COMPONENTS:	ORIGINAL MEASUREMENTS:
1. *N*-Methylmethanamine, (Dimethylamine);C_2H_7N; [124-40-3] 2. Methanol; CH_4O; [67-56-1]	Niepel, W.; Novak, J.P.; Matous, J.; Sobr, J. *Chem. Zvesti* <u>1972</u>, *26* (1), 44-48.
VARIABLES: Temperature, pressure	PREPARED BY: P. G. T. Fogg

EXPERIMENTAL VALUES:

T/K	p_{total}/Torr	$p_{C_2H_7N}$/Torr*	$x_{C_2H_7N}$
293.2	744.5	734	0.669
	786.5	778	0.6945
	836.5	829	0.7205
	889.5	883	0.7485
298.2	740	721	0.597
	766	748	0.616
	790	772	0.6285
	813	797	0.640
	835	820	0.6455
	840	825	0.646
	862	848	0.655
	884	870	0.660
303.2	744.5	712	0.542
	788.5	758	0.5565
	836.5	808	0.572
313.2	748	671	0.4505
	791	718	0.4655
	841.5	774	0.4845
	891	830	0.5065

Cont.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Dimethylamine from a cylinder was bubbled through the solvent in three thermostatted glass vessels in series. The total pressure above each vessel was measured. The absorption of dimethylamine was estimated by reacting weighed samples of solutions with standard sulphuric acid and back-titrating with standard sodium hydroxide solution. The authors gave equations to calculate activity coefficients of dimethylamine and of methanol which were derived from the experimental data.	1. Obtained from a cylinder supplied by FLUKA A.G.; at least 97% pure with methylamine and trimethyl-amine as impurities. 2. Supplied by Lachema, Brno; distilled through a 60 theoretical plate column; density (25°C) 0.7866; n_D (25°C) 1.3266.

REFERENCES:

1. Wichterle, I.; Linek, J.

   Antoine Vapor Pressure Constants of Pure Compounds,

   Academia, Prague. <u>1971</u>.

ESTIMATED ERROR:

COMPONENTS:	ORIGINAL MEASUREMENTS:
1. N-Methylmethanamine, (dimethylamine);C_2H_7N; [124-40-3]	Niepel, W.; Novak, J.P.; Matous, J.; Sobr, J.
	Chem. Zvesti
2. Methanol; CH_4O; [67-56-1]	1972, *26*, 44-48.

EXPERIMENTAL VALUES: Cont.

* The partial pressure of dimethylamine was calculated by the compiler by subtracting the partial pressure of the solvent from the total pressure. The compiler assumed that the partial pressure of methanol was equal, in each case, to the product of the vapor pressure of pure methanol, the mole fraction of methanol in the solution and the activity coefficient of methanol as calculated from the equation given. The vapor pressure of pure methanol was calculated by the compiler from an Antoine type equation using constants from other work (ref. (1)) quoted in the paper. (The compiler noted an error in a sign in the Antoine equation given.)

The authors gave the following equations for activity coefficients:

$$\log_{10} f_1 = x_2^2 \, [-0.9829 + 0.25 \, (3 \, x_1 - x_2)]$$

$$\log_{10} f_2 = x_1^2 \, [-0.9829 + 0.25 \, (x_1 - 3 \, x_2)]$$

where f_1 = activity coefficient of dimethylamine
f_2 = activity coefficient of methanol
x_1 = mole fraction of dimethylamine in the liquid phase
x_2 = mole fraction of methanol in the liquid phase

COMPONENTS:	ORIGINAL MEASUREMENTS:
1. *N*-Methylmethanamine , (Dimethyl-amine); C_2H_7N; [124-40-3] 2. Ethanol, C_2H_6O; [64-17-5]	Niepel, W.; Novak, J.P.; Matous, J.; Sobr, J. *Chem. Zvesti* 1972, *26* (1), 44-48.

VARIABLES:	PREPARED BY:
Temperature, pressure	P. G. T. Fogg

EXPERIMENTAL VALUES:

T/K	p_{total}/Torr	$p_{C_2H_7N}$/Torr*	$x_{C_2H_7N}$
293.2	744	737	0.659
	789	783	0.6835
	840	835	0.7145
	890	885	0.7415
298.2	748	735	0.5865
	789.5	777	0.604
	844.5	834	0.6305
	902.5	893	0.6575
303.2	748.5	727	0.534
	789	769	0.547
	841	822	0.5665
	894	876	0.5815
313.2	747	693	0.420
	787.5	736	0.4335
	842.5	795	0.4545
	889.5	844	0.4705

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Dimethylamine from a cylinder was bubbled through the solvent in three thermostatted glass vessels in series. The total pressure above each vessel was measured. The absorption of dimethylamine was estimated by reacting weighed samples of solutions with standard sulphuric acid and back-titrating with standard sodium hydroxide solution. The authors gave equations to calculate activity coefficients of dimethylamine and of ethanol which were derived from the experimental data.	1. Obtained from a cylinder supplied by FLUKA A.G.; at least 97% pure with methylamine and trimethyl-amine as impurities. 2. Prepared from commercial ethanol by azeotropic distillation with excess benzene; density (25°C) 0.7854; n_D (25°C) 1.3590.
	ESTIMATED ERROR:
	REFERENCES: 1. Wichterle, I. ; Linek, J. *Antoine Vapor Pressure Constants of Pure Compounds*, Academia, Prague. 1971.

COMPONENTS:	ORIGINAL MEASUREMENTS:
1. *N*-Methylmethanamine (dimethylamine); C_2H_7N; [124-40-3] 2. Ethanol; C_2H_6O; [64-17-5]	Niepel, W.; Novak, J.P.; Matous, J.; Sobr, J. *Chem. Zvesti* <u>1972</u>, *26*, 44-48.

EXPERIMENTAL VALUES:

* The partial pressure of dimethylamine was calculated by the compiler by subtracting the partial pressure of the solvent from the total pressure. The compiler assumed that the partial pressure of ethanol was equal, in each case, to the product of the vapor pressure of pure ethanol, the mole fraction of ethanol in the solution and the activity coefficient of ethanol as calculated from the equations given. The vapor pressure of pure ethanol was calculated from an Antoine type equation using constants from other work (ref. (1)) quoted in the paper. (The compiler noted an error in a sign in the Antoine equation given.)

The authors gave the following equations for activity coefficients:

$$\log_{10} f_1 = x_2^2 \, [-0.6691 + 0.13 \, (3 \, x_1 - x_2)]$$

$$\log_{10} f_2 = x_1^2 \, [-0.6691 + 0.13 \, (x_1 - 3 \, x_2)]$$

where f_1 = activity coefficient of dimethylamine
       f_2 = activity coefficient of ethanol
       x_1 = mole fraction of dimethylamine in the liquid phase
       x_2 = mole fraction of ethanol in the liquid phase

COMPONENTS:	ORIGINAL MEASUREMENTS:
1. *N*-Methylmethanamine, (Dimethylamine); C_2H_7N; [124-40-3] 2. 1-Propanol; C_3H_8O; [71-23-8]	Niepel, W.; Novak, J.P.; Matous, J.; Sobr, J. *Chem. Zvesti* <u>1972</u>, *26*, 44-48.

VARIABLES:	PREPARED BY:
Temperature, pressure	P. G. T. Fogg

EXPERIMENTAL VALUES:

T/K	p_{total}/Torr	$p_{C_2H_7N}$/Torr*	$x_{C_2H_7N}$
293.2	744	742	0.6845
	796	794	0.712
	845	844	0.742
	897	896	0.767
298.2	742	738	0.6045
	787	783	0.628
	839	836	0.652
	891	888	0.6765
303.2	746	739	0.551
	796	790	0.575
	841	835	0.595
	893	888	0.614
313.2	745	726	0.4475
	750	731	0.451
	795	778	0.4745
	845	829	0.4945
	895	880	0.510

760 Torr = 1 atm = 1.013×10^5 Pa

Cont.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Dimethylamine from a cylinder was bubbled through the solvent in three thermostatted glass vessels in series The total pressure above each vessel was measured. The absorption of dimethylamine was estimated by reacting weighed samples of solutions with standard sulphuric acid and back-titrating with standard sodium hydroxide solution.

The authors gave equations to calculate activity coefficients of dimethylamine and of propanol which were derived from the experimental data.

SOURCE AND PURITY OF MATERIALS:

1. Obtained from a cylinder supplied by FLUKA A.G.; at least 97% pure with methylamine and trimethyl-amine as impurities.

2. Supplied by Lachema, Brno; distilled through a 60 theoretical plate column; density (25°C) 0.8035; n_D(25°C) 1.3266.

ESTIMATED ERROR:

REFERENCES:

1. Wichterle, I.; Linek, J.
   Antoine Vapor Pressure Constants of Pure Compounds,
   Academia, Prague, <u>1971</u>.

COMPONENTS:	ORIGINAL MEASUREMENTS:
1. *N*-Methylmethanamine, (dimethylamine) C_2H_7N; [124-40-3] 2. 1-Propanol; C_3H_8O; [71-23-8]	Niepel, W.; Novak, J.P.; Matous, J.; Sobr, J. *Chem. Zvesti* <u>1972</u>, *26*, 44-48.

EXPERIMENTAL VALUES: Cont.

* The partial pressure of dimethylamine was calculated by the compiler by subtracting the partial pressure of the solvent from the total pressure. The compiler assumed that the partial pressure of methanol was equal, in each case, to the product of the vapor pressure of pure propanol, the mole fraction of propanol in the solution and the activity coefficient of propanol as calculated from the equations given. The vapor pressure of pure propanol was calculated by the compiler from an Antoine type equation using constants from other work (1) quoted in the paper.

The authors gave the following equations for activity coefficients:

$$\log_{10} f_1 = x_2^2 [-0.7397 + 0.05 (3 x_1 - x_2)]$$

$$\log_{10} f_2 = x_1^2 [-0.7397 + 0.05 (x_1 - 3 x_2)]$$

where f_1 = activity coefficient of dimethylamine

f_2 = activity coefficient of 1-propanol

x_1 = mole fraction of dimethylamine in the liquid phase

x_2 = mole fraction of 1-propanol in the liquid phase

COMPONENTS:	ORIGINAL MEASUREMENTS:

1. *N*-Methylmethanamine, (dimethyl-amine); C_2H_7N; [124-40-3]
 	
2. 1-Octanol; $C_8H_{18}O$; [111-87-5]
   or
   1-Butanol; $C_4H_{10}O$; [71-36-3]
	Gerrard, W.
	
	Solubility of Gases and Liquids,
	
	Plenum 1976, Chapter 10.

VARIABLES:
 	
   Temperature, pressure
	PREPARED BY:
	
	         C. L. Young

EXPERIMENTAL VALUES:

T/K	P/mmHg	P/10^{5}Pa	Mole fraction of dimethylamine in liquid, $x_{(CH_3)_2NH}$
		1-butanol	
293.15	760	1.013	0.709
		1-octanol	
283.15	100	0.133	0.332
	200	0.267	0.442
	300	0.400	0.530
	400	0.533	0.616
	500	0.667	0.696
	600	0.800	0.775
	700	0.933	0.848
	760	1.013	0.894
293.15	100	0.133	0.261
	200	0.267	0.371
	300	0.400	0.455
	400	0.533	0.520
	500	0.667	0.575
	600	0.800	0.634
	700	0.933	0.686
	760	1.013	0.719

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
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].	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)

REFERENCES:
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:
1. *N*-Methylmethanamine (dimethylamine); C_2H_7N; [124-40-3] 2. 1,2-Ethanediol (Ethylene glycol); $C_2H_6O_2$; [107-21-1]	Gerrard, W. *Solubility of Gases and Liquids,* *Plenum* 1976, Chapter 10.
VARIABLES: Pressure	PREPARED BY: C. L. Young

EXPERIMENTAL VALUES:

T/K	P/mmHg	$P/10^5$Pa	Mole fraction of dimethylamine in liquid, $x_{(CH_3)_2NH}$
293.15	100	0.133	0.267
	200	0.267	0.382
	300	0.400	0.455
	400	0.533	0.524
	500	0.667	0.584
	600	0.800	0.637
	700	0.933	0.685
	760	1.013	0.719

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
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].	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)
	REFERENCES: 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:
1. *N*-Methylmethanamine (dimethylamine); C_2H_7N; [124-40-3] 2. 1,2,3-Propanetriol (Glycerol); $C_3H_8O_3$; [56-81-5]	Gerrard, W. *Solubility of Gases and Liquids,* *Plenum* <u>1976</u>, Chapter 10.

VARIABLES:	PREPARED BY:
Pressure	C. L. Young

EXPERIMENTAL VALUES:

T/K	P/mmHg	$P/10^5$Pa	Mole fraction of dimethylamine in liquid, $x_{(CH_3)_2NH}$
293.15	100	0.133	0.300
	200	0.267	0.430
	300	0.400	0.520
	400	0.533	0.584
	500	0.667	0.636
	600	0.800	0.690
	700	0.933	0.736
	760	1.013	0.759

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
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 abosrbed gas was estimated by weighing. The temperature was manually controlled to within 0.2K. The apparatus and procedure are described by Gerrard [1,2].	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)
	REFERENCES: 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.* <u>1976</u>. Chapter 1.

COMPONENTS:	ORIGINAL MEASUREMENTS:
1. *N*-Methylmethanamine, (dimethylamine); C_2H_7N; [124-40-3] 2. 1,2,3-Propanetriol (glycerol); $C_3H_8O_3$; [56-81-5]	Copley, M.J.; Ginsberg, E.; Zellhoefer, G.F.; Marvel, C.S. *J. Amer. Chem. Soc.* <u>1941</u>, *63*, 254-256.

VARIABLES:	PREPARED BY:
	P. G. T. Fogg

EXPERIMENTAL VALUES:

T/K	$p_{C_2H_7N}$/mmHg*	Mole fraction $x_{C_2H_7N}$
305.4	691	0.572

760 mmHg = 1 atm = 1.013×10^5 Pa.

* The pressure of dimethylamine was said by the authors to correspond to its vapor pressure at 4.5°C. The magnitude of this pressure has been estimated by the compiler from vapor pressure data given in ref. (1).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The absorption apparatus was developed for studies of refrigeration systems (ref. (2)) and consisted of a copper drum, 4 x 12 cm, fitted with a needle valve and two-way outlet with one outlet connected to a manometer. The drum was evacuated to a pressure of 1 mmHg and about 40 cm³ of solvent drawn into this drum which was then reweighed and immersed in a water bath at 32.2°C. The drum was agitated and gaseous dimethylamine allowed to flow slowly into it. The final pressure in the drum corresponded to the vapor pressure of dimethylamine at 4.5°C. The magnitude of this pressure was not stated by the authors. The drum and contents were weighed again to find the weight of gas which had been absorbed.	The authors stated that the materials used were all purified carefully by chemical means and fractional distillation where feasible.
	ESTIMATED ERROR:
	REFERENCES: 1. Dreisbach, R.R. *Physical Properties of Chemical Compounds* Vol. 2, A.C.S., Washington. <u>1959</u>. 2. Zellhoefer, G.F. *Ind. Eng. Chem.* <u>1937</u>, *29*, 548.

COMPONENTS:	ORIGINAL MEASUREMENTS:
1. *N*-Methylmethanamine (dimethylamine); C_2H_7N; [124-40-3] 2. 1,4-Dioxane; $C_4H_8O_2$; [123-91-1]	Gerrard, W. *Solubility of Gases and Liquids,* *Plenum* <u>1976</u>, Chapter 10.

VARIABLES:	PREPARED BY:
	C. L. Young

EXPERIMENTAL VALUES:

T/K	P/mmHg	$P/10^5$Pa	Mole fraction of dimethylamine in liquid, $x_{(CH_3)_2NH}$
293.15	760	1.013	0.549

AUXILIARY INFORMATION	

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
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].	1. British Drug Houses or Cambrian Gases sample. 2. Purified and attested by conventional procedures.

	ESTIMATED ERROR:
	$\delta T/K = \pm0.1$; $\delta x/x = \pm3\%$ (estimated by compiler)

	REFERENCES:
	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.* <u>1976</u>. Chapter 1.

COMPONENTS:	ORIGINAL MEASUREMENTS:
1. *N*-Methylmethanamine (dimethylamine); C_2H_7N; [124-40-3] 2. Benzenemethanol (Benzyl alcohol); C_7H_8O; [100-51-6]	Gerrard, W. *Solubility of Gases and Liquids,* *Plenum* 1976, Chapter 10.

VARIABLES:	PREPARED BY:
Temperature, pressure	C. L. Young

EXPERIMENTAL VALUES:

T/K	P/mmHg	P/10⁵Pa	Mole fraction of dimethylamine in liquid, $x_{(CH_3)_2NH}$
283.15	100	0.133	0.388
	200	0.267	0.486
	300	0.400	0.558
	400	0.533	0.625
	500	0.667	0.696
	600	0.800	0.760
	700	0.933	0.830
	760	1.013	0.875
288.15	760	1.013	0.783
293.15	100	0.133	0.340
	200	0.267	0.422
	300	0.400	0.480
	400	0.533	0.536
	500	0.667	0.587
	600	0.800	0.631
	700	0.933	0.675
	760	1.013	0.705

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
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].	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)

REFERENCES:

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.