	= 0.01642
293.25		683.5	14.10	α	= 0.06067
293.25		668.6	13.80	V ₃ */dm ³	= 521.2
292.35		651.9	13.58	V ₁ */dm ³	= 38.85
293.20		632.9	13.15		
293.15		613.7	12.98	V _w (NO)/dm ³	= 24.50
	0.0296	760.0	15.57**	a	= 4.2407
293.20		677.5	14.30	b	= 0.0149
293.20		655.3	14.07	α	= 0.05505
293.19		639.1	13.81	V ₃ */dm ³	= 389.1
293.15		620.2	13.39	V ₁ */dm ³	= 29.46
293.30		600.5	13.20		
293.29		581.2	12.92	V _w (NO)/dm ³	= 18.29
	0.0409	760.0	18.50**	a	= 4.749
293.19		667.6	16.79	b	= 0.01809
293.17		650.6	16.65	α	= 0.06684
293.15		613.1	15.71	V ₃ */dm ³	= 281.6
293.15		594.6	15.41	V ₁ */dm ³	= 25.33
293.25		577.1	15.32	V _w (NO)/dm ³	= 13.23
	0.0513	760.0	21.33**	a	= 4.9136
293.25		644.8	18.82	b	= 0.02160
293.25		623.8	18.47	α	= 0.07981
293.23		606.4	18.02	V ₃ */dm ³	= 224.5
293.25		589.7	17.56	V ₁ */dm ³	= 23.28
293.25		571.1	17.19		
293.25		553.1	16.95	V _w (NO)/dm ³	= 10.55
	0.0663	760.0	23.32**	a	= 6.7589
293.25		697.3	21.91	b	= 0.02181
293.25		678.9	21.60	α	= 0.08059
293.25		660.4	21.18	V ₃ */dm ³	= 173.7
293.23		638.2	20.71	V ₁ */dm ³	= 19.70
293.19		620.7	20.28		
293.15		602.5	19.87	V _w (NO)/dm ³	= 8.16
	0.099	760.0	37.40**	a	= 13.78
293.25		649.9	34.26	b	= 0.031558
293.30		631.1	33.82	α	= 0.11661
293.35		618.4	33.26	V ₃ */dm ³	= 116.3
293.15		603.3	32.76	V ₁ */dm ³	= 21.16
293.00		588.6	32.34		
293.00		574.2	31.95	V _w (NO)/dm ³	= 5.47
** Calculated from the equation; the original author's value.					
V ₃ *, V ₁ * and V _w (NO)/dm ³ were calculated by the compiler.					

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Iron chloride (Ferrous chloride); FeCl ₂ ; [7758-94-3]		ORIGINAL MEASUREMENTS: Kohlschutter, V.; Kutscheroff, M. Ber. <u>1907</u> , 40, 873-878.	
VARIABLES: Concentration		PREPARED BY: W. Gerrard	
EXPERIMENTAL VALUES: The pressure of nitric oxide, p_{NO} , was not stated. The compiler has taken p_{NO} to be 101.325 kPa.			
T/K	Volume of water, V_s containing one mole of ferrous chloride /dm ³	Volume of nitric oxide, V_1 absorbed by V_s (1 mole of salt) /dm ³	Ostwald coefficient L , based on b Calculated by compiler
		a	b
295.15	2.5 5.18 10.35 20.7 51.8	3.15 4.62 5.9 7.0 8.6	3.30 4.83 6.56 8.32 11.89
			1.320 0.932 0.634 0.402 0.230
Column (a) shows the volume of nitric oxide absorbed after allowance for the volume absorbed by V_s dm ³ of pure water, i.e., $b - a$ is the volume of NO which would be absorbed by V_s dm ³ of pure water, taken as 0.0636 dm ³ of NO per dm ³ of water.			
AUXILIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE : An Ostwald type gas buret and pipet were connected by a lead capillary.		SOURCE AND PURITY OF MATERIALS: Ferrous chloride prepared from pure iron wire. No details given for other components.	
		ESTIMATED ERROR:	
		REFERENCES:	

Nitric Oxide

COMPONENTS:		ORIGINAL MEASUREMENTS:		
1. Nitric oxide; NO; [10102-43-9]		Kohlschutter, V.; Kutscheroff, M.		
2. Water; H ₂ O; [7732-18-5]		Ber, <u>1907</u> , 40, 873-878.		
3. Iron II sulfate, (ferrous sulfate); FeSO ₄ ; [7720-78-7]				
VARIABLES:		PREPARED BY:		
Concentration		W. Gerrard.		
EXPERIMENTAL VALUES:				
The pressure of nitric oxide, p_{NO} , was not stated.				
The compiler has taken p_{NO} to be 101.325 kPa.				
T/K	Volume, V_s , of water in which 1 mole of ferrous sulphate is dissolved /dm ³	Volume, V_1 , of nitric oxide absorbed by V_s /dm ³		Ostwald coefficient, L , based on V_1 (b) calculated by compiler.
		(a)	(b)	
298.15	1.2	1.4	1.47	1.225
	1.8	1.9	2.01	1.117
	2.4	2.4	2.55	1.0625
	4.82	4.1	4.40	0.913
	7.2	5.06	5.52	0.767
	12.0	5.70	6.46	0.538
	18.6	6.9	8.01	0.431
	36.0	8.2	10.4	0.289
V_1 (b) - V_1 (a) refers to the volume of nitric oxide which would be absorbed by the stated volume, V_s , of pure water.				
AUXILIARY INFORMATION				
METHOD /APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:		
An Ostwald type gas buret and pipet were connected by a lead capillary.		No details given.		
		ESTIMATED ERROR:		
		REFERENCES:		

COMPONENTS:		ORIGINAL MEASUREMENTS:
1. Nitrogen oxide, (Nitric oxide); NO; [10102-43-9]		Kohlschutter, V.; Kutscheroff, M. <i>Ber</i> , <u>1907</u> , 40, 873-878.
2. Water; H ₂ O; [7732-18-5]		
3. Iron chloride, (ferrous chloride); FeCl ₂ ; [7758-94-3]		
VARIABLES: Concentration		PREPARED BY: W. Gerrard
EXPERIMENTAL VALUES:		
The pressure of nitric oxide, p_{NO} , was not stated. The compiler has taken p_{NO} to be 101.325 kPa. Temperature assumed to be 295.15K.		
T/K	1 mole of ferrous chloride dissolved in 10.37 dm ³ of the following:	Volume, V_1 , of nitric oxide absorbed /dm ³
295.15	Water; H ₂ O;	6.559
	Sodium chloride; NaCl; (saturated aqueous solution)	6.549
	Ammonium chloride; NH ₄ Cl; (saturated aqueous solution)	6.549
	Hydrochloric acid (about 30%)	15.64
	(10%)*	6.17
* given as such in original table (probably wt %)		
AUXILIARY INFORMATION		
METHOD:/APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:
An Ostwald type gas buret and pipet were connected by a lead capillary.		Ferrous chloride solution was prepared from iron wire. No details of source or preparation of other components given.
		ESTIMATED ERROR:
		REFERENCES:

<p>COMPONENTS:</p> <ol style="list-style-type: none"> 1. Nitric oxide; NO; [10102-43-9] 2. Water; H₂O; [7732-18-5] 3. Iron (II) nitrate (Ferrous nitrate); Fe(NO₃)₂; [14013-86-6] 	<p>ORIGINAL MEASUREMENTS:</p> <p>Kohlschutter, V.; Kutscheroff, M. <i>Ber.</i>, 1907, 40, 873-878.</p>																																					
<p>VARIABLES:</p> <p>Concentration of salt</p>	<p>PREPARED BY:</p> <p>W. Gerrard</p>																																					
<p>EXPERIMENTAL VALUES:</p> <p>The pressure of nitric oxide, p_{NO}, was not stated. The compiler has taken p_{NO} to be 101.325 kPa.</p> <table border="1" data-bbox="197 596 1237 934"> <thead> <tr> <th>T/K</th> <th>Volume, V_s, of water in which 1 mole of ferrous nitrate is dissolved /dm³</th> <th>Volume, V_1, of nitric oxide absorbed by V_s (1 mole of ferrous nitrate) /dm³</th> <th>Ostwald coefficient, L, based on V_1 (b) calculated by compiler</th> </tr> <tr> <td></td> <td></td> <td>(a)</td> <td>(b)</td> </tr> </thead> <tbody> <tr> <td rowspan="4">296.15</td> <td>3.25</td> <td>2.56</td> <td>2.77</td> </tr> <tr> <td>6.5</td> <td>3.75</td> <td>4.16</td> </tr> <tr> <td>13.0</td> <td>4.71</td> <td>5.54</td> </tr> <tr> <td>26.0</td> <td>4.90</td> <td>6.61</td> </tr> <tr> <td></td> <td></td> <td></td> <td>0.852</td> </tr> <tr> <td></td> <td></td> <td></td> <td>0.640</td> </tr> <tr> <td></td> <td></td> <td></td> <td>0.426</td> </tr> <tr> <td></td> <td></td> <td></td> <td>0.254</td> </tr> </tbody> </table> <p>V_1 (b) - V_1 (a) refers to the volume of nitric oxide which would be absorbed by the stated volume, V_s, of pure water.</p>		T/K	Volume, V_s , of water in which 1 mole of ferrous nitrate is dissolved /dm ³	Volume, V_1 , of nitric oxide absorbed by V_s (1 mole of ferrous nitrate) /dm ³	Ostwald coefficient, L , based on V_1 (b) calculated by compiler			(a)	(b)	296.15	3.25	2.56	2.77	6.5	3.75	4.16	13.0	4.71	5.54	26.0	4.90	6.61				0.852				0.640				0.426				0.254
T/K	Volume, V_s , of water in which 1 mole of ferrous nitrate is dissolved /dm ³	Volume, V_1 , of nitric oxide absorbed by V_s (1 mole of ferrous nitrate) /dm ³	Ostwald coefficient, L , based on V_1 (b) calculated by compiler																																			
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			0.426																																			
			0.254																																			
<p>AUXILIARY INFORMATION</p>																																						
<p>METHOD APPARATUS/PROCEDURE:</p> <p>An Ostwald type gas buret and pipet were connected by a lead capillary.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>Ferrous nitrate solution was prepared by the interation of ferrous sulfate and barium nitrate.</p> <p>ESTIMATED ERROR:</p> <p>REFERENCES:</p>																																					

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Iron chloride, (Ferrous chloride); FeCl ₂ ; [7758-94-3] 4. Hydrochloric acid; HCl; [7647-01-0]	ORIGINAL MEASUREMENTS: Kohlschutter, V.; Kutscheroff, M. <i>Ber.</i> , <u>1907</u> , 40, 873-878.																																																		
VARIABLES: Concentration	PREPARED BY: W. Gerrard																																																		
EXPERIMENTAL VALUES: The pressure of nitric oxide, p_{NO} was not stated. The compiler has taken p_{NO} to be 101.325 kPa. The stock solution of ferrous chloride contained 45.365 g/dm ³ ; 1.234 dm ³ of solution contained 1 mole of FeCl ₂ . Concentration of "strong hydrochloric acid" was not specified. The aqueous solutions were made up as specified in the table. The temperature was probably 295.15K. <table border="1" data-bbox="63 746 1168 1132"> <thead> <tr> <th>Ferrous chloride stock solution cm³</th> <th>Water cm³</th> <th>Hydrochloric acid stock solution cm³</th> <th>Volume, V_s, solution containing 1 mole ferrous chloride /dm³</th> <th>Volume, V_1, of nitric oxide absorbed by V_s /dm³</th> </tr> </thead> <tbody> <tr><td>10</td><td>40</td><td>-</td><td>6.16</td><td>9.3</td></tr> <tr><td>10</td><td>-</td><td>40</td><td>6.16</td><td>20.48</td></tr> <tr><td>5</td><td>45</td><td>-</td><td>12.32</td><td>10.81</td></tr> <tr><td>5</td><td>15</td><td>30</td><td>12.32</td><td>17.2</td></tr> <tr><td>5</td><td>5</td><td>40</td><td>12.3</td><td>19.2</td></tr> <tr><td>2.5</td><td>47.5</td><td>-</td><td>24.64</td><td>10.42</td></tr> <tr><td>2.5</td><td>37.5</td><td>10</td><td>24.64</td><td>9.165</td></tr> <tr><td>2.5</td><td>27.5</td><td>20</td><td>24.64</td><td>11.62</td></tr> <tr><td>2.5</td><td>7.5</td><td>40</td><td>24.64</td><td>20.62</td></tr> </tbody> </table>		Ferrous chloride stock solution cm ³	Water cm ³	Hydrochloric acid stock solution cm ³	Volume, V_s , solution containing 1 mole ferrous chloride /dm ³	Volume, V_1 , of nitric oxide absorbed by V_s /dm ³	10	40	-	6.16	9.3	10	-	40	6.16	20.48	5	45	-	12.32	10.81	5	15	30	12.32	17.2	5	5	40	12.3	19.2	2.5	47.5	-	24.64	10.42	2.5	37.5	10	24.64	9.165	2.5	27.5	20	24.64	11.62	2.5	7.5	40	24.64	20.62
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AUXILIARY INFORMATION																																																			
METHOD /APPARATUS/PROCEDURE: An Ostwald type gas buret and pipet were connected by a lead capillary.	SOURCE AND PURITY OF MATERIALS: Ferrous chloride solution prepared from iron wire. No details of other components given. ESTIMATED ERROR: REFERENCES:																																																		

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Iron(II) sulfate; FeSO ₄ ; [7720-78-7]		ORIGINAL MEASUREMENTS: Manchot, W.; Huttner, F. <i>Annalen</i> <u>1910</u> , 372, 153-178.	
VARIABLES: Concentration of salt		PREPARED BY: W. Gerrard	
EXPERIMENTAL VALUES:			
T/K	Conc. of ferrous sulfate /mol dm ⁻³	Pressure of nitric oxide /kPa	Volume, V, of nitric oxide absorbed of Iron(II) salt (reduced to 273.15 K, 101.325 kPa) /dm ³
273.15	0.0034	98.257	17.8
	0.0429	98.257	17.9
	0.44	98.257	17.2
	1.2140	100.657	15.4
AUXILIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE: <p>The volume of gas absorbed was measured by the Ostwald-type gas buret and absorption pipet. The apparatus and method were stated to be similar to those previously described (1), except that the technique for introducing the ferrous salt was modified.</p>		SOURCE AND PURITY OF MATERIALS: 1. Nitric oxide was probably taken as 100% pure, see ref. (1). 2, 3. Appeared to be of satisfactory purity.	
		ESTIMATED ERROR:	
		REFERENCES: 1. Manchot, W.; Zechentmayer, K. <i>Annalen</i> <u>1906</u> , 350, 368-389.	

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Sulfuric acid; H ₂ SO ₄ ; [7664-93-9] 4. Iron(II) ammonium sulfate; Fe(NH ₄) ₂ (SO ₄) ₂ ; [10045-89-3]	ORIGINAL MEASUREMENTS: Manchot, W.; Huttner, F. <i>Annalen</i> <u>1910</u> , 372, 153-178.																																																																																																								
VARIABLES: Concentration of components 3 and 4	PREPARED BY: W. Gerrard																																																																																																								
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<p>* T/K = 284.15.</p> <p>M is the number of moles of the sulfate in 1 dm³ of solution.</p> <p>S is the number of moles of sulfuric acid in 1 dm³ of solution; the number () in brackets is the %.</p> <p>V is the volume in dm³ (at 273.15 K and 101.325 kPa) of nitric oxide absorbed for 1 mole of ferrous salt.</p> <p>P is the pressure of nitric oxide.</p>																																																																																																									
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COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Iron(II) ammonium sulfate; Fe(NH ₄) ₂ (SO ₄) ₂ ; [10045-89-3] 4. Hydrochloric acid; HCl; [7647-01-0]				ORIGINAL MEASUREMENTS: Manchot, W.; Huttner, F. <i>Annalen</i> <u>1910</u> , 372, 153-178.			
VARIABLES: Concentration of components 3 and 4				PREPARED BY: W. Gerrard			
EXPERIMENTAL VALUES:							
M/mol dm ⁻³	C/mol dm ⁻³	P/kPa	V/dm ³	M/mol dm ⁻³	C/mol dm ⁻³	P/kPa	V/dm ³
0.0122	12.56	100.657	22.1	0.0063	0	100.657	17.3
0.0128	1.6		13.2	0.0120	0		17.3
0.0128	3.4		15.8	0.0313	0		17.4
0.0128	7.76	100.790	19.5	0.0624	0		17.1
0.0128	8.94		21.0	0.0974	0		17.1
0.0130	7.3		19.2	0.2035	0		16.6
0.0131	11.0		22.5	0.4154	0		16.3
0.0302	12.56	100.657	22.5	0.6535	0		15.6
0.1336	12.56	100.123	22.1	1.4730	0		14.6
<p>M is the number of moles of sulfate in 1 dm³ of solution.</p> <p>C is the number of moles of hydrogen chloride in 1 dm³ of solution.</p> <p>P is the pressure of nitric oxide.</p> <p>V is the volume in dm³ (at 273.15 K, 101.325 kPa) of nitric oxide absorbed for 1 mole of iron(II) salt.</p>							
AUXILIARY INFORMATION							
METHOD APPARATUS/PROCEDURE: The volume of gas absorbed was measured by the Ostwald-type gas buret and absorption pipet. The apparatus and method were stated to be similar to those previously described (1), except that the technique for introducing the ferrous salt was modified.				SOURCE AND PURITY OF MATERIALS: 1. Nitric oxide was probably taken as 100% pure, see ref. (1). 2, 3. Appeared to be of satisfactory purity.			
				ESTIMATED ERROR:			
				REFERENCES: 1. Manchot, W.; Zechentmayer, K. <i>Annalen</i> <u>1906</u> , 350, 368-389.			

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Iron(II) chloride; FeCl ₂ ; [7758-94-3] 4. Hydrochloric acid; HCl; [7647-01-0]		ORIGINAL MEASUREMENTS: Manchot, W.; Huttner, F. <i>Annalen</i> <u>1910</u> , 372, 153-178.		
VARIABLES: Concentration of components 3 and 4		PREPARED BY: W. Gerrard		
EXPERIMENTAL VALUES:				
T/K	Conc. of Iron salt /mol dm ⁻³	Conc. of HCl /mol dm ⁻³ (soln.)	Pressure of NO /kPa	Volume, V ₁ , of NO, 1 mole of iron salt (101.325 kPa) /dm ³
273.15	0.0054	0	100.123	16.7
	0.0111	12.56	99.457	22.1
	0.0111	0	100.123	16.7
	0.0209	7.3	99.590	19.1
	0.0216	0	100.257	16.2
	0.0226	11.0	99.590	22.6
	0.1078	0	100.123	15.8
	0.2108	0	99.057	15.6
	0.4219	12.56	100.123	20.4
	0.5616	0	99.057	15.1
	0.0219	11.0	165.583	22.0
	0.0226	11.0	159.717	22.6
	0.0201	11.0	48.662	21.3
	0.0208	11.0	48.662	21.3
287.65	0.0306	11.0	98.257	21.8
AUXILIARY INFORMATION				
METHOD / APPARATUS / PROCEDURE: Apparatus and method were similar to those described (1), except that the procedure for introducing the ferrous salt was modified. The volume of gas absorbed was measured by means of the gas buret and absorption pipet technique.		SOURCE AND PURITY OF MATERIALS: 1. Nitric oxide probably taken as being 100% pure as in ref. (1). 2, 3, 4. Appeared to be of satisfactory purity.		
		ESTIMATED ERROR:		
		REFERENCES: 1. Manchot, W.; Zechentmayer, K. <i>Annalen</i> <u>1906</u> , 350, 368-389.		

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Hydrogen bromide; HBr; [10035-10-6] 4. Iron bromide, (Ferrous bromide); FeBr ₂ ; [7789-46-0] (see note)	ORIGINAL MEASUREMENTS: Manchot, W. <i>Ber.</i> <u>1914</u> , 47, 1601-1614																										
VARIABLES: Concentration	PREPARED BY: W. Gerrard																										
EXPERIMENTAL VALUES: <p style="text-align: center;">T/K = 273.15</p> <p style="text-align: center;">The pressure of NO was stated to be practically 1 atm (101.325 kPa).</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Conc of HBr / mol dm⁻³</th> <th style="text-align: center;">Volume, *V₁, of NO absorbed by 1 mole of ferrous salt /dm³</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">0.</td><td style="text-align: center;">17.45</td></tr> <tr><td style="text-align: center;">1.918</td><td style="text-align: center;">10.46</td></tr> <tr><td style="text-align: center;">2.110</td><td style="text-align: center;">10.06</td></tr> <tr><td style="text-align: center;">3.836</td><td style="text-align: center;">12.41</td></tr> <tr><td style="text-align: center;">4.54</td><td style="text-align: center;">12.65</td></tr> <tr><td style="text-align: center;">6.40</td><td style="text-align: center;">13.55</td></tr> <tr><td style="text-align: center;">9.35</td><td style="text-align: center;">17.19</td></tr> <tr><td style="text-align: center;">11.52</td><td style="text-align: center;">18.70</td></tr> <tr><td style="text-align: center;">12.20</td><td style="text-align: center;">19.60</td></tr> <tr><td style="text-align: center;">13.83</td><td style="text-align: center;">21.78</td></tr> <tr><td style="text-align: center;">14.33</td><td style="text-align: center;">22.14</td></tr> <tr><td style="text-align: center;">14.67</td><td style="text-align: center;">23.61</td></tr> </tbody> </table> <p>* appears to be the amount absorbed by ferrous bromide in excess of amount absorbed by hydrogen bromide solution.</p>		Conc of HBr / mol dm ⁻³	Volume, *V ₁ , of NO absorbed by 1 mole of ferrous salt /dm ³	0.	17.45	1.918	10.46	2.110	10.06	3.836	12.41	4.54	12.65	6.40	13.55	9.35	17.19	11.52	18.70	12.20	19.60	13.83	21.78	14.33	22.14	14.67	23.61
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AUXILIARY INFORMATION																											
METHOD: /APPARATUS/PROCEDURE: The volume of nitric oxide absorbed was observed as previously stated (1). The "Ferrous" molarity was stated to be equivalent to 0.0127 mole of ferrous ammonium sulfate in 1 dm ³ of solution.	SOURCE AND PURITY OF MATERIALS: 3. Hydrogen bromide was prepared from bromine and naththalene, and treated with red phosphorus. Other components presumably as previously stated in ref. (1). ESTIMATED ERROR: REFERENCES: 1. Manchot, W.; Zechentmayer, K. <i>Annalen</i> , <u>1906</u> , 350, 368-389. See also Manchot, W.; Huttner, F. <i>Annalen</i> , <u>1910</u> , 372, 153-178																										

<p>COMPONENTS:</p> <ol style="list-style-type: none"> Nitric oxide; NO; [10102-43-9] Water; H₂O; [7732-18-5] Iron II sulfate, (ferrous sulfate); FeSO₄; [7720-78-7] 	<p>ORIGINAL MEASUREMENTS:</p> <p>Manchot, W.; Haunschild, H. <i>Z. anorg. Chem.</i> <u>1924</u>, <i>140</i>, 22-36.</p>																																																																																
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<p>M is the molarity of ferrous sulfate V₃ is the volume of solution containing 1 mole of ferrous sulfate. P is the pressure of nitric oxide V₁ is the volume of nitric oxide absorbed by the solution containing 1 mole of sulfate; V₁ is adjusted to (273.15 K, 101.325 kPa).</p>																																																																																	
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COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Ethanol; C ₂ H ₅ O; [64-17-5] 4. Iron (II) selenate, (ferrous selenate); FeSeO ₄ ; [15857-43-9]		ORIGINAL MEASUREMENTS: Manchot, W.; Linckh, E. <i>Z. Anorg. Chem.</i> <u>1924</u> , 140,37-46.	
VARIABLES: Temperature, concentration		PREPARED BY: W. Gerrard	
EXPERIMENTAL VALUES: Concentration of ethanol was 90%.			
T/K	Molarity of ferrous selenate /mol dm ⁻³	Pressure of NO /kPa	Volume of nitric oxide (adjusted to 273.15, 101.325 kPa) absorbed per mole of ferrous salt /dm ³
273.15	0.034	92.031	20.4
273.15	0.0201	93.631	20.6
273.15	0.0142	93.497	20.6
273.15	0.0118	92.031	20.3
273.15	0.01034	93.231	20.2
273.15	0.00981	93.097	21.4
273.15	0.00794	92.564	22.2
267.16	0.0103	92.791	22.2
266.15	0.0103	92.604	22.6
259.15	0.0103	93.164	22.4
258.15	0.0102	93.871	23.2
253.15	0.0101	93.551	22.1
AUXILIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE: The volume of nitric oxide absorbed was measured by means of the apparatus referred to by Manchot and Huttner (1). The vapor pressure of the alcohol was taken into account.		SOURCE AND PURITY OF MATERIALS: 1. Nitric oxide was stated to be essentially pure. 4. Analytically tested.	
		ESTIMATED ERROR:	
		REFERENCES: 1. Manchot, W.; Huttner, F. <i>Annalen</i> , <u>1910</u> ,372,153.	

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Iron (II) selenate; FeSeO ₄ ; [15857-43-9] 4. Selenic acid; H ₂ SeO ₄ ; [7783-08-6]	ORIGINAL MEASUREMENTS: Manchot, W.; Linckh, E. Z. Anorg. Chem. <u>1924</u> , 140, 37-46.																								
VARIABLES: Concentration	PREPARED BY: W. Gerrard																								
EXPERIMENTAL VALUES: T/K is presumably 273.15. The Volume, V ₁ , of nitric oxide stated to be absorbed for 1 mole of ferrous selenate is for a pressure of nitric oxide equal to 101.325 kPa.																									
<table border="1"> <thead> <tr> <th data-bbox="142 603 363 672">Conc of ferrous selenate /mol dm⁻³</th> <th data-bbox="494 603 830 662">Concentration of H₂SeO₄ Weight, %</th> <th data-bbox="698 635 830 662">/mol dm⁻³</th> <th data-bbox="931 603 1076 629">V₁, dm³ (NO)</th> </tr> </thead> <tbody> <tr> <td data-bbox="201 711 290 733">0.0188</td> <td data-bbox="527 711 584 733">29.9</td> <td data-bbox="744 711 804 733">2.62</td> <td data-bbox="977 711 1034 733">18.2</td> </tr> <tr> <td data-bbox="201 735 277 756">0.049</td> <td data-bbox="527 735 584 756">58.8</td> <td data-bbox="744 735 777 756">6.7</td> <td data-bbox="977 735 1034 756">20.0</td> </tr> <tr> <td data-bbox="201 758 290 780">0.0195</td> <td data-bbox="527 758 584 780">67.9</td> <td data-bbox="744 758 804 780">7.15</td> <td data-bbox="977 758 1034 780">18.6</td> </tr> <tr> <td data-bbox="201 782 277 803">0.049</td> <td data-bbox="527 782 584 803">84.8</td> <td data-bbox="731 782 777 803">13.2</td> <td data-bbox="977 782 1034 803">11.9</td> </tr> <tr> <td data-bbox="201 805 290 827">0.0371</td> <td data-bbox="527 805 584 827">91.5</td> <td data-bbox="731 805 777 827">15.1</td> <td data-bbox="977 805 1034 827">11.6</td> </tr> </tbody> </table>		Conc of ferrous selenate /mol dm ⁻³	Concentration of H ₂ SeO ₄ Weight, %	/mol dm ⁻³	V ₁ , dm ³ (NO)	0.0188	29.9	2.62	18.2	0.049	58.8	6.7	20.0	0.0195	67.9	7.15	18.6	0.049	84.8	13.2	11.9	0.0371	91.5	15.1	11.6
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VARIABLES: Temperature, pressure	PREPARED BY: W. Gerrard.																																																																												
EXPERIMENTAL VALUES: The concentration of the ferrous salt was 0.03 moles dm ⁻³ . P is the pressure of NO. V ₁ is the volume of NO (273.15 K, 101.325 kPa) absorbed by the volume of solution, dm ³ , containing 1 mole of ferrous salt, i.e., per mole of ferrous salt. K is the equilibrium constant. $K = P [22.4 - V_1]/V_1]$																																																																													
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273.15	83.125	17.3	24.50																																																																										
273.15	82.618	17.0	26.24																																																																										
Mean			<u>24.91</u>																																																																										
286.15	23.558	6.0	64.39																																																																										
286.15	23.531	5.7	68.94																																																																										
286.15	23.518	5.6	70.55																																																																										
286.15	45.809	9.6	61.08																																																																										
286.15	44.476	9.4	61.51																																																																										
286.15	80.125	12.6	62.32																																																																										
286.15	81.045	12.7	61.90																																																																										
286.15	79.619	12.5	63.06																																																																										
Mean			<u>64.22</u>																																																																										
AUXILIARY INFORMATION																																																																													
METHOD APPARATUS/PROCEDURE: The volume of nitric oxide absorbed was observed as previously stated (1).	SOURCE AND PURITY OF MATERIALS: Presumably as previously described (1). ESTIMATED ERROR: REFERENCES: 1. Manchot, W.; Zechentmayer, K. <i>Annalen</i> , <u>1906</u> , 350, 368-389. See also Manchot, W.; Huttner, F. <i>Annalen</i> , <u>1910</u> , 372, 153-178.																																																																												

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Iron(II) ammonium sulfate; Fe(NH ₄) ₂ (SO ₄) ₂ ; [10045-89-3]	ORIGINAL MEASUREMENTS Manchot, W.; Haunschild, H. <i>Z. anorg. Chem.</i> <u>1924</u> , 140, 22-36.
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EXPERIMENTAL VALUES:

T/K	P/kPa	V ₁ /dm ³	K
298.15	46.675	5.3	150.59
298.15	46.449	5.3	149.86
298.15	59.834	6.2	156.34
298.15	60.074	6.2	156.97
298.15	92.004	8.5	150.45
298.15	91.564	8.3	155.55
		Mean	<u>153.29</u>

Heat of reaction was calculated by the van't Hoff formula :

$$\Delta H = \frac{4.571 T_1 T_2}{T_1 - T_2} (\log K_1 - \log K_2)$$

The following table shows the values given by the original authors, and those calculated by the compiler*.

T/K (1)	T/K (2)	$\Delta H/\text{kcal mole}^{-1}$	$\Delta H/\text{kcal mole}^{-1*}$	$\Delta H/\text{kJ mole}^{-1*}$
286.15	273.15	11.25	11.29	47.24
298.15	273.15	11.74	11.75	49.16
298.15	286.15	12.28	12.29	51.42
	Mean	<u>11.76</u>	11.78	49.27

Estimated by a graph, ΔH was given as 11.9 kcal.

Where V₁ is the volume, dm³, of nitric oxide absorbed for 1 mole of ferrous ammonium sulfate in a 0.03 molar solution, the authors calculated, by means of the equilibrium constant, the pressure of nitric oxide, P, required to give stated value of V₁. The compiler has also given the corresponding kPa values.

V ₁ , (273.15 K, 101.325 kPa).	Required P _{NO}					
	T/K = 273.15 /atm	/kPa	T/K = 286.15 /atm	/kPa	T/K = 298.15 /atm	/kPa
11.2	0.246	24.926	0.633	64.168	1.513	153.321
17.0	0.774	78.407	1.993	201.983	4.76	482.307
17.3	0.834	84.486	2.149	217.715	5.13	519.797
17.8	0.951	96.360	2.450	248.246	5.85	592.751
20.0	2.049	207.582	5.28	534.996	12.61	1277.708
22.2	27.3	2766.	70.3	7123.	168	17022.6

COMPONENTS:		ORIGINAL MEASUREMENTS:						
1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Iron (II) sulfate; FeSO ₄ ; [7720-78-7]		Ganz, S. N.; Mamon, L. I. <i>Zh. Prikl. Khim.</i> <u>1953</u> , <i>26</i> , 1005-13 and <i>J. Applied Chem. (USSR)</i> <u>1953</u> , <i>26</i> , 927-935.						
VARIABLES:		PREPARED BY:						
		W. Gerrard						
EXPERIMENTAL VALUES:								
TABLE 1								
Values of the equilibrium pressure, p , for solutions of 20% FeSO ₄ in which a volume, V , of nitric oxide has dissolved.								
V/cm^3		1000	2000	3000	4000	5000	6000	13000
T/K	$\theta/^\circ\text{C}$	$p_{\text{NO}}/\text{mmHg}$						
293	20	1.26	2.63	5.25	8.8	14.8	21.3	52.5
303	30	3.55	6.9	12.0	20.4	31.6	49	107
313	40	8.5	15.2	24.5	40.6	60.1	87	191
323	50	29	34.7	52.5	79.4	114.0	162	380
333	60	50	74	105	162	224	288	630
343	70	100	135	214	290	380	500	-
353	80	224	295	450	550	603	740	-
363	90	390	500	692	-	-	-	-
<p>V is the volume absorbed adjusted to a pressure of 760 mmHg (101.325 kPa) and a temperature of 273.15 K.</p>								
(cont.)								
AUXILIARY INFORMATION								
METHOD APPARATUS/PROCEDURE:				SOURCE AND PURITY OF MATERIALS:				
<p>The nitric oxide was absorbed in the aqueous solution contained in a fitted scrubber filled with rings and placed in a thermostat. It was simply stated that nitric oxide pressures over the solutions were "investigated" by the static method, and by the dynamic method. The ferrous sulfate content was stated to be "20%". It appears that this is weight per cent of anhydrous salt, <i>i.e.</i>, a concentration of 1.317 mole FeSO₄ per 1000 g of solution.</p>				<p style="text-align: center;">No details given.</p>				
				ESTIMATED ERROR:				
				<p style="text-align: center;">No details given.</p>				
				REFERENCES:				

COMPONENTS:	ORIGINAL MEASUREMENTS:
1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Iron (II) sulfate; FeSO ₄ ; [7720-78-7]	Ganz, S. N.; Mamon, L. I. <i>Zh. Prikl. Khim.</i> <u>1953</u> , <i>26</i> , 1005-13 and <i>J. Applied Chem. (USSR)</i> <u>1953</u> , <i>26</i> , 927-935.

TABLE 2

Values of the solubility coefficient*, H for solution containing 20% FeSO₄.

T/K	293	303	313	323	333	343	353	363
θ/°C	20	30	40	50	60	70	80	90
V/cm ³	Solubility coefficient, H							
1000	9.4	25.0	63.5	149.0	373.0	745.0	1670.0	2910.0
2000	9.8	25.8	56.6	129.0	276.0	505.0	1100.0	2000.0
3000	13.0	30.0	61.0	130.0	288.0	535.0	1120.0	1720.0
4000	16.4	38.2	76.0	148.0	303.0	550.0	1130.0	-
5000	22.0	47.2	90.0	170.0	334.0	568.0	1140.0	-
6000	26.6	61.0	101.0	202.0	359.0	622.0	-	-
13000	30.1	62.0	110.0	218.0	362.0	-	-	-

* defined as pressure of solution containing V cm³ of NO (measured at 101.325 kPa and 273.15 K) divided by the concentration of nitric oxide in solution as a weight-%.

TABLE 3

Values of the solubility coefficient*, H for solution containing 20% FeSO₄ and 2.68 g of nitric oxide + stated % acid. (% acid are probably percentage by weight)

T/K	293	303	313	323	333	343	353	363
θ/°C	20	30	40	50	60	70	80	90
	Solubility coefficient, H							
Without acid	9.8	25.8	56.7	129.0	276.0	505.0	1100	1865
5% H ₂ SO ₄	11.3	29	63.5	139.0	310.0	594.0	1290	2100
5% HNO ₃	12.1	31.7	71.0	159.0	373.0	710.0	1590	2580
5% H ₂ SO ₄ + 5% HNO ₃	13.1	37.3	93.5	214.0	515.0	1030	2460	-
5% HNO ₃ + 8% H ₂ SO ₄	14.5	48.2	121.0	317.0	817.0	1740	-	-
10% H ₂ SO ₄ + 7% HNO ₃	16.3	59.0	170.0	526.0	1550.0	-	-	-
15% H ₂ SO ₄ + 10% HNO ₃	19.1	85.5	304.0	1072.0	-	-	-	-

(cont.)

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Iron (II) sulfate; FeSO ₄ ; [7720-78-7]	ORIGINAL MEASUREMENTS: Ganz, S. N.; Mamon, L. I. <i>Zh. Prikl. Khim.</i> <u>1953</u> , <i>26</i> , 1005-13 and <i>J. Applied Chem. (USSR)</i> <u>1953</u> , <i>26</i> , 927-935.
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TABLE 4

Effects of additives upon the absorption of nitric oxide in 20% FeSO₄ solution at 293 K and 101.3 kPa pressure.

Solution	Gas:	NO absorbed			
	NO %	* cm ³	* mol	mol ⁻¹ FeSO ₄	
FeSO ₄	pure	76	378	0.017	0.43
	+5% H ₂ SO ₄	79	191	0.0085	0.215
	+ 1% hydroquinone	70	258	0.012	0.301
	+ 1% phenol	72	131	0.0059	0.148
	+ 1% sodium sulfide	72	208	0.0093	0.234
	+ 1% HNO ₃	72	202	0.009	0.225
	+ 3% HNO ₃	72	184	0.00825	0.208
	+ 5% HNO ₃	75	195	0.00875	0.22
	+ 1% HNO ₃ + 1% hydroquinone	75	276	0.0123	0.31
	+ 1% hydroquinone + 3% HNO ₃	75	276	0.0123	0.31
	+ 1% hydroquinone + 5% HNO ₃	75	276	0.0123	0.31
	+ 1% phenol + 3% HNO ₃	75	208	0.0093	0.294
	+ 1% phenol + 5% HNO ₃	75	212	0.0095	0.24
	+ 1% hydroquinone + 2% H ₂ SO ₄ + 3% HNO ₃	75	268	0.012	0.31

* per 30 cm³ of solution.

Note the original paper presents data on solubilities after several regenerations of the solution by boiling.

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Iron (II) sulfate; FeSO ₄ ; [7720-78-7]		Pozin, M.E.; Zubov, V.V.; Tereshchenko, L. Ya.; Tarat, E. Ya.; Ponomarev, Yu.L. <i>Izv. Vysshikh Uchebn. Zavedeni,</i> <i>Khim. i. Khim. Tekhnol. 1963, 6, (4),</i> 608-616.	
VARIABLES:		PREPARED BY:	
Temperature, concentration of salt		W. Gerrard.	
EXPERIMENTAL VALUES: 1 atm = 101.325 kPa.			
Concn. of salt / mol dm ⁻³	T/K	Vol. NO. abs. per mole salt /dm ³ *	p _{NO} /atm
1.54	283.15	13.5	0.93
	288.15	11.14	0.93
	288.15	11.08	0.93
	293.15	9.35	0.92
	293.15	9.65	0.93
	303.15	5.87	0.77
	303.15	6.62	0.90
	318.15	2.90	0.79
	318.15	3.50	0.86
	328.15	2.12	0.81
	333.15	1.60	0.77
	338.15	1.22	0.68
	338.15	1.175	0.73
	348.15	0.381	0.60
	348.15	0.76	0.57
	0.705	278.15	15.05
283.15		13.4	0.93
288.15		11.6	0.93
293.15		9.81	0.92
293.15		10.00	0.93
308.15		5.5	0.945
323.15		2.8	0.89
338.15		1.2	0.77
AUXILIARY INFORMATION			
METHOD APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
Volume of gas absorbed was measured by the change in volume in a measuring buret, water saturated with gas being used as a liquid seal. Purified nitrogen was used as a gas diluent to obtain results for various partial pressures of nitric oxide. Vapor pressure of water was taken into account. Absorption was first effected at 363 K, and the temperature was decreased, and then increased again to give 2 values for each temperature. These were stated to agree well. Desorption measurements were also mentioned.		1. Dry gas stated to be 95-98%. Source not stated.	
		2. Water may be assumed to be of satisfactory purity.	
		3. Ferrous sulfate may be assumed to be of satisfactory purity.	
		ESTIMATED ERROR:	
		REFERENCES:	

(cont.)

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Iron (II) sulfate; FeSO ₄ ; [7720-78-7]		Pozin, M.E.; Zubov, V.V.; Tereshchenko, L. Ya.; Tarat, E.Ya. Ponomarev, Yu.I. <i>Izv. Vysshikh Uchebn. Zavedenii, Khim. i. Khim. Tekhnol.</i> 1963, 6, (4), 608-616.	
EXPERIMENTAL VALUES:		1 atm = 101.325 kPa.	
Concn. of salt / mol dm ⁻³	T/K	Vol. NO. abs. per mole salt / dm ³ *	p _{NO} / atm
0.705	353.15	0.3	0.55
0.262	278.75	17.3	0.94
	283.15	15.2	0.935
	283.15	15.3	0.93
	288.15	13.3	0.93
	293.15	10.85	0.924
	293.15	8.9	0.91
	303.15	7.7	0.90
	313.15	4.9	0.87
0.065	283.15	16.2	0.935
	283.15	16.2	0.92
	288.15	13.7	0.93
	293.15	11.3	0.92
	293.15	11.3	0.91
	298.15	8.8	0.92
	303.15	7.3	0.90
	313.15	4.7	0.88
	313.15	4.6	0.88
	328.15	1.8	0.80
	343.15	1.3	0.66
	353.15	0.7	0.52
	358.15	0.5	0.42
* Volume adjusted to 1 atm and 273 K.			

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Iron chloride; (ferrous chloride) FeCl ₂ ; [7758-94-3]		Pozin, M.E.; Zubov, V.V.; Tereshchenko, L. Ya.; Tarat, E. Ya.; Ponomarev, Yu. L. <i>Izv. Vysshikh Ushebn. Zavedeniï, Khim. i. Khim. Tekhnol. 1963, 6, (4). 608-616.</i>	
VARIABLES:		PREPARED BY:	
		W. Gerrard.	
EXPERIMENTAL VALUES:			
1 atm = 101.325 kPa.			
Conc. of salt /mol dm ⁻³	T/K	Vol. No. abs. per mole of salt /dm ³ *	p _{NO} /atm
1.771	283.15	13.8	0.82
	293.15	10.3	0.91
	303.15	7.15	0.93
	313.15	4.65	0.91
	323.15	2.95	0.87
0.885	333.15	1.82	0.81
	348.15	0.734	0.63
	283.15	13.98	0.81
	293.15	10.3	0.92
	303.15	6.95	0.94
0.435	313.15	4.44	0.92
	323.15	2.69	0.88
	333.15	1.58	0.81
	348.15	0.657	0.63
	283.15	14.4	0.88
	293.15	10.45	0.93
	303.15	6.8	0.92
	313.15	4.33	0.90
	323.15	2.52	0.86
	333.15	1.38	0.78
348.15	0.468	0.62	
* Volume adjusted to 1 atm, 273.15 K			
AUXILIARY INFORMATION			
METHOD APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
Volume of gas absorbed was measured by the change in volume in a measuring buret, water saturated with the gas being used as a liquid seal. Purified nitrogen was used to obtain lower partial pressure of nitric oxide. Vapor pressure of water was taken into account. Absorption was first effected at 363 K, and then the temperature was lowered. Desorption measurements were also mentioned.		1. Dry gas stated to be 95-98%. Source not stated.	
		2. Water may be taken as pure	
		3. Ferrous chloride may be taken of satisfactory purity.	
		ESTIMATED ERROR:	
		REFERENCES:	

COMPONENTS:			ORIGINAL MEASUREMENTS:	
1. Nitric Oxide; NO; [10102-43-9]			Polovchenko, V.I.; Skvortsov, G.A.	
2. Water; H ₂ O; [7732-18-5]			Z. Prikl. Khim. 1974, 47, 1917-1922	
3. Iron (II) sulfate; FeSO ₄ ; [7720-78-7]				
VARIABLES:			PREPARED BY:	
Pressure			C.L. Young	
EXPERIMENTAL VALUES:				
T/°C	T/K	Partial pressure of NO p/atm	Partial pressure of NO p/MPa	Nitric oxide concentration, C dm ³ (at 273.2 K and 101.3kPa) mol ⁻¹
22.4	295.6	1.0	0.10	9.3
21.8	295.0	1.5	0.15	11.74
21.4	294.6	2.1	0.21	13.00
21.5	294.7	3.1	0.31	15.75
21.5	294.7	4.6	0.47	17.35
21.1	294.3	4.7	0.48	17.35
22.5	295.7	5.4	0.55	17.75
21.7	294.9	7.0	0.71	18.78
20.4	293.6	7.7	0.78	19.80
20.3	293.5	13.1	1.33	20.95
21.4	294.6	19.7	2.00	22.10
AUXILIARY INFORMATION				
METHOD / APPARATUS / PROCEDURE:			SOURCE AND PURITY OF MATERIALS:	
High pressure static bomb. Known amount of gas dissolved in solution of known volume in a vessel of known volume. Pressure measured with Bourdon gauge. Solubilities determined for 20, 10, 5 and 2.5 wt% iron sulfate solutions but results tabulated for 10 wt% only. Graphical results given for other concentrations.			No details given.	
			ESTIMATED ERROR:	
			$\delta T/K = \pm 0.1$; $\delta C = \pm 0.1$	
			REFERENCES:	

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Ethanol, C ₂ H ₅ OH; [64-17-5] 3. Iron bromide, (ferrous bromide); FeBr ₂ ; [7789-46-0]	ORIGINAL MEASUREMENTS: Thomas, V. <i>Bull Soc. Chem.</i> <u>1898</u> , 19, (3), 343. Thomas, V. <i>Ann. Chim. Phys.</i> <u>1898</u> , 13, (7), 145.																																								
VARIABLES: Temperature, concentration	PREPARED BY: W. Gerrard																																								
EXPERIMENTAL VALUES: <table border="1" data-bbox="100 485 1188 799"> <thead> <tr> <th>Weight of ferrous Fe, g, in 100 cm³ of solution</th> <th>Volume of salt solution /cm³</th> <th>T/K</th> <th>Volume of NO absorbed /cm³</th> <th>Mole of NO/56 of ferrous iron*</th> </tr> </thead> <tbody> <tr><td>0.789</td><td>11.2</td><td>290.16</td><td>21</td><td>0.595</td></tr> <tr><td>0.789</td><td>16.5</td><td>291.16</td><td>28</td><td>0.538</td></tr> <tr><td>0.789</td><td>11.3</td><td>286.16</td><td>24.5</td><td>0.687</td></tr> <tr><td>3.110</td><td>8</td><td>289.16</td><td>52</td><td>0.523</td></tr> <tr><td>3.110</td><td>4.8</td><td>285.16</td><td>47</td><td>0.787</td></tr> <tr><td>3.110</td><td>8</td><td>288.16</td><td>54</td><td>0.543</td></tr> <tr><td>3.110</td><td>5</td><td>287.16</td><td>44</td><td>0.708</td></tr> </tbody> </table> <p>* Calculated by compiler. P_{NO} assumed to be 101.325 kPa.</p> <p>NOTE: The volume of pure ethanol equal to the volume of solution containing 56 g of ferrous iron would absorb approximately 0.09 mole of NO for the first group of data, and 0.08 mole NO for the second group.</p> <p>In the calculation of the mole ratio, NO/Fe, the compiler has assumed that the volume of absorbed NO has been adjusted to 273.16 K, as appears to be done in the paper (1).</p> <p>NOTE: In the second paper cited above, Thomas gave the weight of ferrous iron (Fe) as 8.89 g per 100 cm³ instead of the above quoted 0.789 g per 100 cm³, given in the first cited paper. The temperature was given as 17.0°C in the second paper.</p>		Weight of ferrous Fe, g, in 100 cm ³ of solution	Volume of salt solution /cm ³	T/K	Volume of NO absorbed /cm ³	Mole of NO/56 of ferrous iron*	0.789	11.2	290.16	21	0.595	0.789	16.5	291.16	28	0.538	0.789	11.3	286.16	24.5	0.687	3.110	8	289.16	52	0.523	3.110	4.8	285.16	47	0.787	3.110	8	288.16	54	0.543	3.110	5	287.16	44	0.708
Weight of ferrous Fe, g, in 100 cm ³ of solution	Volume of salt solution /cm ³	T/K	Volume of NO absorbed /cm ³	Mole of NO/56 of ferrous iron*																																					
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3.110	5	287.16	44	0.708																																					
AUXILIARY INFORMATION																																									
METHOD /APPARATUS/PROCEDURE: The liquid was contained in a simple glass vessel furnished with an inlet tube which passed right into the liquid, and with an exit tube. Nitric oxide was slowly passed into the liquid, and the entrained water vapor was collected and weighed. It was simply stated that the quantity of absorbed gas was determined. The pressure was not mentioned.	SOURCE AND PURITY OF MATERIALS: NO: Not mentioned; but presumably prepared from mercury and nitric acid as in ref.(1). ESTIMATED ERROR: REFERENCES: (1) Thomas, V. <i>Bull. Soc. Chim.</i> , <u>1898</u> , 19, (3), 419.																																								

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Ethanol; C ₂ H ₅ OH; [64-17-5] 3. Iron chloride (ferrous chloride); FeCl ₂ ; [7758-94-3]	ORIGINAL MEASUREMENTS: Thomas, V. <i>Bull. Soc. Chim.</i> <u>1898</u> , 19, (3), 419; <i>Ann. Chim. Phys.</i> <u>1898</u> , 13, (7), 145.
VARIABLES: Temperature.	PREPARED BY: W. Gerrard
EXPERIMENTAL VALUES: <p>The solution contained 4.6 g of ferrous iron in 1 dm³. At 290.16 K 12.2 cm³ of this solution absorbed 21.5 cm³ of NO (adjusted to 273.16 K).</p> <p>At 288.16 K 12.5 cm³ of this solution absorbed 23.4 cm³ of NO (adjusted to 273.16 K)</p> <p>Although the pressure was stated to be 101.325 kPa, "augmentee de la pression de tension maxima du solvant", the actual pressure was not stated.</p> <p>Assuming p_{NO} to be 101.325 kPa, the solution containing 56 g of ferrous iron absorbed 0.959 moles of NO at 290.16 K; and 1.02 moles of NO at 288.16 K. The alcohol contained in the solution would when pure absorb about 0.148 mole of NO.</p>	
AUXILIARY INFORMATION	
METHOD / APPARATUS / PROCEDURE: A measured volume of the alcoholic solution of ferrous salt was introduced into a graduated test-tube resting over mercury in a larger vessel. By means of a second graduated test-tube a known volume of nitric oxide was passed into the first tube. There was no diagram, and the actual operation is difficult to visualize from this description.	SOURCE AND PURITY OF MATERIALS: Nitric oxide was self prepared by the action of mercury on nitric acid. ESTIMATED ERROR: REFERENCES:

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Ethanol; C ₂ H ₆ O; [64-17-5] 3. Iron(II) iodide; FeI ₂ ; [7783-86-0]	ORIGINAL MEASUREMENTS: Thomas, V.; <i>Bull. Soc. Chim.</i> <u>1898</u> , 19 (3), 343. Thomas, V.; <i>Ann. Chim. Phys.</i> <u>1898</u> , 13 (7), 145.																				
VARIABLES: <p style="text-align: center;">Temperature</p>	PREPARED BY: <p style="text-align: center;">W. Gerrard</p>																				
EXPERIMENTAL VALUES:																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Weight of ferrous iron, g, in 100 cm³ of solution</th> <th style="text-align: left;">Volume of salt soln. /cm³</th> <th style="text-align: left;">T/K</th> <th style="text-align: left;">Volume of NO absorbed /cm³</th> <th style="text-align: left;">Mole NO/ for 56 g Fe*</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1.925</td> <td style="text-align: center;">8</td> <td style="text-align: center;">288.16</td> <td style="text-align: center;">23</td> <td style="text-align: center;">0.374</td> </tr> <tr> <td style="text-align: center;">1.925</td> <td style="text-align: center;">9.1</td> <td style="text-align: center;">294.16</td> <td style="text-align: center;">26</td> <td style="text-align: center;">0.371</td> </tr> <tr> <td style="text-align: center;">1.925</td> <td style="text-align: center;">9</td> <td style="text-align: center;">285.16</td> <td style="text-align: center;">27</td> <td style="text-align: center;">0.390</td> </tr> </tbody> </table>		Weight of ferrous iron, g, in 100 cm ³ of solution	Volume of salt soln. /cm ³	T/K	Volume of NO absorbed /cm ³	Mole NO/ for 56 g Fe*	1.925	8	288.16	23	0.374	1.925	9.1	294.16	26	0.371	1.925	9	285.16	27	0.390
Weight of ferrous iron, g, in 100 cm ³ of solution	Volume of salt soln. /cm ³	T/K	Volume of NO absorbed /cm ³	Mole NO/ for 56 g Fe*																	
1.925	8	288.16	23	0.374																	
1.925	9.1	294.16	26	0.371																	
1.925	9	285.16	27	0.390																	
<p>* Calculated by the compiler. Based on the assumption that the observed volume of NO had been adjusted to 273.16 K, and that the pressure of NO, p_{NO}, was 101.325 kPa.</p>																					
AUXILIARY INFORMATION																					
METHOD APPARATUS/PROCEDURE: <p>The liquid was contained in simple glass vessel furnished with an inlet tube passing right into the liquid, and an exit tube. Nitric oxide was slowly passed into the liquid. It was simply stated that the quantity of absorbed gas was determined. The pressure was not stated.</p>	SOURCE AND PURITY OF MATERIALS: <p>1. NO: not mentioned; but presumably it was prepared from mercury and nitric acid (1).</p> <hr/> ESTIMATED ERROR: <hr/> REFERENCES: <p>1. Thomas, V.; <i>Bull. Soc. Chim.</i> <u>1898</u>, 19 (3), 419.</p>																				

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitric oxide; NO; [10102-43-9] 2. Ethanol; C ₂ H ₅ OH; [64-17-5] 3. Iron chloride (Ferrous chloride); FeCl ₂ ; [7758-94-3]		Manchot, W.; Zechentmayer, K. <i>Annalen</i> , <u>1906</u> , 350, 368-389.	
VARIABLES:		PREPARED BY:	
Temperature, pressure		W. Gerrard	
EXPERIMENTAL VALUES:			
T/K	Weight of FeCl ₂ added to 50 cm ³ ethanol + 2 cm ³ of hydrochloric acid, 14% HCl /g	Pressure of nitric oxide /kPa	Volume, V ₁ , of nitric oxide absorbed per mole of FeCl ₂ . /dm ³ (273.15 K, 101.325 kPa)
301.15	0.2464	89.164	21.2
284.75	0.2289	94.617	21.4
281.55	0.2766*	96.390	21.9
270.65	0.2210	98.257	21.9
270.95	0.2461	267.573	21.8
275.36	0.5716** +	183.448	21.7
270.95	0.2320 +	183.175	22.5
270.95	0.1369***	97.857	22.7
* 39.8% Fe. ** 43.88% Fe. *** 20 cm ³ of ethanol, and no hydrochloric acid. + Only 3 drops of hydrochloric acid (14% HCl).			
AUXILIARY INFORMATION			
METHOD: /APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
Volumetric apparatus. A three-way tube was connected to a gas buret and an absorption pipet; the third member was used for exhausting the apparatus, and for passing in the gas. By means of a levelling tube containing mercury, the pressure and volume of gas in the buret could be regulated.		1. Prepared from sodium nitrite and dilute sulfuric acid, and washed with alkali. Stated to be 100% pure. 2. Stated to be absolute. 3. Prepared from hydrogen chloride and hot sheet iron. Attested analytically.	
		ESTIMATED ERROR:	
		REFERENCES:	

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitric oxide; NO; [10102-43-9]		Manchot, W.; Huttner, F.	
2. Organic liquid		<i>Annalen</i>	
3. Iron(II) chloride; FeCl ₂ ; [7758-94-3]		<u>1910</u> , 372, 153-178.	
VARIABLES:		PREPARED BY:	
		W. Gerrard	
EXPERIMENTAL VALUES: T/K = 273.15			
Organic liquid	Conc. of Iron(II) /mol dm ⁻³	Pressure of NO /kPa	Volume, V, of NO per mole of Iron(II) salt /dm ³
Ethanol; C ₂ H ₅ OH; [64-17-5]	0.0102	100.257	22.2
Ethyl benzoate; C ₆ H ₅ CO ₂ C ₂ H ₅ ; [93-89-0]	0.0292	100.257	22.5
	0.0667	100.790	22.6
Ethyl acetate; CH ₃ CO ₂ C ₂ H ₅ ; [141-78-6]	0.0154	99.190	22.2
Diethyl propanedioate (Ethyl malonate); CH ₂ (CO ₂ C ₂ H ₅) ₂ ; [105-53-3]	0.0571	98.257	22.8
2-Propanone; CH ₃ COCH ₃ ; [67-64-1]	0.0193	100.257	22.2
	0.0302	98.257	21.9
Pyridine; C ₅ H ₅ N; * [110-86-1]	0.0224	100.390	22.6
	0.0229	100.390	22.4
* not free from water.		V is the volume of NO after adjustment to 101.325 kPa.	
AUXILIARY INFORMATION			
METHOD / APPARATUS / PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
The volume of gas absorbed was measured by the Ostwald-type gas buret and absorption pipet. The apparatus and method were stated to be similar to those previously described (1), except that the technique for introducing the ferrous salt was modified.		1. Nitric oxide probably taken as 100% pure, see ref. (1).	
		2, 3. Appeared to be of satisfactory purity.	
		ESTIMATED ERROR:	
		REFERENCES:	
		1. Manchot, W.; Zechentmayer, K. <i>Annalen</i> <u>1906</u> , 350, 368-389.	

EXPERIMENTAL VALUES:		Volume, V, of NO adjusted to 273.15 K and 101.325 kPa, absorbed per 1 mole Fe /dm ³		
T/K	Gram-atom of Fe in 1 dm ³ of solution	Conc. of H ₂ SO ₄ /mol dm ⁻³ (soln.)	Pressure of NO /kPa	
273.15	0.0096	18.32 (97.6%)	102.123	44.7
	0.0104	18.32 (97.6%)	99.857	44.4
	0.0106	0	99.857	0
	0.0108	16.92 (90.6%)	99.323	44.8
	0.0109	6.67 (47.6%)	99.323	0
	0.0109	11.73 (70.8%)	99.323	0
	0.0113	14.69 (82.0%)	99.323	0
	0.0500	16.92 (90.6%)	101.723	44.4
	0.1000	16.92 (90.6%)	101.723	42.2
	0.1960	16.92 (90.6%)	101.723	31.0
	1.4000	0	98.790	0
	0.0102	16.92 (90.6%)	166.783	44.9
	0.0117	16.92 (90.6%)	42.529	44.7
	284.15	0.0100	16.92 (90.6%)	101.723
AUXILIARY INFORMATION				
METHOD 'APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:		
Apparatus and method were similar to those described (1), see also (2). The volume of absorbed gas was measured by means of a gas buret and absorption pipet.		1. Nitric oxide probably taken as being 100% pure as in refs. (1) and (2).		
		2, 3, 4. Appeared to be of satisfactory purity.		
		ESTIMATED ERROR:		
		REFERENCES:		
		1. Manchot, W.; Zechentmayer, K. <i>Annalen</i> , <u>1906</u> , 350, 368-389.		
		2. Manchot, W.; Huttner, F. <i>Annalen</i> , <u>1910</u> , 372, 153-178.		

COMPONENTS:

1. Nitric oxide; NO; [10102-43-9]
2. Water; H₂O; [7732-18-5]
3. Sulfuric acid; H₂SO₄; [7664-93-9]
4. Iron(III) sulfate; Fe₂(SO₄)₃; [10028-22-5]

ORIGINAL MEASUREMENTS:

Manchot, W.
Annalen
1910, 372, 179-186.

VARIABLES:

Concentration of
components 3 and 4

PREPARED BY:

W. Gerrard

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Ethanol; C ₂ H ₅ OH; [64-17-5] 3. Iron chloride (Ferric chloride); FeCl ₃ ; [7705-08-0]	ORIGINAL MEASUREMENTS: Griffith, W. P.; Lewis, J.; Wilkinson, G. <i>J. Chem. Soc.</i> <u>1958</u> , 3993-3998.
VARIABLES:	PREPARED BY: <p style="text-align: center;">W. Gerrard</p>
EXPERIMENTAL VALUES: <p>M = Molarity of FeCl₃/mol dm⁻³. P = Pressure of NO/kPa. V₁ = Volume of NO/dm³ (adjusted to 273.15 K, 101.325 kPa); V₁ is based on the authors' loose statement: "Vol of NO absorbed per mole at N.T.P.", the mole apparently referring to FeCl₃. K = Equilibrium constant, given by the authors as the mean value of $P_{NO} \text{ FeCl}_3 / \text{FeCl}_3 \text{ NO}$, in mmHg. K* = The compiler's values based on $K = P_{NO} (22.4 - V_1) / V_1$, in mmHg. $\Delta H = 4.571(\log K_1 - \log K_2) \times T_1 T_2 / (T_1 - T_2)$, T = T/K.</p> <p>NOTE: The authors simply stated: "heat of reaction 20.4 kcal/mole", but the basis of the calculation was not revealed.</p> <p>V₁(E) = Volume of NO (adjusted to 273.15 K, 101.325 kPa) which would be absorbed by that volume of ethanol equal to the volume of solution containing 1 mole of FeCl₃.</p> <p style="text-align: right;">(cont.)</p>	
AUXILIARY INFORMATION	
METHOD APPARATUS/PROCEDURE: <p>It was simply stated that the gas absorption was measured in a conventional Warburg-type apparatus.</p>	SOURCE AND PURITY OF MATERIALS: 1. Nitric oxide was prepared in a sodium nitrite-ferrous sulfate generator; nitrogen dioxide was removed by a concentrated aqueous solution of potassium hydroxide. 2, 3. Probably of satisfactory purity.
ESTIMATED ERROR:	
REFERENCES:	

1. Nitric oxide; NO; [10102-43-9]
2. Ethanol; C₂H₅OH; [64-17-5]
3. Iron chloride (Ferric chloride); FeCl₃; [7705-08-0]

Griffith, W. P.; Lewis, J.;
 Wilkinson, G.
J. Chem. Soc. 1958, 3993-3998.

EXPERIMENTAL VALUES:

T/K	M	P/kPa	V ₁ /dm ³	K/(mmHg)	K*/(mmHg)	V ₁ (E)	No.
282.4	0.034	98.657	21.3	-	38.2	8.4	1
	0.017		21.0	43.9	49.3	16.8	2
294.4	0.034	96.537	18.0	-	177.0	7.7	3
	0.017		17.4	196.0	208.1	15.4	4
298	0.034	93.99	15.2	-	333.9	7.6	5
	0.017		16.1	305.0	275.9	15.2	6

ΔH values, calculated by compiler: T/K range (): (1-3) 21.09; (1-4) 23.32; (1-5) 23.22; (1-6) 21.17; (2-3) 17.58; (2-4) 19.81; (2-5) 20.49; (2-6) 18.44; (3-5) 30.70; (3-6) 21.47; (4-5) 22.87; (4-6) 13.63 kcal mol⁻¹ (1 kcal = 4.1840 kJ).

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Hydrochloric acid; HCl; [7647-01-0] 4. Copper (II) chloride, (Cupric chloride); CuCl ₂ ; [7447-39-4]	ORIGINAL MEASUREMENTS: Kohlschutter, V.; Kutscheroff, M. Ber, <u>1904</u> , 37,3044-3052																																	
VARIABLES: Concentration	PREPARED BY: W. Gerrard.																																	
EXPERIMENTAL VALUES: Neither temperature nor pressure of nitric oxide were stated. T/K thought to be 293.16 K, and P _{NO} to be 101.325 kPa. <table border="0" style="width: 100%;"> <thead> <tr> <th style="text-align: left;">Volume, V_s, of hydrochloric acid (concentrated) containing one mole of cupric chloride /dm³</th> <th style="text-align: left;">Volume, V₁, absorbed by V_s /dm³</th> <th style="text-align: left;">Ostwald coefficient, L, calculated by compiler.</th> </tr> </thead> <tbody> <tr><td>0.389</td><td>0.801</td><td>2.059</td></tr> <tr><td>0.410</td><td>0.933</td><td>2.276</td></tr> <tr><td>0.840</td><td>2.838</td><td>3.379</td></tr> <tr><td>1.230</td><td>3.426</td><td>2.785</td></tr> <tr><td>2.462</td><td>3.989</td><td>1.620</td></tr> <tr><td>7.499</td><td>3.931</td><td>0.524</td></tr> <tr><td>12.500</td><td>3.606</td><td>0.288</td></tr> <tr><td>18.750</td><td>3.153</td><td>0.168</td></tr> <tr><td>28.650</td><td>1.976</td><td>0.069</td></tr> <tr><td></td><td>Pure water</td><td>0.0505 (1)</td></tr> </tbody> </table>		Volume, V _s , of hydrochloric acid (concentrated) containing one mole of cupric chloride /dm ³	Volume, V ₁ , absorbed by V _s /dm ³	Ostwald coefficient, L, calculated by compiler.	0.389	0.801	2.059	0.410	0.933	2.276	0.840	2.838	3.379	1.230	3.426	2.785	2.462	3.989	1.620	7.499	3.931	0.524	12.500	3.606	0.288	18.750	3.153	0.168	28.650	1.976	0.069		Pure water	0.0505 (1)
Volume, V _s , of hydrochloric acid (concentrated) containing one mole of cupric chloride /dm ³	Volume, V ₁ , absorbed by V _s /dm ³	Ostwald coefficient, L, calculated by compiler.																																
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AUXILIARY INFORMATION																																		
METHOD/APPARATUS/PROCEDURE: A gas buret and pipet of the Ostwald type were connected to a gasometer by a lead capillary tube. Two electrodes were fitted to the absorption tube, and the specific conductance was determined before and after the absorption. It was stated that the point of saturation could be sharply determined.	SOURCE AND PURITY OF MATERIALS: No details given. ESTIMATED ERROR: (Empty)																																	
REFERENCES: 1. Winkler, L.W. Ber. <u>1901</u> , 34, 1414																																		

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Copper chloride, (Cupric chloride); CuCl ₂ ; [7447-39-4]	ORIGINAL MEASUREMENTS: Kohlschutter, V.; Kutscheroff, M. <i>Ber.</i> <u>1904</u> , 37, 3044-3052.	
VARIABLES: Concentration	PREPARED BY: W. Gerrard.	
EXPERIMENTAL VALUES: Neither temperature nor pressure of nitric oxide were stated. T/K thought to be 293.16 K, and p_{NO} to be 101.325 kPa.		
Volume of solution, V_s containing 1 mole of cupric chloride /dm ³	Volume of nitric oxide, absorbed by the volume V_s , of solution /dm ³	Ostwald coefficient, L , calculated by compiler.
0.231	0.120	0.519
0.277	0.098	0.354
0.371	0.052	0.140
	Pure water (1)	0.0505
AUXILIARY INFORMATION		
METHOD/APPARATUS/PROCEDURE: A gas buret and pipet of the Ostwald type were connected to a gasometer by a lead capillary tube. Two electrodes were fitted to the absorption tube, and the specific conductance was determined before and after the absorption. It was stated that the point of saturation could be sharply determined.	SOURCE AND PURITY OF MATERIALS: No details given.	
	ESTIMATED ERROR:	
	REFERENCES: 1. Winkler, L.W. <i>Ber.</i> <u>1901</u> , 34, 1414	

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Copper bromide (Cupric bromide); CuBr ₂ ; [7789-45-9]	ORIGINAL MEASUREMENTS: Kohlschutter, V.; Kutscheroff, M. <i>Ber.</i> <u>1904</u> , 37, 3044-3052.															
VARIABLES: Concentration	PREPARED BY: W. Gerrard															
EXPERIMENTAL VALUES: Neither temperature nor pressure of nitric oxide were stated. T/K thought to be 293.16 K, and p _{NO} to be 101.325 kPa. <table border="1" data-bbox="82 592 1202 830"> <thead> <tr> <th data-bbox="82 592 494 703">Volume, V_s, of water containing one mole of cupric bromide /dm³</th> <th data-bbox="494 592 868 703">Volume, V₁, of nitric oxide absorbed by V_s /dm³</th> <th data-bbox="868 592 1202 703">Ostwald coefficient, L, calculated by compiler</th> </tr> </thead> <tbody> <tr> <td data-bbox="82 703 494 737">0.37</td> <td data-bbox="494 703 868 737">0.515</td> <td data-bbox="868 703 1202 737">1.392</td> </tr> <tr> <td data-bbox="82 737 494 771">0.62</td> <td data-bbox="494 737 868 771">0.120</td> <td data-bbox="868 737 1202 771">0.194</td> </tr> <tr> <td data-bbox="82 771 494 805">0.925</td> <td data-bbox="494 771 868 805">0.000</td> <td data-bbox="868 771 1202 805">-</td> </tr> <tr> <td colspan="2" data-bbox="82 805 919 830">Pure water (1)</td> <td data-bbox="919 805 1202 830">0.0505</td> </tr> </tbody> </table>		Volume, V _s , of water containing one mole of cupric bromide /dm ³	Volume, V ₁ , of nitric oxide absorbed by V _s /dm ³	Ostwald coefficient, L, calculated by compiler	0.37	0.515	1.392	0.62	0.120	0.194	0.925	0.000	-	Pure water (1)		0.0505
Volume, V _s , of water containing one mole of cupric bromide /dm ³	Volume, V ₁ , of nitric oxide absorbed by V _s /dm ³	Ostwald coefficient, L, calculated by compiler														
0.37	0.515	1.392														
0.62	0.120	0.194														
0.925	0.000	-														
Pure water (1)		0.0505														
AUXILIARY INFORMATION																
METHOD / APPARATUS / PROCEDURE: A gas buret and pipet of the Ostwald type were connected to a gasometer by a lead capillary tube. Two electrodes were fitted to the absorption tube, and the specific conductance was determined before and after the absorption. It was stated that the point of saturation could be sharply determined.	SOURCE AND PURITY OF MATERIALS: No details given. ESTIMATED ERROR: REFERENCES: 1. Winkler, L.W. <i>Ber.</i> <u>1901</u> , 34, 1414															

COMPONENTS:		ORIGINAL MEASUREMENTS:		
1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Copper (II) sulfate; CuSO ₄ ; [18939-61-2] 4. Sulfuric acid; H ₂ SO ₄ ; [7664-93-9]		Manchot, W. <i>Annalen</i> , <u>1910</u> , 375, 308-315		
VARIABLES:		PREPARED BY:		
Temperature, concentration		W. Gerrard		
EXPERIMENTAL VALUES:				
T/K	Conc. of cupric salt /mol dm ⁻³ (soln).	Conc. of H ₂ SO ₄ /mol dm ⁻³ (soln)	Pressure of NO/kPa	Volume in dm ³ (adjusted to 101.325 kPa) of NO absorbed per 1 mole salt.
273.15	0.0053	18.32 (97.6%)	100.257	22.3
	0.0119	18.32 (97.6%)	100.390	22.4
	0.0159	16.92 (90.6%)	100.257	16.6
	0.0159	16.92 (90.6%)	100.257	22.4
	0.0236	0 0	100.390	0
	0.0241	16.92 (90.6%)	100.257	16.7
	0.0246	16.92 (90.6%)	100.257	16.9
	0.0251	6.67 (47.6%)	100.257	0
	0.0265	18.32 (97.6%)	100.257	22.4
	0.0265	11.73 (70.8%)	100.257	0
	0.0266	14.69 (82.0%)	100.257	1.4
	0.0586	0 0	100.390	0
	0.1183	18.32 (97.6%)	100.390	10.4
	0.1376	0 0	100.390	0
	7.833	0 0	98.790	0
	0.0179	18.32 (97.6%)	173.716	22.3
	0.0175	18.32 (97.6%)	42.929	22.4
284.15	0.0180	18.32 (97.6%)	101.723	22.7
AUXILIARY INFORMATION				
METHOD APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:		
The volume of absorbed nitric oxide was observed presumably as previously stated (1).		Presumably as previously stated (1).		
		ESTIMATED ERROR:		
		REFERENCES:		
		1. Manchot, W.; Zechentmayer, K. <i>Annalen</i> , <u>1906</u> , 350, 368-389.		

COMPONENTS:		ORIGINAL MEASUREMENTS:		
1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Ethanol; C ₂ H ₆ O; [64-17-5] 4. Copper(II) chloride, (Cupric chloride); CuCl ₂ ; [7447-39-4]		Manchot, W. <i>Annalen</i> , <u>1910</u> , 375, 308-315		
VARIABLES:		PREPARED BY:		
Temperature, concentration		W. Gerrard		
EXPERIMENTAL VALUES:				
T/K	Conc. of CuCl ₂ /mol dm ⁻³ (soln)	% (vol/vol) of ethanol in solution	Pressure of NO/kPa.	Volume, V ₁ , of NO (101.325 kPa) absorbed per 1 mole of CuCl /dm ³
273.15	0.005	Absolute	100.257	17.8
	0.0064	Absolute	100.257	18.0
	0.0123	Absolute	100.390	18.1
	0.0234	70	99.990	2.7
	0.0256	50	99.990	0.3
	0.0256	Absolute	100.390	17.5
	0.0271	90	99.990	10.4
	0.0277	0	100.390	0
	0.0353	Absolute	100.123	18.1
	0.0636	Absolute	100.390	17.4
	0.1268	0	100.390	0
	0.1352	Absolute	100.390	17.3
	0.2689	Absolute	98.257	15.9
	0.2806	Absolute	100.390	15.3
	0.6490	Absolute	100.390	14.1
	3.5650	0	98.657	0.3
	4.2800	Absolute	98.657	5.5
11.7300	0	98.657	0.3	
286.35	0.0183	Absolute	173.983	19.3
	0.0176	Absolute	44.262	15.2
	0.0494	Absolute	98.257	16.1
AUXILIARY INFORMATION				
METHOD APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:		
<p>The volume of nitric oxide absorbed was observed as previously stated (1) using a volumetric apparatus. The volume of gas first absorbed by ethanol-water mixture first measured and then a small tube containing salt was broken and the absorption of solution measured.</p>		1. Presumably as previously stated (1). Prepared from sodium nitrate and dilute sulfuric acid.		
		ESTIMATED ERROR:		
		REFERENCES:		
		1. Manchot, W.; Zechentmayer, K. <i>Annalen</i> , <u>1906</u> , 350, 368-389.		

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Methanol; CH ₃ OH; [67-56-1] 3. Copper chloride (Cupric chloride); CuCl ₂ ; [7447-39-4]	ORIGINAL MEASUREMENTS: Kohlschutter, V.; Kutscheroff, M. <i>Ber.</i> <u>1904</u> , 37, 3044-3052	
VARIABLES: Concentration	PREPARED BY: W. Gerrard	
EXPERIMENTAL VALUES: Neither temperature nor pressure of nitric oxide were stated. T/K thought to be 293.16 K, and p _{NO} to be 101.325 kPa.		
Volume, V, containing 1 mole of cupric chloride in solution /dm ³	Volume V ₁ , of nitric oxide absorbed by V _s /dm ³	Ostwald coefficient, L, calculated by compiler.
1.60 8.22 20.50 82.25	3.3 5.6 6.15 4.9 Pure methanol (1)	2.062 0.681 0.300 0.0596 0.350
82.25 dm ³ of pure methanol would absorb 28.79 dm ³ of nitric oxide.		
AUXILIARY INFORMATION		
METHOD/APPARATUS/PROCEDURE: A gas buret and pipet of the Ostwald type were connected to a gasometer by a lead capillary tube. Two electrodes were fitted to the absorption tube, and the specific conductance was determined before and after the absorption. It was stated that the point of saturation could be sharply determined.	SOURCE AND PURITY OF MATERIALS: No details given.	
	ESTIMATED ERROR:	
	REFERENCES: 1. Riccoboni, L. <i>Gazz. chim. ital.</i> <u>1941</u> , 71, 139	

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Ethanol; C ₂ H ₅ OH; [64-17-5] 3. Copper chloride (Cupric chloride); CuCl ₂ ; [7447-39-4]	ORIGINAL MEASUREMENTS: Kohlschutter, V.; Kutscheroff, M. <i>Ber.</i> <u>1904</u> , 37, 3044-3052.	
VARIABLES: Concentration	PREPARED BY: W. Gerrard.	
EXPERIMENTAL VALUES: Neither temperature nor pressure of nitric oxide were stated. T/K thought to be 293.16 K, and p _{NO} to be 101.325 kPa.		
Volume, V _s , of ethanol containing one mole of cupric chloride /dm ³	Volume, V ₁ , of nitric oxide absorbed by V _s /dm ³	Ostwald coefficient, L, calculated by compiler.
1.50 3.84 12.8 38.41 76.83 192.1	8.7 12.38 15.43 18.15 18.05 15.92 Ethanol alone	5.80 3.22 1.205 0.473 0.235 0.0829 0.285 (1)
AUXILIARY INFORMATION		
METHOD/APPARATUS/PROCEDURE: A gas buret and pipet of the Ostwald type were connected to a gasometer by a lead capillary tube. Two electrodes were fitted to the absorption tube, and the specific conductance was determined before and after the absorption. It was stated that the point of saturation could be sharply determined.	SOURCE AND PURITY OF MATERIALS: No details given.	
	ESTIMATED ERROR:	
	REFERENCES: 1. Carius, L. <i>Annalen</i> , <u>1855</u> , 94, 129	

<p>COMPONENTS:</p> <ol style="list-style-type: none"> Nitric oxide; NO; [10102-43-9] Ethanol; C₂H₅OH; [64-17-5] Copper bromide, (Cupric bromide); CuBr₂; [7789-45-9] 	<p>ORIGINAL MEASUREMENTS:</p> <p>Kohlschutter, V.; Kutscheroff, M. Ber. <u>1904</u>, 37, 3044-3052.</p>																											
<p>VARIABLES:</p> <p style="text-align: center;">Concentration</p>	<p>PREPARED BY:</p> <p>W. Gerrard.</p>																											
<p>EXPERIMENTAL VALUES:</p> <p style="text-align: center;">Neither temperature nor pressure of nitric oxide were stated. T/K thought to be 293.16 K, and p_{NO} to be 101.325 kPa.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Volume, V_s, of ethanol containing one mole of cupric bromide /dm³</th> <th style="text-align: left;">Volume, V₁, of nitric oxide absorbed by V_s /dm³</th> <th style="text-align: left;">Ostwald coefficient, L, calculated by compiler</th> </tr> </thead> <tbody> <tr> <td>2.625</td> <td>16.02</td> <td>6.103</td> </tr> <tr> <td>5.25</td> <td>19.26</td> <td>3.669</td> </tr> <tr> <td>13.12</td> <td>20.51</td> <td>1.563</td> </tr> <tr> <td>43.74</td> <td>21.13</td> <td>0.483</td> </tr> <tr> <td>131.2</td> <td>22.23</td> <td>0.169</td> </tr> <tr> <td>262.5</td> <td>23.46</td> <td>0.089</td> </tr> <tr> <td>656.1</td> <td>30.46</td> <td>0.046</td> </tr> <tr> <td></td> <td style="text-align: center;">Ethanol alone</td> <td>0.285 (1)</td> </tr> </tbody> </table>		Volume, V _s , of ethanol containing one mole of cupric bromide /dm ³	Volume, V ₁ , of nitric oxide absorbed by V _s /dm ³	Ostwald coefficient, L, calculated by compiler	2.625	16.02	6.103	5.25	19.26	3.669	13.12	20.51	1.563	43.74	21.13	0.483	131.2	22.23	0.169	262.5	23.46	0.089	656.1	30.46	0.046		Ethanol alone	0.285 (1)
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<p>COMPONENTS:</p> <ol style="list-style-type: none"> Nitric oxide; NO; [10102-43-9] Formic acid; CH₂O₂; [64-18-6] Copper chloride, (Cupric chloride); CuCl₂; [7447-39-4] 	<p>ORIGINAL MEASUREMENTS:</p> <p>Kohlschutter, V.; Kutscheroff, M. Ber. <u>1904</u>, 37, 3044-3052.</p>																		
<p>VARIABLES:</p> <p style="text-align: center;">Concentration</p>	<p>PREPARED BY:</p> <p style="text-align: center;">W. Gerrard</p>																		
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COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Acetic acid; C ₂ H ₄ O ₂ ; [64-19-7] 3. Copper chloride, (Cupric chloride); CuCl ₂ ; [7447-39-4]	ORIGINAL MEASUREMENTS: Kohlschutter, V.; Kutscheroff, M. <i>Ber.</i> <u>1904</u> , 37, 3044-3052.									
VARIABLES: Concentration	PREPARED BY: W. Gerrard.									
EXPERIMENTAL VALUES: Neither temperature nor pressure of nitric oxide were stated. T/K thought to be 293.16 K, and p _{NO} to be 101.325 kPa. <table border="0" style="width: 100%;"> <tr> <td style="width: 33%;">Volume, V_s, of acetic acid containing one mole of cupric chloride /dm³</td> <td style="width: 33%;">Volume, V₁, of nitric oxide absorbed by V_s /dm³</td> <td style="width: 33%;">Ostwald coefficient, L, calculated by compiler.</td> </tr> </table>		Volume, V _s , of acetic acid containing one mole of cupric chloride /dm ³	Volume, V ₁ , of nitric oxide absorbed by V _s /dm ³	Ostwald coefficient, L, calculated by compiler.						
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COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. 2-Propanone, (Acetone); C ₃ H ₆ O; [67-64-1] 2. Copper chloride, (Cupric chloride); CuCl ₂ ; [7747-39-4]	ORIGINAL MEASUREMENTS: Kohlschutter, V.; Kutscheroff, M. <i>Ber.</i> <u>1904</u> , 37, 3044-3052																					
VARIABLES: Concentration	PREPARED BY: W. Gerrard.																					
EXPERIMENTAL VALUES: Neither temperature nor pressure of nitric oxide were stated. T/K thought to be 293.16 K, and p _{NO} to be 101.325 kPa. <table border="0" style="width: 100%;"> <thead> <tr> <th style="text-align: left;">Volume, V_s, of acetone containing one mole of cupric chloride /dm³</th> <th style="text-align: left;">Volume, V₁, of nitric oxide absorbed by V_s /dm³</th> <th style="text-align: left;">Ostwald coefficient, L, calculated by compiler.</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">4.667</td> <td style="text-align: center;">14.04</td> <td style="text-align: center;">3.010</td> </tr> <tr> <td style="text-align: center;">29.16</td> <td style="text-align: center;">24.01</td> <td style="text-align: center;">0.823</td> </tr> <tr> <td style="text-align: center;">58.33</td> <td style="text-align: center;">24.60</td> <td style="text-align: center;">0.422</td> </tr> <tr> <td style="text-align: center;">291.6</td> <td style="text-align: center;">40.99</td> <td style="text-align: center;">0.141</td> </tr> <tr> <td style="text-align: center;">583.2</td> <td style="text-align: center;">67.22</td> <td style="text-align: center;">0.115</td> </tr> <tr> <td style="text-align: center;">1166.4</td> <td style="text-align: center;">81.96</td> <td style="text-align: center;">0.070</td> </tr> </tbody> </table>		Volume, V _s , of acetone containing one mole of cupric chloride /dm ³	Volume, V ₁ , of nitric oxide absorbed by V _s /dm ³	Ostwald coefficient, L, calculated by compiler.	4.667	14.04	3.010	29.16	24.01	0.823	58.33	24.60	0.422	291.6	40.99	0.141	583.2	67.22	0.115	1166.4	81.96	0.070
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COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Ethanol; C ₂ H ₆ O; [64-17-5] 3. Copper (II) bromide, (Cupric bromide; CuBr ₂ ; [7789-45-9]	ORIGINAL MEASUREMENTS: Manchot, W. <i>Ber.</i> <u>1914</u> , 47,1601-1614.																																					
VARIABLES: Temperature, concentration	PREPARED BY: W. Gerrard.																																					
EXPERIMENTAL VALUES: <p style="text-align: center;">V₁ is the volume of NO (101.325 kPa) in dm³ absorbed for 1 mole of CuBr₂.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">T/K</th> <th style="text-align: center;">Conc /mol dm⁻³ (soln)</th> <th style="text-align: center;">Pressure of NO/kPa</th> <th style="text-align: center;">V₁/dm³</th> </tr> </thead> <tbody> <tr> <td rowspan="7" style="text-align: center; vertical-align: top;">273.15</td> <td style="text-align: center;">0.00498</td> <td style="text-align: center;">99.190</td> <td style="text-align: center;">20.02</td> </tr> <tr> <td style="text-align: center;">0.00548</td> <td style="text-align: center;">99.857</td> <td style="text-align: center;">20.32</td> </tr> <tr> <td style="text-align: center;">0.0107</td> <td style="text-align: center;">99.457</td> <td style="text-align: center;">21.36</td> </tr> <tr> <td style="text-align: center;">0.0599</td> <td style="text-align: center;">99.590</td> <td style="text-align: center;">20.57</td> </tr> <tr> <td style="text-align: center;">0.1187</td> <td style="text-align: center;">99.590</td> <td style="text-align: center;">21.48</td> </tr> <tr> <td style="text-align: center;">0.3833</td> <td style="text-align: center;">99.857</td> <td style="text-align: center;">20.90</td> </tr> <tr> <td style="text-align: center;">0.1126</td> <td style="text-align: center;">149.185</td> <td style="text-align: center;">19.98</td> </tr> <tr> <td rowspan="2" style="text-align: center; vertical-align: top;">293.65</td> <td style="text-align: center;">0.05656</td> <td style="text-align: center;">99.723</td> <td style="text-align: center;">21.00</td> </tr> <tr> <td style="text-align: center;">0.0504</td> <td style="text-align: center;">45.529</td> <td style="text-align: center;">18.66</td> </tr> <tr> <td style="text-align: center; vertical-align: top;">273.15⁺</td> <td style="text-align: center;">0.0478</td> <td style="text-align: center;">99.457</td> <td style="text-align: center;">19.07</td> </tr> </tbody> </table> <p style="text-align: center;">+ "Spirit" was used instead of absolute ethanol.</p>		T/K	Conc /mol dm ⁻³ (soln)	Pressure of NO/kPa	V ₁ /dm ³	273.15	0.00498	99.190	20.02	0.00548	99.857	20.32	0.0107	99.457	21.36	0.0599	99.590	20.57	0.1187	99.590	21.48	0.3833	99.857	20.90	0.1126	149.185	19.98	293.65	0.05656	99.723	21.00	0.0504	45.529	18.66	273.15 ⁺	0.0478	99.457	19.07
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METHOD/APPARATUS/PROCEDURE: The volume of nitric oxide absorbed was observed as previously stated (1).	SOURCE AND PURITY OF MATERIALS: (1) and (3) Presumably as previously described (1). (2) Absolute ethanol; distilled from lime and sodium ethylate.																																					
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REFERENCES: 1. Manchot, W.; Zechentmayer, K. <i>Annalen</i> , <u>1906</u> , 350, 368-389. See also Manchot, W.; Huttner, F. <i>Annalen</i> , <u>1910</u> , 372, 153-178.																																						

<p>COMPONENTS:</p> <ol style="list-style-type: none"> Nitric oxide; NO; [10102-43-9] Ethanol; C₂H₅OH; [64-17-5] Copper chloride (Cupric chloride); CuCl₂; [7447-39-4] 	<p>ORIGINAL MEASUREMENTS:</p> <p>Griffith, W. P.; Lewis, J.; Wilkinson, G. <i>J. Chem. Soc.</i> <u>1958</u>, 3993-3998.</p>
<p>VARIABLES:</p>	<p>PREPARED BY:</p> <p>W. Gerrard</p>
<p>EXPERIMENTAL VALUES:</p> <p>M = molarity of cupric chloride/mol dm⁻³. P = Pressure of NO/kPa. V₁ = Volume of NO/dm³ (adjusted to 273.15, 101.325 kPa); V₁ is based on the authors' loose statement: "Vol of NO absorbed per mole at N.T.P.", the mole apparently referring to CuCl₂. K = Equilibrium constant given by the authors as the mean value of $P_{NO} \text{ CuCl}_2 / \text{CuCl}_2 \text{NO}$ in mmHg. K* = Compiler's value based on $P_{NO} (22.4 - V_1) / V_1$, in mmHg. The H values have been calculated by the compiler from the expression:</p> $\Delta H = 4.571(\log K_1 - \log K_2) \times T_1 T_2 / (T_1 - T_2) \text{ in kcal mole}^{-1};$ <p>T = T/K. The K values are those of the original authors, and the temperature range is shown (). V₁(E) = Volume of NO (adjusted to 273.15 K, 101.325 kPa) which would be absorbed by that volume of ethanol equal to the volume of solution containing 1 mole of CuCl₂.</p> <p style="text-align: right;">(cont.)</p>	
<p>AUXILIARY INFORMATION</p>	
<p>METHOD APPARATUS/PROCEDURE:</p> <p>It was simply stated that the gas absorption was measured in a conventional Warburg-type apparatus.</p> <p>NOTE: The authors did not show how the "heat of reaction 7.3 kcal/mole" was obtained.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <ol style="list-style-type: none"> Nitric oxide was obtained from a sodium nitrite-ferrous sulfate generator, and washed with a concentrated aqueous solution of potassium hydroxide. 3. Probably of satisfactory purity. <p>ESTIMATED ERROR:</p> <p>REFERENCES:</p>

1. Nitric oxide; NO; [10102-43-9]
2. Ethanol; C₂H₅OH; [64-17-5]
3. Copper chloride (Cupric chloride); CuCl₂; [7447-39-4]

Griffith, W. P.; Lewis, J.;
 Wilkinson, G.
J. Chem. Soc. 1958, 3993-3998.

EXPERIMENTAL VALUES:

No.	T/K	M	P/kPa	V ₁ /dm ³	K/(mmHg)	K*/(mmHg)	V ₁ (E)/dm ³
1	273.4	0.05	99.043	19.1		128.35	6.3
2		0.025		20.1	115.0	85.05	12.6
3	283.0	0.05	97.577	17.3		215.76	5.7
4		0.025		17.0	226.4	232.46	11.4
5	297.6	0.05	92.911	15.6	340.8	303.7	5.2
6	304.4	0.025	91.458	12.2	568.0	573.54	10.2

ΔH values \bar{T}/K range (): (2-4), 10.84; (2-5) 7.25; (2-6), 8.51; (4-6), 7.35; (5-6), 13.51. Mean is 9.5 kcal mol⁻¹. The authors gave ΔH as 7.3 kcal mol⁻¹ (30.55 kJ mol⁻¹).

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Nickel (II) sulfate; NiSO ₄ ; [7786-81-4]	ORIGINAL MEASUREMENTS: Hufner, G. <i>Z. Phys. Chem.</i> <u>1907</u> , 59, 416-423.																					
VARIABLES: Pressure	PREPARED BY: W. Gerrard.																					
EXPERIMENTAL VALUES: V_1/cm^3 , is the volume of nitric oxide absorbed by 205.69 cm of solution containing 0.0506 g of nickel as nickel sulfate, at the temperature and pressure, P/mmHg , of nitric oxide stated. <table border="1" data-bbox="280 586 843 795"> <thead> <tr> <th>T/K</th> <th>P/mmHg</th> <th>V_1/cm^3</th> </tr> </thead> <tbody> <tr> <td></td> <td>760.0</td> <td>25.4*</td> </tr> <tr> <td>293.35</td> <td>654.7</td> <td>23.00</td> </tr> <tr> <td>293.35</td> <td>629.8</td> <td>22.54</td> </tr> <tr> <td>293.35</td> <td>609.5</td> <td>22.03</td> </tr> <tr> <td>293.30</td> <td>591.7</td> <td>21.65</td> </tr> <tr> <td>293.29</td> <td>573.4</td> <td>21.18</td> </tr> </tbody> </table> <p>* Calculated by the original author from the equation: $V = a + bP$, where $a = 8.3146$, and $b = 0.022493$. The author referred to the product $760b/205.69$ as the "absorption coefficient α;" but this is not the quantity usually referred to as an absorption coefficient; α was stated to be 0.08311.</p> <p>The following values were calculated by the compiler :</p> <p>The volume of solution, V_3/dm^3, containing 58.71 g of nickel as sulfate = 238.7 dm³. The volume of nitric oxide absorbed by this volume of solution = 29.47 dm³ (760 mmHg, 101.325 kPa). The volume of nitric oxide which would be absorbed by 238.7 dm³ of water is $238.7 \times 0.047 = 11.22 \text{ dm}^3$ (101.325 kPa).</p>		T/K	P/mmHg	V_1/cm^3		760.0	25.4*	293.35	654.7	23.00	293.35	629.8	22.54	293.35	609.5	22.03	293.30	591.7	21.65	293.29	573.4	21.18
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AUXILIARY INFORMATION																						
METHOD APPARATUS/PROCEDURE: The volume of nitric oxide absorbed by 205.69 cm ³ of solution was observed at the observed pressure of gas.	SOURCE AND PURITY OF MATERIALS: 1. Nitric oxide was prepared from hydrogen iodide and nitric acid Winkler, (1). 3. Prepared from pure metal. <table border="1" data-bbox="646 1574 1201 1705"> <tbody> <tr> <td> ESTIMATED ERROR: REFERENCES: 1. Winkler, L.W. <i>Ber</i>, <u>1901</u>, 34, 1408. </td> </tr> </tbody> </table>	ESTIMATED ERROR: REFERENCES: 1. Winkler, L.W. <i>Ber</i> , <u>1901</u> , 34, 1408.																				
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COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Cobalt (II) sulfate; CoSO ₄ ; [10124-43-3]	ORIGINAL MEASUREMENTS: Hufner, G. <i>Z. Phys. Chem.</i> <u>1907</u> , <i>59</i> , 416-423.																					
VARIABLES: Pressure	PREPARED BY: W. Gerrard																					
EXPERIMENTAL VALUES: V_1/cm^3 , is the volume of nitric oxide absorbed by 205.69 cm ³ of solution containing 0.0598 g of cobalt as cobalt sulfate, at the temperature and pressure, P/mmHg , of nitric oxide stated. <table border="1" data-bbox="69 574 1174 785"> <thead> <tr> <th>T/K</th> <th>P/mmHg</th> <th>V_1/cm^3</th> </tr> </thead> <tbody> <tr> <td>293.30</td> <td>760</td> <td>25.57*</td> </tr> <tr> <td>293.30</td> <td>678.3</td> <td>23.47</td> </tr> <tr> <td>293.31</td> <td>653.5</td> <td>23.01</td> </tr> <tr> <td>293.35</td> <td>636.6</td> <td>22.55</td> </tr> <tr> <td>293.45</td> <td>615.9</td> <td>21.99</td> </tr> <tr> <td>293.55</td> <td>600.0</td> <td>21.56</td> </tr> </tbody> </table> <p>* Calculated by the original author from the equation: $V = a + bP$, where $a = 6.7288$, and $b = 0.024791$. The author referred to the product $760/205.69$ (0.09146) as the "absorption coefficient, α;" but this is not equal to $V_1/205.69$.</p> <p>The following values were calculated by the compiler: The volume, V_3/dm^3, of solution containing 58.93 g of cobalt as sulfate = 202.7 dm³. The volume of nitric oxide absorbed by this volume of solution = 25.20 dm³ (101.325 kPa). The volume of nitric oxide which would be absorbed by 202.7 dm³ of water is $202.7 \times 0.047 = 9.53 \text{ dm}^3$ (101.325 kPa).</p>		T/K	P/mmHg	V_1/cm^3	293.30	760	25.57*	293.30	678.3	23.47	293.31	653.5	23.01	293.35	636.6	22.55	293.45	615.9	21.99	293.55	600.0	21.56
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AUXILIARY INFORMATION																						
METHOD APPARATUS/PROCEDURE: The volume of nitric oxide absorbed by 205.69 cm ³ of solution was observed at the observed pressure.	SOURCE AND PURITY OF MATERIALS: 1. Nitric oxide was prepared from hydrogen iodide and nitric acid (Winkler, (1)). 3. Prepared from pure metal. <table border="1" data-bbox="634 1564 1174 1695"> <tbody> <tr> <td> ESTIMATED ERROR: (Empty) </td> </tr> <tr> <td> REFERENCES: 1. Winkler, L.W. <i>Ber.</i> <u>1901</u>, <i>34</i>, 1408. </td> </tr> </tbody> </table>	ESTIMATED ERROR: (Empty)	REFERENCES: 1. Winkler, L.W. <i>Ber.</i> <u>1901</u> , <i>34</i> , 1408.																			
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<p>COMPONENTS:</p> <ol style="list-style-type: none"> Nitric oxide; NO; [10102-43-9] Water; H₂O; [7732-18-5] Manganese chloride; MnCl₂; [7773-01-5] 	<p>ORIGINAL MEASUREMENTS:</p> <p>Hufner, G. <i>Z. Phys. Chem.</i> <u>1907</u>, <i>59</i>, 416-423.</p>																					
<p>VARIABLES:</p> <p style="text-align: center;">Pressure</p>	<p>PREPARED BY:</p> <p style="text-align: center;">W. Gerrard</p>																					
<p>EXPERIMENTAL VALUES: V_1/cm^3, is the volume of nitric oxide absorbed by 205.69 cm³ of solution containing 0.0697 g of manganese as manganese chloride, at the temperature and pressure of NO, P/mmHg,</p> <table border="1" data-bbox="190 546 1049 731"> <thead> <tr> <th>T/K</th> <th>P/mmHg</th> <th>V_1/cm^3</th> </tr> </thead> <tbody> <tr> <td>293.15</td> <td>760.0</td> <td>15.12*</td> </tr> <tr> <td>293.15</td> <td>711.96</td> <td>14.25</td> </tr> <tr> <td>293.20</td> <td>686.5</td> <td>13.99</td> </tr> <tr> <td>293.35</td> <td>657.4</td> <td>13.49</td> </tr> <tr> <td>293.45</td> <td>638.9</td> <td>13.05</td> </tr> <tr> <td>293.60</td> <td>621.0</td> <td>12.81</td> </tr> </tbody> </table> <p>* Calculated by the original author from the equation: $V_1 = a + bP$, where $a = 2.5518$, and $b = 0.016538$. The author referred to the product $760b/205.69$ (0.06111) as the "absorption coefficient, α"; but this is not equal to $V_1/205.69$.</p> <p>The following values were calculated by the compiler:</p> <p>The volume, V_3/dm^3, of solution containing 1 mole of manganese chloride = 162.1 dm³.</p> <p>The volume of nitric oxide absorbed by this volume of solution = 11.92 dm³ (101.325 kPa).</p> <p>The volume of nitric oxide which would be absorbed by 162.dm³ of water is $162.1 \times 0.047 = 7.62$ dm³ (101.325 kPa.)</p>		T/K	P/mmHg	V_1/cm^3	293.15	760.0	15.12*	293.15	711.96	14.25	293.20	686.5	13.99	293.35	657.4	13.49	293.45	638.9	13.05	293.60	621.0	12.81
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<p>AUXILIARY INFORMATION</p>																						
<p>METHOD APPARATUS/PROCEDURE:</p> <p>The volume of nitric oxide absorbed by 205.69 cm³ of solution was observed at the observed pressure.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <ol style="list-style-type: none"> Nitric oxide was prepared from hydrogen iodide and nitric acid (Winkler, 1). Concentration attested as pyrophosphate. <p>ESTIMATED ERROR:</p> <p>REFERENCES:</p> <ol style="list-style-type: none"> Winkler, L.W. <i>Ber.</i> <u>1901</u>, <i>34</i>, 1408. 																					

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Water; H ₂ O; [7732-18-5] 3. Metal salts.	ORIGINAL MEASUREMENTS: Usher, F.L. <i>Z. Phys. Chem.</i> <u>1908</u> , 62, 622-625.												
VARIABLES:	PREPARED BY: W. Gerrard.												
EXPERIMENTAL VALUES: <p style="text-align: center;">T/K = 293.15</p> <p style="text-align: center;">The volume of nitric oxide absorbed was express as the Bunsen coefficient α (273.15 K, 101.325 kPa).</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 45%;">(3) Sulfuric acid, nickel (2+) salt, (Nickel sulfate); NiSO₄; [7786-81-4]</td> <td style="width: 30%;">"Hufner's concentration"* "Saturated solution"</td> <td style="width: 25%; text-align: right;">$\alpha = 0.048$ $\alpha = 0.0245$</td> </tr> <tr> <td>(3) Sulfuric acid, cobalt (2+) salt, (Cobalt sulfate); CoSO₄; [10124-43-3]</td> <td>"Saturated solution"</td> <td style="text-align: right;">$\alpha = 0.0288$</td> </tr> <tr> <td>(3) Manganese chloride; MnCl₂; [7773-01-5]</td> <td>"Saturated solution"</td> <td style="text-align: right;">$\alpha = 0.0082$</td> </tr> <tr> <td>(3) Sulfuric acid, iron (2+) salt (Ferrous sulfate); FeSO₄; [7720-78-7]</td> <td>"Hufner's concentration"* For water alone</td> <td style="text-align: right;">$\alpha = 0.180$ $\alpha = 0.049$</td> </tr> </table> <p>* Hufner's concentration was 0.0506 g of nickel (as sulfate) in 203.69 cm³ of solution.</p> <p>** This concentration appears to refer to Hufner's solution that contained 0.099 g of iron (as sulfate) in 205.69 cm³ of solution; the Bunsen α value was 0.170.</p> <p>NOTE: Usher gave two sets of Bunsen α values for water alone. One set obtained by a large absorption pipet: 0.0451, 0.0449, 0.0448, were for NO washed with concentrated sulfuric acid. The other set: 0.0468, 0.0471, 0.0473, 0.0487 were for NO washed with aqueous potassium hydroxide. In the ferrous sulfate system he purported to show that discrepancies could occur by the reduction of NO to N₂O and N₂; but this contention was not confirmed by the detailed analysis of Tarte (2).</p>		(3) Sulfuric acid, nickel (2+) salt, (Nickel sulfate); NiSO ₄ ; [7786-81-4]	"Hufner's concentration"* "Saturated solution"	$\alpha = 0.048$ $\alpha = 0.0245$	(3) Sulfuric acid, cobalt (2+) salt, (Cobalt sulfate); CoSO ₄ ; [10124-43-3]	"Saturated solution"	$\alpha = 0.0288$	(3) Manganese chloride; MnCl ₂ ; [7773-01-5]	"Saturated solution"	$\alpha = 0.0082$	(3) Sulfuric acid, iron (2+) salt (Ferrous sulfate); FeSO ₄ ; [7720-78-7]	"Hufner's concentration"* For water alone	$\alpha = 0.180$ $\alpha = 0.049$
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METHOD APPARATUS/PROCEDURE: <p>Volume of nitric oxide absorbed was determined by the gas buret and absorption pipet technique of Ostwald. The maximum error was stated to be 3%.</p>	SOURCE AND PURITY OF MATERIALS: 1. Nitric oxide was prepared from hydrogen iodide and nitric acid, Winkler (1). It was washed with aqueous potassium hydroxide.												
ESTIMATED ERROR:													
REFERENCES: (1) Winkler, L.W. <i>Ber.</i> <u>1901</u> , 34, 1408. (2) Tarte, P. <i>Ind. Chim. Belg.</i> <u>1952</u> , 17, 42.													

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitrogen oxide; (Nitric oxide); NO; [10102-43-9]		Kohlschutter, V.; Kutscheroff, M.	
2. Water; H ₂ O; [7732-18-5]		Ber, <u>1907</u> , 40, 873-878	
3. Sodium salts.			
VARIABLES:		PREPARED BY:	
		W. Gerrard	
EXPERIMENTAL VALUES: The pressure of nitric oxide, p_{NO} , was not stated. The compiler has taken p_{NO} to be 101.325 kPa. Temperature assumed to be 295.15K.			
T/K	Volume of water, V_s , in which one mole of salt was dissolved / dm ³	Volume, V_1 , of nitric oxide absorbed by one dm ³ of salt solution /dm ³	
295.15	Sodium chloride; NaCl; [7647-14-5]		
	0.5		0.0580
	1.0		0.0359
	Sulfuric acid, disodium salt, (sodium sulfate); Na ₂ SO ₄ ; [7757-82-6]		
	4.0		0.0397
	2.0		0.0277
	Water; H ₂ O; [7732-18-5]		0.0636
AUXILIARY INFORMATION			
METHOD /APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
An Ostwald type gas buret and pipet were connected by a lead capillary.		No details given.	
		ESTIMATED ERROR:	
		REFERENCES:	

COMPONENTS:		ORIGINAL MEASUREMENTS:
1. Nitric oxide; NO; [10102-43-9]		Armor, J.N.
2. Water; H ₂ O; [7732-18-5]		<i>J. Chem. Engng. Data.</i> <u>1974</u> ,19, 82-84.
3. Electrolytes.		
VARIABLES:		PREPARED BY:
Concentration		C.L. Young
EXPERIMENTAL VALUES:		
T/K = 298.15 pH = 7.0		
Electrolyte	Conc. of electrolyte /mol dm ⁻³	Solubility of nitric ⁺ oxide, S/mol dm ⁻³
H ₂ O	-	1.95
H ₂ PO ₄ ⁻ /OH ⁻	0.1*	1.80
NaCl	0.1 0.5 1.0	1.62 1.61 1.38
LiCl	0.1 1.0	1.78 1.52
LiClO ₄	1.0	1.58
NaClO ₄	1.0	1.28
+ at a partial pressure of gas of 101.3 kPa		
* Total ionic strength.		
AUXILIARY INFORMATION		
METHOD APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:
Solution was saturated with gas for at least 30 minutes in a reaction vessel. A 5 cm ³ aliquot was removed and injected into 80 cm ³ of oxygen saturated water. This solution was analysed spectrophotometrically of product of reaction of NO ₂ with sulfanilamide and N-(1-naphtyl)-ethylenediamine hydrochloride.		1. Matheson sample. Nitrogen dioxide removed by "vigorous" scrubbing.
		2. Distilled water, redistilled from alkaline permanaganate.
		3. LiCl, recrystallised. LiClO ₄ and NaClO ₄ prepared by action of HClO ₄ on corresponding carbonates, resulting solution concentrated and crystals obtained by cooling in ice bath
		ESTIMATED ERROR:
		REFERENCES:

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitric oxide; NO; [10102-43-9]		Armor, J.N.	
2. Water; H O; [7732-18-5]		<i>J. Chem. Engng. Data.</i> <u>1974</u> , 19, 82-84.	
3. Sodium chloride; NaCl; [7647-14-5]			
4. Buffer solutions.			
VARIABLES:		PREPARED BY:	
		C.L. Young	
EXPERIMENTAL VALUES:			
$T/K = 298.15$			
Solution	Conc. of NaCl /mol dm ⁻³	pH	Solubility of nitric oxide, ⁺ S/mol dm ⁻³
Buffer (1)	0.1	13.0	1.70
	0.10	12.9	1.52
Buffer#	1.0	12.7	1.35
	0.0	12.12	1.78
	0.10	11.92	1.77
	1.0	11.51	1.32
	0.10	10.8	1.73
	1.0	10.3	1.34
	0.0	9.87	1.78
	0.10	9.88	1.71
	1.0	9.56	1.29
	0	9.34	1.76
	0.1	9.27	1.68
	1.0	9.00	1.23
	1.05	8.95	1.37
	0.0	8.15	1.85
	0.1	8.09	1.74
	1.0	7.82	1.31
	0.0	7.18	1.80
	0.1	7.06	1.69
1.0	6.69	1.22	
0.0	4.24	1.73	
0.1	4.09	1.78	
AUXILIARY INFORMATION			
METHOD APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS.	
Solution was saturated with gas for at least 30 minutes in a reaction vessel. A 5 cm ³ aliquot was removed and injected into a 80 cm ³ of oxygen saturated water. This solution was analysed spectrophotometrically of product of reaction of NO ₂ with sulfanilamide and N-(1-naphtyl)-ethylenediamine hydrochloride.		1. Matheson sample-Nitrogen dioxide removed by "vigorous" scrubbing.	
		2. Distilled water, redistilled from alkaline permanagonate.	
		3. and 4. No details given.	
		ESTIMATED ERROR:	
		$\delta T/K = \pm 0.1; \delta S = \pm 4\%$	
		REFERENCES.	

COMPONENTS:

1. Nitric oxide; NO; [10102-43-9]
2. Water; H₂O; [7732-18-5]
3. Sodium chloride; NaCl; [7647-14-5]
4. Buffer solutions.

ORIGINAL MEASUREMENTS:

Armor, J.N.
J. Chem. Engng. Data. 1974, *19*,
 82-84.

EXPERIMENTAL VALUES:

Solution	Conc. of NaCl /mol dm ⁻³	pH	Solubility of nitric oxide, ⁺ S/mol dm ⁻³
Buffer#	1.0	3.91	1.36
Buffer (2)	0.0	2.0	1.69
Buffer (3)	0.1	1.0	1.47
Buffer (4)	1.0	0	1.02
Buffer (5)	0.0	2.0	1.71
Buffer (6)	1.0	0	1.37

+ at a partial pressure of gas of 101.3kPa.

§ conc. of NaClO₄.

Buffer (1)	0.1 mol dm ⁻³ NaOH
Buffer (2)	0.01 mol dm ⁻³ HClO ₄
Buffer (3)	0.1 mol dm ⁻³ HCl
Buffer (4)	1.0 mol dm ⁻³ HCl
Buffer (5)	0.01 mol dm ⁻³ HCl
Buffer (6)	1.0 mol dm ⁻³ HClO ₄

Authors quoted "buffers were prepared from HOAc/NaOAc (pH4), H₂PO₄⁻/OH⁻ (pH 6-8), borax/HCl (pH 8-9.2) borax /OH⁻ (pH 9.2-10.5), HPO₄²⁻/OH⁻ (pH 10.5-12.0)"

The total ionic strength of buffers appears to be about 0.1 mol dm⁻³

<p>COMPONENTS:</p> <ol style="list-style-type: none"> Nitric oxide; NO; [10102-43-9] Organic liquids 	<p>EVALUATOR:</p> <p>Colin L. Young, Department of Physical Chemistry, University of Melbourne, Parkville, Victoria 3052, Australia.</p> <p>October 1980.</p>
<p>CRITICAL EVALUATION:</p> <p>The data of Vosper (1) are thought to be reliable since they were carried out with carefully purified materials and corrections for the vapor pressure of the liquid and non-ideality of the gas were applied. His data are classified as tentative.</p> <p>The temperature-dependence of Klemenc <i>et al.</i>'s (2) mole fraction solubility of nitric oxide in tetrachloromethane is unusual and of opposite sign to that of Vosper (1). On the other hand Klemenc <i>et al.</i> (2) data for nitrobenzene show the normal increase in mole fraction solubility for a decrease in temperature but the opposite is true for benzene. Therefore the data of Klemenc <i>et al.</i> (2) on all three solvents are classified as doubtful. The data of Tsiklis and Svetlova (3) show a fairly large scatter and are classified as doubtful.</p> <p>The data of Riccoboni (4) for methanol and Carius (5) for ethanol are included but in view of the year in which these data were determined must be regarded at best as doubtful. Garelli and Monath's data (6) based on the depression of freezing point are rejected.</p> <p>The results of Trautz and Gerwig (7) for pentane and toluene are thought to be unreliable. The temperature-dependence of the solubility for pentane should be similar to that for hexane as measured by Vosper (1) but the pentane data show no such similarity. The Trautz and Gerwig (7) results for toluene are in poor agreement with those of Vosper (1) and are rejected.</p> <p><u>References:</u></p> <ol style="list-style-type: none"> Shaw, A. W.; Vosper, A. J. <i>J. Chem. Soc., Faraday Trans. I</i> <u>1977</u>, <i>73</i>, 1239. Klemenc, A.; Spitzer-Neumann, E. <i>Monatsh.</i> <u>1929</u>, <i>53</i>, 413. Tsiklis, D. S.; Svetlova, G. M. <i>Zh. Fiz. Khim.</i> <u>1958</u>, <i>32</i>, 1476. Riccoboni, L. <i>Gazz. chim. ital.</i> <u>1841</u>, <i>71</i>, 139. Carus, L. <i>Annalen</i> <u>1855</u>, <i>94</i>, 129. Garelli, F.; Monath, E. <i>Att. Accad. Torino</i> <u>1926</u>, <i>61</i>, 12. Trautz, M.; Gerwig, W. <i>Z. anorg. Chem.</i> <u>1925</u>, <i>146</i>, 1. 	

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Nitric oxide; NO; [10102-43-9]		Tsiklis, D.S.; Svetlova, G.M.	
2. Cyclohexane; C ₆ H ₁₂ ; [110-82-7]		Zh. Fiz. Khim. <u>1958</u> , 32, 1476-80.	
VARIABLES:		PREPARED BY:	
Temperature, pressure		C.L. Young	
EXPERIMENTAL VALUES:			
T/K	P/bar	Mole fraction of nitric oxide in liquid, x_{NO}	
283.15	0.133	0.00030	
	0.267	0.00059	
	0.400	0.00089	
	0.533	0.00119	
	0.667	0.00148	
	0.800	0.00178	
	0.933	0.00208	
	1.067	0.00237	
	293.15	0.133	0.00026
		0.267	0.00049
0.400		0.00074	
0.533		0.00099	
0.667		0.00123	
0.800		0.00148	
0.933		0.00173	
1.067		0.00199	
313.15		0.133	0.00025
		0.267	0.00049
	0.400	0.00074	
	0.533	0.00099	
	0.667	0.00123	
	0.800	0.00148	
	0.933	0.00173	
	1.067	0.00199	
	AUXILIARY INFORMATION		
	METHOD APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:
Volumetric apparatus. Gas admitted from a gas buret to absorption pipet. Mole fraction calculated from measurements of pressure and volume.		1. Purified by passing through "caustic" at 233K to remove acidic oxides.	
		2. Commercial sample, twice distilled.	
		DATA CLASS:	
		ESTIMATED ERROR:	
		$\delta T/K = \pm 0.0.1$; $\delta P/\text{bar} = \pm 0.005$; $\delta x_{NO} = \pm 2 \times 10^{-5}$	
		REFERENCES:	

COMPONENTS:			ORIGINAL MEASUREMENTS:		
1. Nitric oxide; NO; [10102-43-9]			Shaw, A. W.; Vosper, A. J.		
2. Hexane; C ₆ H ₁₄ ; [110-54-3]			<i>J. Chem. Soc. Faraday Trans. I</i> 1977, 73, 1239-1244.		
VARIABLES:			PREPARED BY:		
Temperature			A. J. Vosper		
EXPERIMENTAL VALUES:					
Absorption measurements			Desorption measurements		
T/K	Mole fraction x_1^*	Concentration* mol dm ⁻³	T/K	Mole fraction x_1^*	Concentration* mol dm ⁻³
291.0	0.00240	0.0185	243.2	0.00289	0.0236
283.0	0.00248	0.0193	253.0	0.00277	0.0224
273.4	0.00256	0.0202	260.0	0.00270	0.0217
264.2	0.00264	0.0211	268.2	0.00262	0.0208
257.4	0.00271	0.0218			
248.5	0.00281	0.0229			
238.7	0.00294	0.0242			
233.2	0.00304	0.0252			
* The mole fractions follow directly from the authors' results whereas the concentrations were calculated using literature values (1) for the density of hexane, extrapolating where necessary.					
Mean values for the partial molar enthalpy of solution and partial molar entropy of solution over the temperature range 233-291 K were given:					
$\Delta H^\circ = -2.23 \pm 0.03 \text{ kJ mol}^{-1}$			$\Delta S^\circ = -57.8 \pm 0.01 \text{ J mol}^{-1} \text{ K}^{-1}$		
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
A gas burette was used to determine the volume of gas absorbed by a known weight of the degassed liquid at a known temperature and at the prevailing barometric pressure. Measurements of desorption of gas from the saturated liquid with increasing temperature were also made. Corrections were applied for the vapor pressure of the liquid (1) and non-ideality of the gas (2). Results were calculated for a gas pressure of 101.325 kPa assuming Henry's Law which had previously been shown to be valid over the relevant pressure range.			The gas (Matheson Co. Inc.) was passed through 90 per cent H ₂ SO ₄ and a trap at ca. 190 K. It was solidified at 77 K and volatile impurities pumped away. The product contained less than 0.2 per cent N ₂ O as the only detectable impurity.		
			The liquid (BDH 99 per cent minimum) was dried over CaCl ₂ then sodium wire and fractionated. The fraction boiling between 341.5-341.8K was used.		
			ESTIMATED ERROR:		
			REFERENCES:		
			1. Timmermans, J. "Physico-chemical constants of pure organic compounds". Elsevier, Vol. 1, p.4? and Vol. 2, p.10.		
			2. Johnson, H. L.; Weimer, H. W. <i>J. Amer. Chem. Soc.</i> 1934, 56, 625.		

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Benzene, C ₆ H ₆ , [71-43-2]	ORIGINAL MEASUREMENTS: Klemenc, A.; Spitzer-Neumann, E. <i>Monatsh.</i> <u>1929</u> , 53, 413-419.																																																																	
VARIABLES: Temperature, pressure	PREPARED BY: W. Gerrard																																																																	
EXPERIMENTAL VALUES: <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>T/K</td> <td>281.96</td> <td>287.76</td> <td>297.76</td> <td>307.76</td> </tr> <tr> <td>Pressure range, *</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> from (kPa);</td> <td>69.328</td> <td>92.752</td> <td>87.673</td> <td>78.274</td> </tr> <tr> <td> to (kPa):</td> <td>132.53</td> <td>90.673</td> <td>86.260</td> <td>80.513</td> </tr> <tr> <td>Ostwald coefficient, *</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> From :</td> <td>0.284</td> <td>0.279</td> <td>0.300</td> <td>0.316</td> </tr> <tr> <td> To:</td> <td>0.268</td> <td>0.294</td> <td>0.306</td> <td>0.320</td> </tr> <tr> <td>Mean: * *</td> <td>0.275</td> <td>0.284</td> <td>0.300</td> <td>0.318</td> </tr> <tr> <td>Mole fraction, ***</td> <td>0.00104</td> <td>0.00106</td> <td>0.00109</td> <td>0.00114</td> </tr> <tr> <td>x_1:</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Number of measurements:</td> <td>11</td> <td>5</td> <td>5</td> <td>5</td> </tr> </tbody> </table> <p>* Irregular distribution. ** Given by authors. *** Calculated by compiler.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>T/K</td> <td>281.96</td> <td>287.6</td> <td>287.76</td> <td>307.76</td> </tr> <tr> <td>ΔF^0, cal mole⁻¹</td> <td>2480</td> <td>2520</td> <td>2600</td> <td>2660</td> </tr> </tbody> </table> <p>From $\Delta F^0 = -RT \ln (L/RT)$. $\Delta H_{298} = 940 \text{ cal mole}^{-1}$.</p> <p>* The Ostwald coefficient was given as : $L = \frac{\text{Concentration of gas in the liquid phase}}{\text{Concentration of gas in the gas phase.}}$</p>		T/K	281.96	287.76	297.76	307.76	Pressure range, *					from (kPa);	69.328	92.752	87.673	78.274	to (kPa):	132.53	90.673	86.260	80.513	Ostwald coefficient, *					From :	0.284	0.279	0.300	0.316	To:	0.268	0.294	0.306	0.320	Mean: * *	0.275	0.284	0.300	0.318	Mole fraction, ***	0.00104	0.00106	0.00109	0.00114	x_1 :					Number of measurements:	11	5	5	5	T/K	281.96	287.6	287.76	307.76	ΔF^0 , cal mole ⁻¹	2480	2520	2600	2660
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AUXILIARY INFORMATION																																																																		
METHOD/APPARATUS/PROCEDURE: An absorption vessel, and a gas buret with a levelling tube of the usual form were used. The volume of NO absorbed was measured at a total pressure, $p_T = p_{NO} + p_S$, where p_{NO} is the partial pressure of the gas, and p_S is the vapour pressure of the liquid S over the solution.	SOURCE AND PURITY OF MATERIALS: 1. Prepared by the action of mercury on nitric acid in the presence of 90% sulfuric acid. 2. Rendered gas free.																																																																	
ESTIMATED ERROR:																																																																		
REFERENCES:																																																																		

COMPONENTS:			ORIGINAL MEASUREMENTS:		
1. Nitric oxide; NO; [10102-43-9]			Shaw, A. W.; Vosper, A. J.		
2. Methylbenzene; C ₇ H ₈ ; [108-88-3]			<i>J. Chem. Soc. Faraday Trans. I</i> <u>1977</u> , 73, 1239-1244.		
VARIABLES:			PREPARED BY:		
Temperature			A. J. Vosper		
EXPERIMENTAL VALUES:					
Absorption measurements			Desorption measurements		
T/K	Mole fraction x_1^*	Concentration mol dm ⁻³	T/K	Mole fraction x_1^*	Concentration* mol dm ⁻³
289.0	0.00120	0.0123	217.2	0.00171	0.0175
279.8	0.00125	0.0130	219.7	0.00169	0.0172
265.4	0.00137	0.0133	222.7	0.00167	0.0169
256.0	0.00141	0.0139	225.8	0.00164	0.0166
246.6	0.00146	0.0144	227.7	0.00162	0.0163
238.4	0.00151	0.0151	233.2	0.00158	0.0159
230.7	0.00157	0.0158	235.5	0.00156	0.0156
219.7	0.00168	0.0171	241.7	0.00152	0.0151
213.7	0.00175	0.0180	245.7	0.00149	0.0148
			255.0	0.00142	0.0140
			272.1	0.00133	0.0128
* The mole fractions follow directly from the authors work whereas the concentrations were calculated using literature values for the density of toluene, ¹ extrapolating where necessary.					
Mean values for the partial molar enthalpy of solution and partial molar entropy of solution over the temperature range 214-289 K were given					
$\Delta H^\circ = -2.28 \pm 0.04 \text{ kJ mol}^{-1}$; $\Delta S^\circ = -63.4 \pm 0.02 \text{ J mol}^{-1} \text{ K}^{-1}$					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
A gas burette was used to determine the volume of gas absorbed by a known weight of the degassed liquid at a known temperature and at the prevailing barometric pressure. Measurements of desorption of gas from the saturated liquid with increasing temperature were also made. Corrections were applied for the vapor pressure of the liquid ¹ and nonideality of the gas ² . Results were calculated for a gas pressure of 101.325 kPa assuming Henry's Law which had previously been shown to be valid over the relevant pressure range.			The gas (Matheson Co. Inc.) was passed through 90 per cent H ₂ SO ₄ and a trap at ca. 190 K. It was solidified at 77 K and volatile impurities pumped away. The product contained less than 0.2 per cent N ₂ O as the only detectable impurity. The liquid (BDH ANALAR GRADE) was dried over CaCl ₂ then sodium wire and fractionated. The portion boiling between 383.8-383.9 K was used.		
			ESTIMATED ERROR:		
			REFERENCES:		
			1. Timmermans, J. "Physico-chemical Constants of Pure Organic Compounds". Elsevier, Vol. 1, p.150 and Vol. 2, p.99.		
			2. Johnson, H. L.; Weimer, H. R. <i>J. Amer. Chem. Soc.</i> <u>1934</u> , 56, 625.		

COMPONENTS:			ORIGINAL MEASUREMENTS:		
1. Nitric oxide; NO; [10102-43-9]			Shaw, A. W.; Vosper, A. J.		
2. 1,3-Dimethylbenzene; C ₈ H ₁₀ ; [108-38-3]			<i>J. Chem. Soc. Faraday Trans. I</i> 1977, 73, 1239-1244.		
VARIABLES:			PREPARED BY:		
Temperature			A. J. Vosper		
EXPERIMENTAL VALUES:					
Absorption measurements			Desorption measurements		
T/K	Mole fraction x_1^*	Concentration [*] mol dm ⁻³	T/K	Mole fraction x_1^*	Concentration [*] mol dm ⁻³
294.1	0.00134	0.0111	243.2	0.00162	0.0139
284.1	0.00140	0.0115	251.3	0.00156	0.0133
274.1	0.00144	0.0120	259.2	0.00152	0.0128
263.2	0.00148	0.0125	267.4	0.00149	0.0124
255.2	0.00153	0.0129	271.7	0.00147	0.0122
249.0	0.00157	0.0134	279.4	0.00142	0.0118
245.4	0.00159	0.0136	285.4	0.00137	0.0113
239.4	0.00164	0.0141			
234.0	0.00169	0.0146			
<p>* The mole fractions follow directly from the authors' work whereas the concentrations were calculated using literature values (1) for the density of m-xylene, extrapolating where necessary.</p> <p>Mean values for the partial molar enthalpy of solution and partial molar entropy of solution over the temperature range 234-294 K were given:</p> $\Delta H^\circ = -2.17 \pm 0.04 \text{ kJ mol}^{-1} \quad \Delta S^\circ = -62.4 \pm 0.2 \text{ J mol}^{-1} \text{ K}^{-1}$					
AUXILIARY INFORMATION					
METHOD / APPARATUS / PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
<p>A gas burette was used to determine the volume of gas absorbed by a known weight of the degassed liquid at a known temperature and at the prevailing barometric pressure. Measurements of desorption of gas from the saturated liquid with increasing temperature were also made. Corrections were applied for the vapor pressure of the liquid (1) and non-ideality of the gas (2). Results were calculated for a gas pressure of 101.325 kPa assuming Henry's Law which had previously been shown to be valid over the relevant pressure range.</p>			<p>The gas (Matheson Co. Inc.) was passed through 90 per cent H₂SO₄ and a trap at ca. 190 K. It was solidified at 77 K and volatile impurities pumped away. The product contained less than 0.2 per cent N₂O as the only detectable impurity.</p> <p>The liquid (BDH ANALAR GRADE) was dried over CaCl₂ then sodium wire and fractionated. The fraction boiling between 437.8-437.9 K was used.</p>		
			ESTIMATED ERROR:		
			REFERENCES:		
			1. Timmermans, J. "Physico-chemical constants of pure organic compounds". Elsevier, Vol. 1, p.164 and Vol. 2, p.112.		
			2. Johnson, H. L.; Weimer, H. R. <i>J. Amer. Chem. Soc.</i> 1934, 56, 625.		

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Methanol; CH ₃ OH; [67-56-1]	ORIGINAL MEASUREMENTS: Riccoboni, L. <i>Gazz. chim. ital.</i> <u>1841</u> , 71, 139-53.																																													
VARIABLES: Temperature, pressure	PREPARED BY: W. Gerrard																																													
EXPERIMENTAL VALUES: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">T/K</th> <th style="text-align: center;">273.16</th> <th style="text-align: center;">283.16</th> <th style="text-align: center;">293.16</th> <th style="text-align: center;">303.16</th> </tr> </thead> <tbody> <tr> <td>Pressure, kPa, *</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>from:</td> <td style="text-align: center;">65.355</td> <td style="text-align: center;">63.327</td> <td style="text-align: center;">57.198</td> <td style="text-align: center;">60.955</td> </tr> <tr> <td>to:</td> <td style="text-align: center;">150.821</td> <td style="text-align: center;">174.767</td> <td style="text-align: center;">188.730</td> <td style="text-align: center;">181.396</td> </tr> <tr> <td>Ostwald coefficient, L, *</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>from:</td> <td style="text-align: center;">0.367</td> <td style="text-align: center;">0.366</td> <td style="text-align: center;">0.355</td> <td style="text-align: center;">0.358</td> </tr> <tr> <td>to:</td> <td style="text-align: center;">0.360</td> <td style="text-align: center;">0.356</td> <td style="text-align: center;">0.346</td> <td style="text-align: center;">0.339</td> </tr> <tr> <td>Mean: **</td> <td style="text-align: center;">0.363</td> <td style="text-align: center;">0.362</td> <td style="text-align: center;">0.350</td> <td style="text-align: center;">0.347</td> </tr> <tr> <td>Mole fraction, : ***</td> <td style="text-align: center;">0.000640</td> <td style="text-align: center;">0.000623</td> <td style="text-align: center;">0.000589</td> <td style="text-align: center;">0.000571</td> </tr> </tbody> </table> <p style="margin-left: 40px;">* Irregular distribution ** Mean given by author *** Calculated by compiler</p> <p>The author assumed L to be independent of pressure. The compiler used the gram-mole volume of NO (22388 cm³ at 273.16, 101.325 kPa) based on the standard density, 1.3402 g/dm³. The volume for other temperatures was obtained by 22388 × (T/273.16). The L value was assumed to be for 101.325 kPa.</p>		T/K	273.16	283.16	293.16	303.16	Pressure, kPa, *					from:	65.355	63.327	57.198	60.955	to:	150.821	174.767	188.730	181.396	Ostwald coefficient, L, *					from:	0.367	0.366	0.355	0.358	to:	0.360	0.356	0.346	0.339	Mean: **	0.363	0.362	0.350	0.347	Mole fraction, : ***	0.000640	0.000623	0.000589	0.000571
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Mole fraction, : ***	0.000640	0.000623	0.000589	0.000571																																										
AUXILIARY INFORMATION																																														
METHOD APPARATUS/PROCEDURE: Determination of weight of gas absorbed by a known weight of liquid. Converted into the Ostwald coefficient, L. Solvent was freed from air and vacuum distilled into the ampoule. Solvent and solution were weighed in a removable ampoule which also served as a dilatometer. Diagram given by author.	SOURCE AND PURITY OF MATERIALS: 1. Nitric oxide. Self-prepared and rigorously purified and attested. 2. Methanol. Redistilled. ESTIMATED ERROR: REFERENCES:																																													

<p>COMPONENTS:</p> <p>1. Nitric oxide; NO; [10102-43-9]</p> <p>2. Ethanol, C₂H₆O; [64-17-5]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Carius, L.</p> <p><i>Annalen</i>, <u>1855</u>, 94, 129-166.</p>																					
<p>VARIABLES:</p>	<p>PREPARED BY:</p> <p>W. Gerrard</p>																					
<p>EXPERIMENTAL VALUES:</p> <table border="1" data-bbox="91 486 1175 780"> <thead> <tr> <th>T/K</th> <th>Bunsen absorption coefficient, α</th> <th>Mole fraction, x_{NO} (Calculated by compiler)*</th> </tr> </thead> <tbody> <tr><td>275.15</td><td>0.30895</td><td>0.0007885</td></tr> <tr><td>279.15</td><td>0.29684</td><td>0.0007615</td></tr> <tr><td>284.95</td><td>0.28162</td><td>0.0007262</td></tr> <tr><td>289.15</td><td>0.27250</td><td>0.0007062</td></tr> <tr><td>293.15</td><td>0.26573</td><td>0.0006915</td></tr> <tr><td>297.35</td><td>0.26014</td><td>0.0006800</td></tr> </tbody> </table> <p>Absorption coefficient, $\alpha = 0.31606 - 0.0034870t + 0.0000490 t^2$ (From 273.15 to 298.15 K) where $t = T/K - 273.15$</p> <p>Henrich (1) used Carius's data to give a modified smoothing equation :</p> $\alpha = 0.31578 - 0.003469 t + 0.00004827 t^2$ <p><u>Note</u> : Henrich did not give any experimental data.</p> <p>* The gas molecular volume of NO at 273.15 K and 101.325 kPa was taken to be 22.385 dm³, based on the standard density of 1.3402 g /dm⁻³.</p>		T/K	Bunsen absorption coefficient, α	Mole fraction, x_{NO} (Calculated by compiler)*	275.15	0.30895	0.0007885	279.15	0.29684	0.0007615	284.95	0.28162	0.0007262	289.15	0.27250	0.0007062	293.15	0.26573	0.0006915	297.35	0.26014	0.0006800
T/K	Bunsen absorption coefficient, α	Mole fraction, x_{NO} (Calculated by compiler)*																				
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<p>AUXILIARY INFORMATION</p>																						
<p>METHOD /APPARATUS/PROCEDURE:</p> <p>Measurement of volume by the Bunsen gas buret.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>1. NO: Self prepared and purified.</p> <p>2. Ethanol was distilled as "absolute", $d_{20}^{20} = 0.792$.</p> <hr/> <p>ESTIMATED ERROR:</p> <hr/> <p>REFERENCES:</p> <p>1. Henrich, F. Z. <i>Phys. Chem.</i> <u>1892</u>, 9, 435.</p>																					

COMPONENTS:			ORIGINAL MEASUREMENTS:		
1. Nitric oxide; NO; [10102-43-9]			Shaw, A. W.; Vosper, A. J.		
2. 1,1'-Oxybisethane, (diethyl ether); C ₄ H ₁₀ O; [60-29-7]			<i>J. Chem. Soc. Faraday Trans. I</i> 1977, 73, 1239-1244.		
VARIABLES:			PREPARED BY:		
Temperature			A. J. Vosper		
EXPERIMENTAL VALUES:					
Absorption measurements			Desorption measurements		
T/K	Mole fraction x_1^*	Concentration* mol dm ⁻³	T/K	Mole fraction x_1^*	Concentration* mol dm ⁻³
279.4	0.00264	0.0260	227.9	0.00355	0.0377
271.9	0.00271	0.0271	236.2	0.00335	0.0352
264.0	0.00283	0.0287	243.2	0.00321	0.0334
255.5	0.00294	0.0300	252.7	0.00306	0.0314
247.4	0.00306	0.0317	260.2	0.00296	0.0301
240.4	0.00320	0.0333	267.4	0.00287	0.0287
233.4	0.00337	0.0355			
230.7	0.00343	0.0364			
225.7	0.00360	0.0385			
* The mole fractions follow directly from the authors' work whereas the concentrations were calculated using literature values (1) for the density of diethyl ether.					
Mean values for the partial molar enthalpy of solution and partial molar entropy of solution over the temperature range 226-279 K were given:					
$\Delta H^\circ = -3.02 \pm 0.08 \text{ kJ mol}^{-1}$ $\Delta S^\circ = -60.2 \pm 0.3 \text{ J mol}^{-1} \text{ K}^{-1}$					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
A gas burette was used to determine the volume of gas absorbed by a known weight of the degassed liquid at a known temperature and at the prevailing barometric pressure. Measurements of desorption of gas from the saturated liquid with increasing temperature were also made. Corrections were applied for the vapor pressure of the liquid (1) and non-ideality of the gas (2). Results were calculated for a gas pressure of 101.325 kPa assuming Henry's Law which had previously been shown to be valid over the relevant pressure range.			The gas (Matheson Co. Inc.) was passed through 90 per cent H ₂ SO ₄ and a trap at ca. 190 K. It was solidified at 77 K and volatile impurities pumped away. The product contained less than 0.2 per cent N ₂ O as the only detectable impurity.		
			The liquid (BDH ANALAR GRADE) was dried over CaCl ₂ then sodium wire and fractionated. The fraction boiling at 307.7 K was used.		
			ESTIMATED ERROR:		
			REFERENCES:		
			1. Timmermans, J. "Physico-chemical constants of pure organic compounds". Elsevier, Vol. 1, p.342.		
			2. Johnson, H. L.; Weimer, H. R. <i>J. Amer. Chem. Soc.</i> 1934, 56, 625.		

COMPONENTS:			ORIGINAL MEASUREMENTS:		
1. Nitric oxide; NO; [10102-43-9] 2. Ethyl acetate; C ₄ H ₈ O ₂ ; [141-78-6]			Shaw, A. W.; Vosper, A. J. <i>J. Chem. Soc. Faraday Trans. I</i> <u>1977</u> , 73, 1239-1244.		
VARIABLES:			PREPARED BY:		
Temperature			A. J. Vosper		
EXPERIMENTAL VALUES:					
Absorption measurements			Desorption measurements		
T/K	Mole fraction x_1^*	Concentration* mol dm ⁻³	T/K	Mole fraction x_1^*	Concentration* mol dm ⁻³
286.6	0.00173	0.0179	226.2	0.00224	0.0249
277.8	0.00176	0.0184	236.0	0.00212	0.0234
266.2	0.00182	0.0193	242.0	0.00205	0.0224
257.8	0.00187	0.0201	249.2	0.00199	0.0216
247.2	0.00196	0.0213	253.7	0.00197	0.0211
239.8	0.00204	0.0224	260.7	0.00192	0.0205
231.7	0.00213	0.0236	271.2	0.00187	0.0197
224.7	0.00223	0.0249			
220.2	0.00230	0.0258			
* The mole fractions follow directly from the authors' results whereas the concentrations were calculated using literature values (1) for the density of ethyl acetate.					
Mean values for the partial molar enthalpy of solution and partial molar entropy of solution over the temperature range 220-287 K were given:					
$\Delta H^\circ = -2.53 \pm 0.09 \text{ kJ mol}^{-1}$ $\Delta S^\circ = -62.0 \pm 0.4 \text{ J mol}^{-1} \text{ K}^{-1}$					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
A gas burette was used to determine the volume of gas absorbed by a known weight of the degassed liquid at a known temperature and at the prevailing barometric pressure. Measurements of desorption of gas from the saturated liquid with increasing temperature were also made. Corrections were applied for the vapor pressure of the liquid (1) and non-ideality of the gas (2). Results were calculated for a gas pressure of 101.325 kPa assuming Henry's Law which had previously been shown to be valid over the relevant pressure range.			The gas (Matheson Co. Inc.) was passed through 90 per cent H ₂ SO ₄ and a trap at ca. 190 K. It was solidified at 77 K and volatile impurities pumped away. The product contained less than 0.2 per cent N ₂ O as the only detectable impurity. The liquid (BDH ANALAR GRADE) was dried over potassium carbonate then P ₂ O ₅ . It was fractionated and the portion boiling at 350.3 K was used.		
			ESTIMATED ERROR:		
			REFERENCES:		
			1. Timmermans, J. "Physico-chemical constants of pure organic compounds". Elsevier, Vol. 1, p.415.		
			2. Johnson, H. L.; Weimer, H. R. <i>J. Amer. Chem. Soc.</i> <u>1934</u> , 56, 625.		

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Tetrachloromethane; (Carbon tetrachloride); CCl ₄ ; [56-23-5]	ORIGINAL MEASUREMENTS: Klemenc, A.; Spitzer-Neumann, E.; <i>Monatsh.</i> <u>1929</u> , <i>53</i> , 413-419.																																																																								
VARIABLES: Temperature, pressure.	PREPARED BY: W. Gerrard																																																																								
EXPERIMENTAL VALUES: <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 40%;">T/K</td> <td style="width: 20%;">281.96</td> <td style="width: 20%;">292.76</td> <td style="width: 20%;">307.76</td> </tr> <tr> <td>Pressure range, *</td> <td></td> <td></td> <td></td> </tr> <tr> <td> from (kPa) :</td> <td>59.462</td> <td>108.391</td> <td>75.754</td> </tr> <tr> <td> to (kPa) :</td> <td>133.456</td> <td>58.823</td> <td>100.192</td> </tr> <tr> <td>Ostwald coefficient, *</td> <td></td> <td></td> <td></td> </tr> <tr> <td> from :</td> <td>0.336</td> <td>0.338</td> <td>0.368</td> </tr> <tr> <td> to :</td> <td>0.342</td> <td>0.355</td> <td>0.385</td> </tr> <tr> <td>Mean : **</td> <td>0.339</td> <td>0.345</td> <td>0.375</td> </tr> <tr> <td>Mole fraction, x_1 : ***</td> <td>0.00140</td> <td>0.00139</td> <td>0.00146</td> </tr> <tr> <td>Number of measurements :</td> <td>9</td> <td>11</td> <td>7</td> </tr> <tr> <td colspan="4">* Irregular distribution.</td> </tr> <tr> <td colspan="4">** Given by the authors.</td> </tr> <tr> <td colspan="4">*** Calculated by compiler</td> </tr> <tr> <td>ΔF^0, cal mole⁻¹</td> <td>2360</td> <td>2460</td> <td>2570</td> </tr> <tr> <td colspan="4">From $\Delta F^0 = -RT \ln (L/RT)$</td> </tr> <tr> <td>$\Delta H_{298}$ = 700 cal mole⁻¹</td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4">* The Ostwald coefficient was taken to be :</td> </tr> <tr> <td colspan="4" style="text-align: center;"> $L = \frac{\text{Concentration of gas in the liquid phase}}{\text{Concentration of gas in the gas phase.}}$ </td> </tr> </tbody> </table>		T/K	281.96	292.76	307.76	Pressure range, *				from (kPa) :	59.462	108.391	75.754	to (kPa) :	133.456	58.823	100.192	Ostwald coefficient, *				from :	0.336	0.338	0.368	to :	0.342	0.355	0.385	Mean : **	0.339	0.345	0.375	Mole fraction, x_1 : ***	0.00140	0.00139	0.00146	Number of measurements :	9	11	7	* Irregular distribution.				** Given by the authors.				*** Calculated by compiler				ΔF^0 , cal mole ⁻¹	2360	2460	2570	From $\Delta F^0 = -RT \ln (L/RT)$				ΔH_{298} = 700 cal mole ⁻¹				* The Ostwald coefficient was taken to be :				$L = \frac{\text{Concentration of gas in the liquid phase}}{\text{Concentration of gas in the gas phase.}}$			
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AUXILIARY INFORMATION																																																																									
METHOD/APPARATUS/PROCEDURE: An absorption vessel, and a gas buret with levelling tube of the usual form were used. The volume of NO absorbed at a total pressure $P_T = P_{NO} + P_S$, where P_{NO} is the partial pressure of the gas, and P_S is the vapor pressure of the solvent over the solution.	SOURCE AND PURITY OF MATERIALS: 1. Prepared by the action of mercury and nitric acid in the presence of 90% sulfuric acid. 2. The solvent was rendered gas free.																																																																								
ESTIMATED ERROR:																																																																									
REFERENCES:																																																																									

COMONENTS:			ORIGINAL MEASUREMENTS:		
1. Nitric oxide; NO; [10102-43-9] 2. Tetrachloromethane, (carbon tetrachloride); CCl ₄ ; [56-23-5]			Shaw, A. W.; Vosper, A. J. <i>J. Chem. Soc. Faraday Trans. I</i> <u>1977</u> , <i>73</i> , 1239-1244.		
VARIABLES:			PREPARED BY:		
Temperature			A. J. Vosper		
EXPERIMENTAL VALUES:					
Absorption measurements			Desorption measurements		
T/K	Mole fraction x_1^*	Concentration* mol dm ⁻³	T/K	Mole fraction x_1^*	Concentration* mol dm ⁻³
292.2	0.00138	0.0144	256.2	0.00150	0.0163
288.0	0.00139	0.0145	261.2	0.00148	0.0160
283.5	0.00141	0.0149	266.4	0.00147	0.0157
278.4	0.00142	0.0150	270.7	0.00145	0.0154
273.7	0.00144	0.0153	275.7	0.00144	0.0153
268.0	0.00145	0.0155	285.0	0.00137	0.0143
264.0	0.00147	0.0158			
258.2	0.00149	0.0161			
253.7	0.00151	0.0165			
<p>* The mole fractions follow directly from the authors' results whereas the concentrations were calculated using literature values (1) for the density of carbon tetrachloride extrapolating where necessary.</p> <p>Mean values for the partial molar enthalpy of solution and partial molar entropy of solution over the temperature range 253-292 K were given:</p> <p style="text-align: center;">$\Delta H^\circ = -1.42 \pm 0.03 \text{ kJ mol}^{-1}$ $\Delta S^\circ = -59.6 \pm 0.1 \text{ J mol}^{-1} \text{ K}^{-1}$</p>					
AUXILIARY INFORMATION					
METHOD / APPARATUS / PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
A gas burette was used to determine the volume of gas absorbed by a known weight of the degassed liquid at a known temperature and at the prevailing barometric pressure. Measurements of desorption of gas from the saturated liquid with increasing temperature were also made. Corrections were applied for the vapor pressure of the liquid (1) and non-ideality of the gas (2). Results were calculated for a gas pressure of 101.325 kPa assuming Henry's Law which had previously been shown to be valid over the relevant pressure range.			The gas (Matheson Co. Inc.) was passed through 90 per cent H ₂ SO ₄ and a trap at ca. 190 K. It was solidified at 77 K and volatile impurities pumped away. The product contained less than 0.2 per cent N ₂ O as the only detectable impurity.		
			The liquid (BDH ANALAR GRADE) was refluxed with NaOH solution, dried over CaCl ₂ and fractionated. The fraction boiling between 349.9-350.1 K was used.		
			ESTIMATED ERROR:		
			REFERENCES:		
			1. Timmermans, J. <i>"Physico-chemical constants of pure organic compounds"</i> . Elsevier, Vol. 1, p.224.		
			2. Johnson, H. L.; Weimer, H. R. <i>J. Amer. Chem. Soc.</i> <u>1934</u> , <i>56</i> , 625.		

COMPONENTS:			ORIGINAL MEASUREMENTS:		
1. Nitric oxide; NO; [10102-43-9]			Shaw, A. W.; Vosper, A. J.		
2. Acetonitrile; CH ₃ CN; [75-05-8]			<i>J. Chem. Soc. Faraday Trans. I</i> <u>1977</u> , 73, 1239-1244.		
VARIABLES:			PREPARED BY:		
Temperature			A. J. Vosper		
EXPERIMENTAL VALUES:					
Absorption measurements			Desorption measurements		
T/K	Mole fraction x_1^*	Concentration* mol dm ⁻³	T/K	Mole fraction x_1^*	Concentration* mol dm ⁻³
282.9	0.000786	0.0152	235.7	0.000913	0.0188
274.7	0.000794	0.0155	242.0	0.000888	0.0181
264.7	0.000824	0.0163	248.6	0.000867	0.0175
252.4	0.000849	0.0171	256.7	0.000843	0.0169
244.9	0.000881	0.0179	260.7	0.000833	0.0166
237.6	0.000908	0.0186	269.3	0.000816	0.0161
232.5	0.000929	0.0192			
* The mole fractions follow directly from the authors' results whereas the concentrations were calculated using literature values (1) for the density of acetonitrile.					
Mean values for the partial molar enthalpy and partial molar entropy over the temperature range 233-283 K were given:					
$\Delta H^\circ = -1.83 \pm 0.05 \text{ kJ mol}^{-1}$ $\Delta S^\circ = -66.0 \pm 0.2 \text{ J mol}^{-1} \text{ K}^{-1}$					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
A gas burette was used to determine the volume of gas absorbed by a known weight of the degassed liquid at a known temperature and at the prevailing barometric pressure. Measurements of desorption of gas from the saturated liquid with increasing temperature were also made. Corrections were applied for the vapor pressure of the liquid (1) and non-ideality of the gas (2). Results were calculated for a gas pressure of 101.325 kPa assuming Henry's Law which had previously been shown to be valid over the relevant pressure range.			The gas (Matheson Co. Inc.) was passed through 90 per cent H ₂ SO ₄ and a trap at <i>ca.</i> 190 K. It was solidified at 77 K and volatile impurities pumped away. The product contained less than 0.2 per cent N ₂ O as the only detectable impurity.		
			The liquid (BDH ANALAR GRADE) was refluxed over P ₂ O ₅ then fractionated. The fraction boiling at 354.8 K was used.		
			ESTIMATED ERROR:		
			REFERENCES:		
			1. Timmermans, J. " <i>Physico-chemical constants of pure organic compounds</i> ". Elsevier, Vol. 1, p.527 and Vol. 2, p.343.		
			2. Johnson, H. L.; Weimer, H. R. <i>J. Amer. Chem. Soc.</i> 1934, 56, 625.		

COMPONENTS: 1. Nitric oxide; NO; [10102-43-9] 2. Nitrobenzene; C ₆ H ₅ NO ₂ ; [98-95-3]	ORIGINAL MEASUREMENTS: Klemenc, A.; Spitzer-Neumann, E. <i>Monatsh.</i> <u>1929</u> , <i>53</i> , 413-419.																																																												
VARIABLES: Temperature, pressure	PREPARED BY: W. Gerrard																																																												
EXPERIMENTAL VALUES: <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 20%;">T/K</td> <td style="width: 15%;">293.16</td> <td style="width: 15%;">298.16</td> <td style="width: 15%;">313.16</td> <td style="width: 15%;">333.16</td> <td style="width: 15%;">363.16</td> </tr> <tr> <td>Pressure range,*</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>from (kPa) :</td> <td>62.128</td> <td>133.056</td> <td>136.522</td> <td>144.921</td> <td>142.388</td> </tr> <tr> <td>to (kPa) :</td> <td>140.225</td> <td>-</td> <td>65.995</td> <td>67.728</td> <td>61.195</td> </tr> <tr> <td>Ostwald coefficient,*</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>from :</td> <td>0.176</td> <td>-</td> <td>0.182</td> <td>0.184</td> <td>0.196</td> </tr> <tr> <td>to :</td> <td>0.200</td> <td>-</td> <td>0.198</td> <td>0.205</td> <td>0.183</td> </tr> <tr> <td>Mean: **</td> <td>0.189</td> <td>0.190</td> <td>0.190</td> <td>0.193</td> <td>0.188</td> </tr> <tr> <td>Mole fraction, x₁:***</td> <td>0.000805</td> <td>0.000799</td> <td>0.000769</td> <td>0.000747</td> <td>0.000685</td> </tr> <tr> <td>Number of measurements:</td> <td>9</td> <td>1</td> <td>7</td> <td>6</td> <td>4</td> </tr> </tbody> </table> <p>* Irregular distribution. ** Given by authors. *** Calculated by compiler.</p> <p>ΔF^0, cal mole⁻¹ 2820 2870 3050 3276 3656</p> <p>From $\Delta F^0 = -RT \ln (L/RT)$</p> <p>$\Delta H_{298} = 0$</p> <p>Henry's law was assumed.</p>		T/K	293.16	298.16	313.16	333.16	363.16	Pressure range,*						from (kPa) :	62.128	133.056	136.522	144.921	142.388	to (kPa) :	140.225	-	65.995	67.728	61.195	Ostwald coefficient,*						from :	0.176	-	0.182	0.184	0.196	to :	0.200	-	0.198	0.205	0.183	Mean: **	0.189	0.190	0.190	0.193	0.188	Mole fraction, x ₁ :***	0.000805	0.000799	0.000769	0.000747	0.000685	Number of measurements:	9	1	7	6	4
T/K	293.16	298.16	313.16	333.16	363.16																																																								
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METHOD/APPARATUS/PROCEDURE: Gas buret and absorption vessel. Ostwald coefficient taken to be concentration of gas in the liquid phase/concentration of gas in the gas phase. Measurement of volume of gas absorbed at a measured pressure, P _{Total} . Partial pressure of gas = P _{Total} - P _S , where p _S is the partial pressure of the solvent over the solution.	SOURCE AND PURITY OF MATERIALS: 1. Prepared by the action of mercury on nitric acid in the presence of 90% sulfuric acid. 2. Rendered gas free.																																																												
ESTIMATED ERROR:																																																													
REFERENCES:																																																													

<p>COMPONENTS:</p> <ol style="list-style-type: none"> Nitric oxide Inorganic, nonaqueous liquids 	<p>EVALUATOR:</p> <p>W. Gerrard The Polytechnic of North London Holloway, London, N7 8DB UK March 1980</p>
<p>CRITICAL EVALUATION:</p> <p>Sulfuric acid; H_2SO_4; [7664-93-9]</p> <p>The data of Manchot, Konig, and Reimberger [1] on aqueous solutions of sulfuric acid of a range of concentrations up to 96% H_2SO_4 enables a rational, but speculative extrapolation to be made to 100% H_2SO_4. These data enable straightforward Ostwald coefficients to be recorded; and these are deemed acceptable. For 273 K and 1 atm the mole fraction x_{NO} for the "pure" acid is calculated to be 0.000357, compared with 0.0000592 for water. Results by Lunge [2] and by Tower [3], and by Pinkus and Jacobi [4] fit approximately into the data of Manchot <i>et al.</i></p> <p>Nitrosyl chloride; $NOCl$; [2696-92-6]</p> <p>The mole fraction, x_{NO}, at 220 K [1 atm], 0.0028, based on the observation of Trautz and Gerwig [5] appears to be approximately of the right magnitude.</p> <p>Nitrose</p> <p>Tseitlin [6] gave data on the solubility of nitric oxide in solutions of nitrosyl sulfuric acid which appear to be acceptable.</p> <p>REFERENCES:</p> <ol style="list-style-type: none"> Manchot, W.; Konig, J.; Reimlinger, S. <i>Ber.</i> <u>1926</u>, <i>59B</i>, 2672 Lunge, G. <i>Ber.</i> <u>1885</u>, <i>18</i>, 1393 Tower, O.F. <i>Z. anorg. Chem.</i> <u>1906</u>, <i>50</i>, 382 Pinkus, A.; Jacobi, J. <i>Bull. Soc. Chim. Belg.</i> <u>1927</u>, <i>36</i>, 448 Trautz, M.; Gerwig, W. <i>Z. anorg. Chem.</i> <u>1925</u>, <i>146</i>, 1 Tseitlin, A.N. <i>J. Applied Chem.</i> [USSR] <u>1946</u>, <i>19</i>, 820 	

<p>COMPONENTS:</p> <p>1. Nitric oxide; NO; [10102-43-9]</p> <p>2. Water; H₂O; [7732-18-5]</p> <p>3. Sulfuric acid; H₂SO₄; [7664-93-9]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Manchot, W.; Konig, J.; Reimlinger, S. Ber, <u>1926</u>, 59B, 2672-2681.</p>																																																																																																													
<p>VARIABLES:</p> <p>Composition</p>	<p>PREPARED BY:</p> <p>W. Gerrard</p>																																																																																																													
<p>EXPERIMENTAL VALUES:</p> <p>T/K = 273.15 Pressure of nitric oxide appeared to be 1 atm.</p> <table border="1" data-bbox="194 544 1040 1152"> <thead> <tr> <th rowspan="2">Conc. of H₂SO₄ wt %</th> <th colspan="4">Volume of NO, cm³, absorbed by 100 g of soln. 100 cm³ of soln.</th> </tr> <tr> <th>a</th> <th>b</th> <th>a</th> <th>b</th> </tr> </thead> <tbody> <tr><td>0</td><td>7.38</td><td></td><td>7.38</td><td></td></tr> <tr><td>8.8</td><td>6.5</td><td>6.1</td><td>6.9</td><td>6.5</td></tr> <tr><td>18.2</td><td>5.2</td><td>4.9</td><td>5.9</td><td>5.6</td></tr> <tr><td>28.0</td><td>4.5</td><td>4.3</td><td>5.4</td><td>5.2</td></tr> <tr><td>38.6</td><td>3.8</td><td>3.6</td><td>4.9</td><td>4.6</td></tr> <tr><td>48.0</td><td>2.9</td><td>2.7</td><td>4.0</td><td>3.8</td></tr> <tr><td>52.6</td><td>2.4</td><td>2.3</td><td>3.4</td><td>3.2</td></tr> <tr><td>58.7</td><td>2.2</td><td>2.1</td><td>3.3</td><td>3.1</td></tr> <tr><td>66.5</td><td>1.9</td><td>1.8</td><td>3.0</td><td>2.8</td></tr> <tr><td>70.8</td><td>1.9</td><td>1.8</td><td>3.0</td><td>2.8</td></tr> <tr><td>76.7</td><td>1.8</td><td>1.7</td><td>3.1</td><td>2.9</td></tr> <tr><td>78.0</td><td>1.9</td><td>1.8</td><td>3.2</td><td>3.1</td></tr> <tr><td>88.3</td><td>2.0</td><td>1.9</td><td>3.5</td><td>3.4</td></tr> <tr><td>89.1</td><td>2.1</td><td>1.9</td><td>3.7</td><td>3.6</td></tr> <tr><td>90.0</td><td>2.3</td><td>2.1</td><td>4.1</td><td>3.8</td></tr> <tr><td>90.4</td><td>2.4</td><td>2.2</td><td>4.3</td><td>4.0</td></tr> <tr><td>91.9</td><td>2.4</td><td>2.2</td><td>4.3</td><td>4.0</td></tr> <tr><td>92.4</td><td>2.5</td><td>2.4</td><td>4.6</td><td>4.4</td></tr> <tr><td>95.0</td><td>3.8</td><td>3.7</td><td>7.1</td><td>6.9</td></tr> <tr><td>95.9</td><td>4.2</td><td>3.9</td><td>7.7</td><td>7.2</td></tr> </tbody> </table> <p>a and b are duplicate measurements</p>		Conc. of H ₂ SO ₄ wt %	Volume of NO, cm ³ , absorbed by 100 g of soln. 100 cm ³ of soln.				a	b	a	b	0	7.38		7.38		8.8	6.5	6.1	6.9	6.5	18.2	5.2	4.9	5.9	5.6	28.0	4.5	4.3	5.4	5.2	38.6	3.8	3.6	4.9	4.6	48.0	2.9	2.7	4.0	3.8	52.6	2.4	2.3	3.4	3.2	58.7	2.2	2.1	3.3	3.1	66.5	1.9	1.8	3.0	2.8	70.8	1.9	1.8	3.0	2.8	76.7	1.8	1.7	3.1	2.9	78.0	1.9	1.8	3.2	3.1	88.3	2.0	1.9	3.5	3.4	89.1	2.1	1.9	3.7	3.6	90.0	2.3	2.1	4.1	3.8	90.4	2.4	2.2	4.3	4.0	91.9	2.4	2.2	4.3	4.0	92.4	2.5	2.4	4.6	4.4	95.0	3.8	3.7	7.1	6.9	95.9	4.2	3.9	7.7	7.2
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<p>METHOD /APPARATUS/PROCEDURE:</p> <p>The apparatus and technique were stated to be those of Manchot (1).</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>Appeared to be of satisfactory purity.</p> <p>ESTIMATED ERROR:</p> <p>REFERENCES:</p> <p>1. Manchot, W. Z. <i>Anorg. Chem.</i> <u>1924</u>, 141, 38.</p>																																																																																																													

SYSTEM INDEX

Underlined page numbers refer to evaluation text and those not underlined to compiled tables. All compounds are listed as in Chemical Abstracts. For example, toluene is listed as benzene, methyl- and dimethylsulfoxide is listed as methane, sulfinylbis-.

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Nickel sulfate	see sulfuric acid, nickel salt	
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