COMPONENTS:	ORIGINAL MEASUREMENTS:
 N,N-Dimethylmethanamine, (Trimethylamine); C₃H₉N; [75-50-3] Methanol; CH₄O; [67-56-1] 	Halban, H. Z. Phys. Chem. 1913, 84, 129-159.
VARIABLES:	PREPARED BY:
Concentration	P. G. T. Fogg

EXPERIMENTAL VALUES:

T/K	Concentration of C ₃ H ₉ N in solytion/mol dm	$p_{\mathrm{C_3H_9N}/\mathrm{mmHg}}$	Concentration of C ₃ H ₉ N in solution/concentration in gas phase	Mole fraction in solution* ${}^{x}C_{3}H_{9}N$
298.2	0.368	9.63	712	0.0148
	0.510	13.2	718	0.0204
	0.511	13.5	704	0.0204

Calculated by the compiler, on the assumption that dissolution of gas caused negligible change of volume of the liquid phase, using the density of methanol given in ref. (1).

AUXILIARY INFORMATION

METHOD /APPARATUS / PROCEDURE: The partial pressures of trimethylamine above solutions of concentrations determined by titration, were measured by a dynamic method (refs. (2) & (3). oxygen, produced by electrolysis of sodium hydroxide solution, were passed through each solution of trimethylamine. The trimethylamine in the gas stream was absorbed in hydrochloric acid and estimated from changes in electrical conductivity due to partial neutralisation of the acid. The volumes of hydrogen/ oxygen gas mixture produced by electrolysis were found from the barometric pressure and changes in a copper voltameter in series with the cell for producing the gas. The partial pressures of trimethylamine were calculated on the assumption that equilibrium was established between trimethylamine in solution and that in the gas phase, during passage of hydrogen/oxygen mixture through the solution.

SOURCE AND PURITY OF MATERIALS:

- 1. Hydrated chloride from Kahlbaum reacted with KOH; gas dried with NaOH.
- Mixtures of hydrogen and 2. Kahlbaum methylalkohol I distilled from CaO. b.p. 64.3-65.3 C (752 mmHg).

ESTIMATED ERROR:

- 1. Timmermans, J. Physico-Chemical Constants of Pure Organic Compounds Vol. 2, Elsevier, Amsterdam. 1965
- 2. Gaus, Z. Anorg. Chem. 1900, 25, 236.
- 3. Abegg, R.; Riesenfeld, H. Z. Phys. Chem. 1902, 40, 84.

1. N, N-Dimethylmethanamine, (Trimethylamine); C3H9N; [75-50-3]Ethanol; C₂H₆O; [557-75-5]

ORIGINAL MEASUREMENTS:

Halban, H.

Z. Phys. Chem.

1913, 84, 129-159.

VARIABLES:

COMPONENTS:

Concentration

PREPARED BY:

P. G. T. Fogg

EXPERIMENTAL VALUES:

T/K	Concentration of C ₃ H ₉ N in solytion/mol dm	PC3H9N/mmHg	Concentration of C ₃ H ₉ N in solution/concentration in gas phase	Mole fraction in solution* $^{x}\mathrm{C_{3}^{H_{9}N}}$
298.2	0.1914	7.62	467	0.0111
	0.299	11.8	472	0.0172
	0.299	11.7	474	0.0172

* Calculated by the compiler using the density of the solvent given in ref. (1), on the assumption that dissolution of gas caused negligible change of volume of the liquid phase.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The partial pressures of trimethylamine above solutions of concentrations determined by titration, were measured by a dynamic method (refs. (2) & (3). Mixtures of hydrogen and oxygen, produced by electrolysis of sodium hydroxide solution, were passed through each solution of trimethylamine. The trimethylamine in the gas stream was absorbed in hydrochloric acid and estimated from changes in electrical conductivity due to partial neutralisation of the acid. The volumes of hydrogen/ oxygen gas mixture produced by electrolysis were found from the barometric pressure and changes in a copper voltameter in series with the cell for producing the gas. partial pressures of trimethylamine were calculated on the assumption that equilibrium was established between trimethylamine in solution and that in the gas phase, during passage of hydrogen/oxygen mixture through the solution.

SOURCE AND PURITY OF MATERIALS:

- 1. Hydrated chloride from Kahlbaum reacted with KOH; gas dried with
- Dried over CaO and distilled;
 b.p. 78.1 C (760 mmHg).

ESTIMATED ERROR:

- 1. Timmermans, J. Physico-Chemical Constants of Pure Organic Compounds Vol. 2, Elsevier, Amsterdam. 1965
- 2. Gaus. Z. Anorg. Chem. 1900, 25, 236.
- 3. Abegg, R; Riesenfeld, H. Z. Phys. Chem. 1902, 40, 84.

- 1. N, N-Dimethylmethanamine, (Trimethylamine); C3H9N; [75-50-3]
- 2. l-Propanol; C₃H₈O; [71-23-8]

ORIGINAL MEASUREMENTS:

Halban, H.

Z. Phys. Chem.

1913, 84, 129-159.

VARIABLES:

Concentration

PREPARED BY:

P. G. T. Fogg

EXPERIMENTAL VALUES:

T/K	Concentration of C ₃ H ₉ N in solytion/mol dm	PC3H9N/mmHg	Concentration of C ₃ H ₉ N in solution/ concentration in gas phase	Mole fraction in solution* ${}^{x}C_{3}H_{9}N$
298.2	0.219	8.55	482	0.0162
	0.329	13.1	467	0.0241
	0.330	13.2	467	0.0242

* Calculated by the compiler, using the density of the solvent given in ref. (1), on the assumption that dissolution of gas caused negligible change of volume of the liquid phase.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The partial pressures of trimethylamine above solutions of concentrations determined by titration, were measured by a dynamic method (refs. Mixtures of hydrogen and (2) & (3). oxygen, produced by electrolysis of sodium hydroxide solution, were passed through each solution of trimethylamine. The trimethylamine in the gas stream was absorbed in hydrochloric acid and estimated from changes in electrical conductivity due to partial neutralisation of the acid. The volumes of hydrogen/ oxygen gas mixture produced by electrolysis were found from the barometric pressure and changes in a copper voltameter in series with the cell for producing the gas. The partial pressures of trimethylamine were calculated on the assumption that equilibrium was established between trimethylamine in solution and that in the gas phase, during passage of hydrogen/oxygen mixture through the solution.

SOURCE AND PURITY OF MATERIALS:

- 1. Hydrated chloride from Kahlbaum; reacted with KOH; gas dried with NaOH.
- 2. Dried over KOH and distilled; b.p. 96.8-97.1°C (754 mmHg).

ESTIMATED ERROR:

- 1. Timmermans, J. Physico-Chemical Constants of Pure Organic Compounds Vol. 2, Elsevier, Amsterdam. 1965
- Z. Anorg. Chem. 1900, 2. Gaus, 25, 236.
- 3. Abegg, R.; Riesenfeld, H. Z. Phys. Chem. 1902, 40, 84.

COMPONENTS:			ORIGINAL MEASUREMENTS:
1. N,N-Dir (trimet [75-50-	nethylmethan thylamine); -3]	amine C ₃ H ₉ N;	Gerrard, W. Solubility of Gases and Liquids, Plenum 1976, Chapter 10.
2. 1-Butan	ol; C ₄ H ₁₀ O;	; [71-36-3]	
VARIABLES:			PREPARED BY:
Tempe	rature, pres	ssure	C. L. Young
EXPERIMENTAL	VALUES:		
т/к	P/mmHg	<i>P</i> /10 ⁵ Pa	Mole fraction of trimethylamine in liquid, **(CH3)3N
293.15 298.15	760 700 760	1.013 0.933 1.013	0.571 0.488 0.510

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Amine was passed into a known weight of pure liquid in a bubbler tube at a total pressure measured by a manometer assembly. The amount of absorbed gas was estimated by weighing. The temperature was manually controlled to within 0.2K.

The apparatus and procedure are described by Gerrard [1,2].

SOURCE AND PURITY OF MATERIALS:

- 1. British Drug Houses or Cambrian Gases sample.
- 2. Purified and attested by conventional procedures.

ESTIMATED ERROR:

 $\delta T/K = \pm 0.1; \quad \delta x/x = \pm 3$ \$

(estimated by compiler)

- 1. Gerrard, W.
- J. Appl. Chem. Biotechnol. 1972, 22 623-650.
- 2. Gerrard, W.
- Solubility of Gases and Liquids. Plenum Press, New York. 1976. Chapter 1.

COMPONENTS:	ORIGINAL MEASUREMENTS:
 N, N-Dimethylmethanamine, (Trimethylamine); C₃H₉N; [75-50-3] 3-Methyl-l-Butanol; C₅H₁₂O; [123-51-3] 	Halban, H. Z. Phys. Chem. 1913, 84, 129-159.
VARIABLES:	PREPARED BY:
Concentration	P. G. T. Fogg

T/K	Concentration of C3 ^H 9 ^N in solution/	p _{C3H9N} /mmHg	Concentration of C3H9N in solution/concentration in gas phase	Mole fraction in solution* ${}^x\mathrm{C}_3\mathrm{H}_9\mathrm{N}$
298.2	0.342	16.3	390	0.0358
Ì	0.346	16.9	382	0.0362
	0.347	16.9	383	0.0363

* Calculated by the compiler, using the density of the solvent given in ref. (1), on the assumption that dissolution of gas caused negligible change of volume of the liquid phase.

AUXILIARY INFORMATION

METHOD 'APPARATUS / PROCEDURE:

The partial pressures of trimethylamine above solutions of concentrations determined by titration, were measured by a dynamic method (refs. Mixtures of hydrogen and (2) & (3). oxygen, produced by electrolysis of sodium hydroxide solution, were passed through each solution of trimethylamine. The trimethylamine in the gas stream was absorbed in hydrochloric acid and estimated from changes in electrical conductivity due to partial neutralisation of the acid. The volumes of hydrogen/ oxygen gas mixture produced by electrolysis were found from the barometric pressure and changes in a copper voltameter in series with the cell for producing the gas. partial pressures of trimethylamine were calculated on the assumption that equilibrium was established between trimethylamine in solution and that in the gas phase, during passage of hydrogen/oxygen mixture through the solution.

SOURCE AND PURITY OF MATERIALS:

- 1. Hydrated chloride from Kahlbaum; reacted with KOH; gas dried with NaOH.
- 2. Kahlbaum Amylalkohol frei von Pyridin

distilled twice from Na; fraction distilling 130.6-131.0°C (752 mmHg) was collected.

ESTIMATED ERROR:

- Lange's Handbook of Chemistry (12th edition), McGraw-Hill, New York. 1979.
- Gaus, Z. Anorg. Chem. 1900, 25, 236.
- Abegg, R.; Riesenfeld, H. Z. Phys. <u>Chem.</u> 1902, 40, 84.

- N, N-Dimethylmethanamine, (Trimethylamine); C3H9N; [75-50-3]
- 2. 1-Octanol; C₈H₁₈O; [111-87-5]

ORIGINAL MEASUREMENTS:

Gerrard, W.

Solubility of Gases and Liquids,

Plenum 1976, Chapter 10.

VARIABLES:

Temperature, pressure

PREPARED BY:

C. L. Young

EXPERIMENTAL VALUES:		Mole fraction of trimethylamine	
T/K	P/mmHg	<i>P</i> /10 ⁵ Pa	in liquid, ^x (CH₃)₃N
278.15	100	0.133	0.263
	200	0.267	0.401
	300	0.400	0.510
	400	0.533	0.607
	500	0.667	0.691
	600	0.800	0.790
	700	0.933	0.882
	760	1.013	0.936
283.15	100	0.133	0.240
	200	0.267	0.392
	300	0.400	0.472
	400	0.533	0.538
	500	0.667	0.602
	600	0.800	0.675
	700	0.933	0.752
	760	1.013	0.800
293.15	760	1.013	0.636
298.15	100	0.133	0.157
	200	0.267	0.251
	300	0.400	0.320
	400	0.533	0.382
	500	0.667	0.436
	600	0.800	0.486 ·
	700	0.933	0.538
	760	1.013	0.568

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Amine was passed into a known weight of pure liquid in a bubbler tube at a total pressure measured by a manometer assembly. The amount of absorbed gas was estimated by weighing. The temperature was manually controlled to within 0.2K.

The apparatus and procedure are described by Gerrard [1,2].

SOURCE AND PURITY OF MATERIALS:

- British Drug Houses or Cambrian Gases sample.
- 2. Purified and attested by conventional procedures.

ESTIMATED ERROR:

 $\delta T/K = \pm 0.1;$ $\delta x/x = \pm 3\%$ (estimated by compiler)

- 1. Gerrard, W.
- J. Appl. Chem. Biotechnol. 1972, 22 623-650.
- 2. Gerrard, W. Solubility of Gases and Liquids. Plenum Press, New York. 1976. Chapter 1.

- 1. N, N-Dimethylmethanamine, (Trimethylamine); C2H0N; [75-50-3]
- 2. Benzenemethanol (benzyl alcohol); C_7H_8O ; [100-51-6]

ORIGINAL MEASUREMENTS:

Halban, H.

Z. Phys. Chem.

1913, 84, 129-159.

VARIABLES:

Concentration

PREPARED BY:

P. G. T. Fogg

EXPERIMENTAL VALUES:

т/к	Concentration of C ₃ H ₉ N in solution/mol dm	pC3H9N/wwHg	Concentration of C ₃ H ₉ N in solution/ concentration in gas phase	Mole fraction in solution* $^{x}\mathrm{C_{3}^{H}_{9}^{N}}$
298.2	0.0950	1.35	1308	0.0098
	0.247	3.57	1282	0.0250
	0.447	7.39	1127	0.0443
	0.486	8.37	1081	0.0480
	0.763	14.6	973	0.0734
1	0.769	14.7	968	0.0739
	1.040	25.0	775	0.0975

* Calculated by the compiler, using the density of the solvent given in ref. (1), on the assumption that dissolution of gas caused negligible change of volume of the liquid phase.

AUXILIARY INFORMATION

METHOD /APPARATUS / PROCEDURE:

The partial pressures of trimethylamine above solutions of concentrations determined by titration, were measured by a dynamic method (refs. (2) & (3)). Mixtures of hydrogen and 2. From Schmitz, Düsseldorf; oxygen, produced by electrolysis of sodium hydroxide solution, were passed through each solution of trimethylamine. The trimethylamine in the gas stream was absorbed in hydrochloric acid and estimated from changes in electrical conductivity due to partial neutralisation of the acid. The volumes of hydrogen/ oxygen gas mixture produced by electrolysis were found from the barometric pressure and changes in a copper voltameter in series with the cell for producing the gas. The partial pressures of trimethylamine were calculated on the assumption that equilibrium was established between trimethylamine in solution and that in the gas phase, during passage of hydrogen/oxygen mixture through the solution.

SOURCE AND PURITY OF MATERIALS:

- 1. Hydrated chloride from Kahlbaum; reacted with KOH; gas dried with
- b.p. 204.8-205.2°C.

ESTIMATED ERROR:

- 1. Dreisbach, R.R. Physical Properties of Chemical Compounds, Vol. 1, A.C.S. Washington. 1955.
- 2. Gaus, Z. Anorg. Chem. 1900, 25, 236.
- Abegg, R.; Riesenfeld, H. Z. Phys. Chem. 1902, 40, 84.

COMPONENTS: ORIGINAL MEASUREMENTS: 1. N, N-Dimethylmethanamine Gerrard, W. (trimethylamine); C3H9N; Solubility of Gases and Liquids, [75-50-3] 2. Benzenemethanol (Benzyl alcohol); Plenum 1976, Chapter 10. $C_7H_8O;$ [100-51-6] VARIABLES: PREPARED BY: C. L. Young Temperature, pressure EXPERIMENTAL VALUES: Mole fraction of trimethylamine in liquid, P/10⁵Pa P/mmHg T/K x (CH₃)₃N 0.133 0.315 278.15 100 0.267 0.407 200 300 0.400 0.484 0.557 400 0.533 500 0.667 0.644 600 0.800 0.742 0.933 0.866 700 760 1.013 0.925 0.293 100 0.133 283.15 0.372 200 0.267 0.400 0.448 300 0.508 0.533 400 500 0.667 0.574 0.800 0.644 600 700 0.933 0.725 0.776 1.013 760 0.585 293.15 760 1.013 298.15 100 0.133 0.224 0.267 0.301 200 300 0.400 0.353 0.395 400 0.533 0.436 500 0.667 0.800 0.475 600 0.516 700 0.933 1.013 0.541 760 AUXILIARY INFORMATION METHOD/APPARATUS/PROCEDURE: SOURCE AND PURITY OF MATERIALS: Amine was passed into a known weight 1. British Drug Houses or Cambrian of pure liquid in a bubbler tube at a Gases sample. total pressure measured by a manometer assembly. The amount of absorbed 2. Purified and attested by gas was estimated by weighing. conventional procedures. temperature was manually controlled to within 0.2K. The apparatus and procedure are described by Gerrard [1,2].

ESTIMATED ERROR:

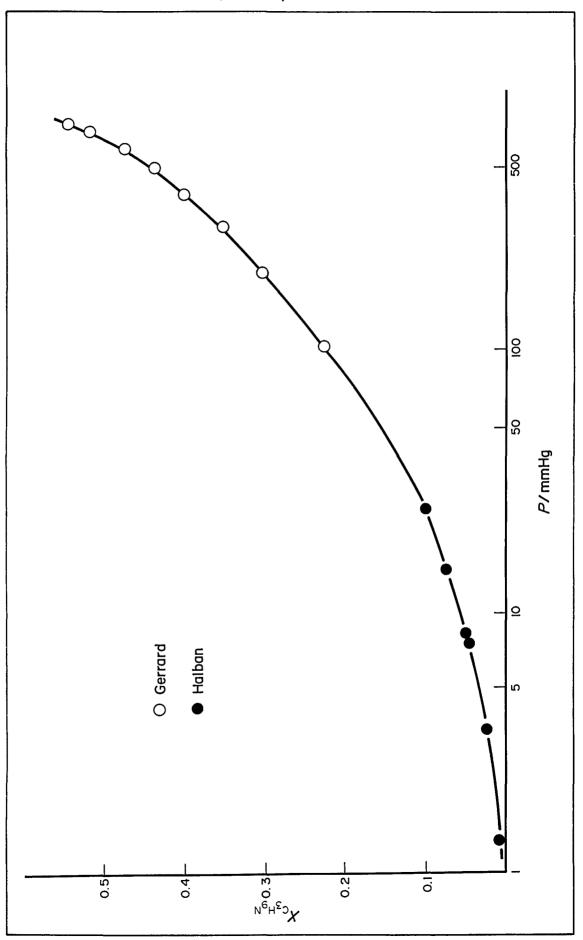
 $\delta T/K = \pm 0.1; \quad \delta x/x = \pm 3$ %

(estimated by compiler)

REFERENCES:

523-650.

- 1. Gerrard, W. J. Appl. Chem. Biotechnol. 1972, 22
- Gerrard, W. Solubility of Gases and Liquids. Plenum Press, New York. 1976. Chapter 1.



- N,N-Dimethylmethanamine (trimethylamine); C₃H₉N; [75-50-3]

ORIGINAL MEASUREMENTS:

Gerrard, W.

Solubility of Gases and Liquids,

Plenum 1976, Chapter 10.

VARIABLES:

Temperature, pressure

PREPARED BY:

Ī

C. L. Young

EXPERIMENTAL VALUES:

T/K	P/mmHg	<i>P</i> /10⁵Pa	Mole fraction of trimethylamine in liquid, "(CH ₃) ₂ N
283.15	100	0.133	0.116
	200	0.267	0.216
	300	0.400	0.304
	400	0.533	0.384
	500	0.667	0.455
	600	0.800	0.531
	700	0.933	0.616
	760	1.013	0.672
298.15	100	0.133	0.058
	200	0.267	0.120
	300	0.400	0.180
	400	0.533	0.232
	500	0.667	0.285
	600	0.800	0.331
	700	0.933	0.378
	760	1.013	0.396

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Amine was passed into a known weight of pure liquid in a bubbler tube at a total pressure measured by a manometer assembly. The amount of absorbed gas was estimated by weighing. The temperature was manually controlled to within 0.2K.

The apparatus abd procedure are described by Gerrard [1,2].

SOURCE AND PURITY OF MATERIALS:

- 1. British Drug Houses or Cambrian Gases sample.
- 2. Purified and attested by conventional procedures.

ESTIMATED ERROR:

 $\delta T/K = \pm 0.1;$ $\delta x/x = \pm 3$ % (estimated by compiler)

- 1. Gerrard, W.
- J. Appl. Chem. Biotechnol. <u>1972</u>, 22 623-650.
- 2. Gerrard, W. Solubility of Gases and Liquids. Plenum Press, New York. 1976. Chapter 1.

- N,N-Dimethylmethanamine, (Trimethylamine); C₃H₉N; [75-50-3]
- 2-Propanone, (acetone); C₃H₆O; [67-64-1]

ORIGINAL MEASUREMENTS:

Halban, H.

Z. Phys. Chem.

1913, 84, 129-159.

VARIABLES:

Concentration

PREPARED BY:

P. G. T. Fogg

EXPERIMENTAL VALUES:

т/к	Concentration of C ₃ H ₉ N in solytion/mol dm	PC3H9N/mmHg	Concentration of C ₃ H ₉ N in solution/concentration in gas phase	Mole fraction in solution* $^{x}C_{3}^{H_{9}}N$
298.2	0.212	51.8	76.2	0.0153
	0.237	57.8	76.7	0.0171
	0.281	68.5	76.2	0.0202
	0.325	77.6	77.7	0.0233

* Calculated by the compiler, using the density of the solvent given in ref. (1), on the assumption that dissolution of gas caused negligible change of volume of the liquid phase.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The partial pressures of trimethylamine above solutions of concentrations determined by titration, were measured by a dynamic method (refs. (2) & (3)). Mixtures of hydrogen and oxygen, produced by electrolysis of sodium hydroxide solution, were passed through each solution of trimethylamine. The trimethylamine in the gas stream was absorbed in hydrochloric acid and estimated from changes in electrical conductivity due to partial neutralisation of the acid. The volumes of hydrogen/oxygen gas mixture produced by electrolysis were found from the barometric pressure and changes in a copper voltameter in series with the cell for producing the gas. The partial pressures of trimethylamine were calculated on the assumption that equilibrium was established between trimethylamine in solution and that in the gas phase, during passage of hydrogen/oxygen mixture through the solution.

SOURCE AND PURITY OF MATERIALS:

- Hydrated chloride from Kahlbaum; reacted with KOH; gas dried with NaOH.
- Kahlbaum aus der Bisulfitverbindung; dried over anhydrous CuSO₄;
 b.p. 56.4 C (769 mmHg).

ESTIMATED ERROR:

- Lange's Handbook of Chemistry (12th edition), McGraw-Hill, New York, <u>1979</u>.
- 2. Gaus, Z. Anorg. Chem. 1900, 25, 236.
- 3. Abegg, R.; Riesenfeld, H. Z. Phys. Chem. 1902, 40, 84.

COMPONENTS: 1. N,N-Dimethylmethanamine (trimethylamine); C₃H₉N; [75-50-3] 2. 1,2,3-Propanetriol (Glycerol); C₃H₈O₃; [56-81-5] VARIABLES: Temperature, pressure ORIGINAL MEASUREMENTS: Gerrard, W. Solubility of Gases and Liquids, Plenum 1976, Chapter 10. PREPARED BY: C. L. Young EXPERIMENTAL VALUES:

т/к	P/mmHg	<i>P</i> /10 ⁵ Pa	Mole fraction of trimethylamine in liquid, ^x (CH ₃) ₃ N
283.15	100	0.133	0.134
2001.20	200	0.267	0.238
	300	0.400	0.316
	400	0.533	0.395
	500	0.667	0.464
	600	0.800	0.530
	700	0.933	0.604
	760	1.013	0.657
298.15	100	0.133	0.075
	200	0.267	0.129
	300	0.400	0.177
	400	0.533	0.224
	500	0.667	0.272
	600	0.800	0.322
	700	0.933	0.376
	760	1.013	0.408

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Amine was passed into a known weight of pure liquid in a bubbler tube at a total pressure measured by a manometer assembly. The amount of absorbed gas was estimated by weighing. The temperature was manually controlled to within 0.2K.

The apparatus and procedure are described by Gerrard [1,2].

SOURCE AND PURITY OF MATERIALS:

- 1. British Drug Houses or Cambrian Gases sample.
- 2. Purified and attested by conventional procedures.

ESTIMATED ERROR:

 $\delta T/K = \pm 0.1; \quad \delta x/x = \pm 3$ %

(estimated by compiler)

- 1. Gerrard, W.
- J. Appl. Chem. Biotechnol. 1972, 22 623-650.
- 2. Gerrard, W. Solubility of Gases and Liquids. Plenum Press, New York. 1976. Chapter 1.