COMPONENTS:	ORIGINAL MEASUREMENTS:
1. *N*-Methylmethanamine, (dimethylamine); C_2H_7N; [124-40-3] 2. Tetrachloromethane (carbon tetrachloride); CCl_4; [56-23-5]	Wolff, H.; Höppel, H.-E. *Ber. Bunsenges. Phys. Chem.* <u>1966</u>, *70*, 874-883.

VARIABLES:	PREPARED BY:
Composition, temperature	P. G. T. Fogg

EXPERIMENTAL VALUES:

Variation of the total vapor pressure/Torr with variation of temperature and of mole fraction of C_2H_7N in the liquid phase, $x_{C_2H_7N}$

	T/K		
$x_{C_2H_7N}$	253.15	273.15	293.15
0	9.8	33.0	90.9
0.0067	11.8	37.4	100.2
0.0488	23.6	68.6	167.0
0.0660	26.1	75.5	184.8
0.0887	28.0	79.0	200.2
0.115	32.7	90.6	220.1
0.121	33.5	94.4	224.3
0.189	46.5	128.4	302.8
0.219	51.6	141.7	333.6
0.225	52.4	146.2	342.4
0.249	57.1	156.7	366.2
0.264	60.0	165.1	385.1
0.306	68.0	187.4	436.0
0.348	75.3	206.1	470.7
0.384	83.1	226.6	522.3
0.442	93.4	256.1	589.5
0.494	104.1	282.5	650.5
0.542	113.8	307.7	693.9

Cont.

AUXILIARY INFORMATION

METHOD APPARATUS/PROCEDURE:

A modified version of apparatus described previously (1) was used. Liquid mixtures of accurately known composition were introduced into a cell held in a thermostat controlled to ± 0.02°C. The total vapor pressures were measured by a mercury manometer but a sensitive quartz spiral manometer was used as a null instrument to prevent carbon tetrachloride vapour from coming into contact with mercury. The authors calculated activity coefficients of each component from the vapor pressure data by a method described by Barker (2). Constants for Redlich-Kister equations (3) for activity coefficients were evaluated and reported. The compositions of the vapor phase were also calculated by the authors.

SOURCE AND PURITY OF MATERIALS:

1. Vacuum distilled; purity checked by i.r. spectroscopy.

2. Purity checked by i.r. spectroscopy.

ESTIMATED ERROR:
$\delta T/K = \pm 0.02$; $\delta p/Torr = 0.1-0.2$ at low pressure
$\delta p/Torr = 1$ at high pressure (authors' estimate)

REFERENCES:

1. Wolff, H.; Höpfner, A. *Z. Elektrochem.* <u>1962</u>, *66*, 149.
2. Barker, J.A. *Aust. J. Chem.* <u>1953</u>, *6*, 207.
3. Redlich, O.; Kister, A.T. *Ind. Eng. Chem.* <u>1948</u>, *21*, 345.

COMPONENTS:	ORIGINAL MEASUREMENTS:
1. N-Methylmethanamine, (dimethylamine); C_2H_7N; [124-40-3] 2. Tetrachloromethane (carbon tetrachloride); CCl_4; [56-23-5]	Wolff, H.; Höppel, H.-E. *Ber. Bunsenges. Phys. Chem.* <u>1966</u>, *70*, 874-883.

EXPERIMENTAL VALUES: Cont.

	T/K		
$x_{C_2H_7N}$	253.15	273.15	293.15
0.608	126.9	343.9	798.0
0.650	136.2	366.1	847.9
0.711	147.9	397.5	913.8
0.762	158.5	424.9	980.2
0.810	168.9	451.8	1027.4
0.861	178.8	480.4	1094.2
0.910	189.5	504.4	1152.8
0.969	200.6	539.9	1227.8
1	206.5	562.9	1271.5

760 Torr = 1 atm = 1.013×10^5 Pa

Constants for calculation of activity coefficients from the Redlich-Kister equations given below.

T/K	A	B	C	D	E	F
253.15	−0.001	−0.080	+0.129	−0.094	−	−
263.15	−0.005	−0.079	+0.119	−0.105	−	−
273.15	−0.024	−0.073	+0.031	−0.223	−	−
283.15	−0.015	−0.068	+0.058	−0.146	−	−
293.15	+0.005	−0.031	+0.102	−0.173	−	−
293.15	+0.021	−0.096	+0.071	+0.133	+0.144	−0.517

$$\ln f_1 = A x_2^2 - B x_2^2 (1 - 4 x_1) + C x_2^2 (1 - 8 x_1 + 12 x_1^2)$$
$$- D x_2^2 (1 - 12 x_1 + 36 x_1^2 - 32 x_1^3)$$
$$+ E x_2^2 (1 - 16 x_1 + 72 x_1^2 - 128 x_1^3 + 80 x_1^4)$$
$$- F x_2^2 (1 - 20 x_1 + 120 x_1^2 - 320 x_1^3 + 400 x_1^4 - 192 x_1^5)$$
$$\ln f_2 = A x_1^2 + B x_1^2 (1 - 4 x_2) + C x_1^2 (1 - 8 x_2 + 12 x_2^2)$$
$$+ D x_1^2 (1 - 12 x_2 + 36 x_2^2 - 32 x_2^3)$$
$$+ E x_1^2 (1 - 16 x_2 + 72 x_2^2 - 128 x_2^3 + 80 x_2^4)$$
$$+ F x_1^2 (1 - 20 x_2 + 120 x_2^2 - 320 x_2^3 + 400 x_2^4 - 192 x_2^5)$$

where f_1 = activity coefficient of dimethylamine

f_2 = activity coefficient of carbon tetrachloride

x_1 = mole fraction of dimethylamine in the liquid phase

x_2 = mole fraction of carbon tetrachloride in the liquid phase

Four constants only were evaluated for each temperature except in the case of 293.2 K. In this case the use of six constants gave greater consistency than the use of four constants.

COMPONENTS:	ORIGINAL MEASUREMENTS:
1. *N*-Methylmethanamine (dimethylamine); C_2H_7N; [124-40-3] 2. Chlorinated methanes	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/10⁵Pa	Mole fraction of dimethylamine in liquid, $x_{(CH_3)_2NH}$

Trichloromethane (chloroform); $CHCl_3$; [67-66-3]

T/K	P/mmHg	P/10⁵Pa	$x_{(CH_3)_2NH}$
293.15	600	0.800	0.610
	700	0.933	0.672
	760	1.013	0.708

Tetrachloromethane (carbon tetrachloride); CCl_4; [56-23-5]

T/K	P/mmHg	P/10⁵Pa	$x_{(CH_3)_2NH}$
293.15	700	0.933	0.550
	760	1.013	0.596

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. <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 (dimethyl-amine); C_2H_7N; [124-40-3] 2. 2,2,2-Trichloroethanol (1,1,1-trichloro-2-hydroxyethane); $C_2H_3Cl_3O$; [115-20-8]	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/10^{5}Pa	Mole fraction of dimethylamine in liquid, $x_{(CH_3)_2NH}$
283.15	100	0.133	0.518
	200	0.267	0.588
	300	0.400	0.644
	400	0.533	0.690
	500	0.667	0.740
	600	0.800	0.800
	700	0.933	0.861
	760	1.013	0.900
288.15	760	1.013	0.826
293.15	100	0.133	0.474
	200	0.267	0.537
	300	0.400	0.582
	400	0.533	0.621
	500	0.667	0.658
	600	0.800	0.695
	700	0.933	0.733
	760	1.013	0.756
298.15	760	1.013	0.706

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 (dimethyl-amine); C_2H_7N; [124-40-3]
 	
2. Chlorobenzene; C_6H_5Cl; [108-90-7]
   or
  Bromobenzene; C_6H_5Br; [108-86-1]
   or
  Iodobenzene; C_6H_5I; [591-50-4]
	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, $x_{(CH_3)_2NH}$
		Benzene, chloro-; C_6H_5Cl; [108-90-7]	
293.15	600	0.800	0.429
	700	0.933	0.520
	760	1.013	0.575
		Benzene, bromo-; C_6H_5Br; [108-86-1]	
293.15	700	0.933	0.532
	760	1.013	0.580
		Benzene, iodo-; C_6H_5I; [591-50-4]	
293.15	100	0.133	0.097
	200	0.267	0.132
	300	0.400	0.203
	400	0.533	0.341
	500	0.667	0.417
	600	0.800	0.495
	700	0.933	0.570
	760	1.013	0.612

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:
	δT/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.* 1976. Chapter 1.

COMPONENTS:	ORIGINAL MEASUREMENTS:
1. *N*-Methylmethanamine (dimethyl-amine); C_2H_7N; [124-40-3] 2. 1-Bromo-3-methylbenzene (*m*-bromotoluene); C_7H_7Br; [95-46-5]	Gerrard, W. *Solubility of Gases and Liquids,* *Plenum* 1976, 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, $x_{(CH_3)_2NH}$
283.15	100	0.133	0.065
	200	0.267	0.132
	300	0.400	0.203
	400	0.533	0.275
	500	0.667	0.349
	600	0.800	0.428
	700	0.933	0.510
	760	1.013	0.563

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 House 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 (dimethyl-amine); C_2H_7N; [124-40-3] 2. 1-Bromonaphthalene; $C_{10}H_7Br$; [90-11-9]	Gerrard, W. *Solubility of Gases and Liquids* *Plenum* <u>1976</u>, 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	0.060
	200	0.267	0.117
	300	0.400	0.175
	400	0.533	0.237
	500	0.667	0.300
	600	0.800	0.368
	700	0.933	0.446
	760	1.013	0.500

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:

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

(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.