

COMPONENTS:			ORIGINAL MEASUREMENTS:
1. Methanamine, (methylamine); CH <sub>5</sub> N; [74-89-5]			Gerrard, W.
2. Chlorinated methanes			<i>Solubility of Gases and Liquids</i> , Plenum, <u>1976</u> , Chapter 10.
VARIABLES:			PREPARED BY:
Temperature, pressure			C.L. Young
EXPERIMENTAL VALUES:			
T/K	P/mmHg	P/10 <sup>5</sup> Pa	Mole fraction of methylamine in liquid, $x_{\text{CH}_3\text{NH}_2}$
Trichloromethane (chloroform); CHCl <sub>3</sub> ; [67-66-3]			
273.15	760	1.013	0.778
283.15	700	0.933	0.614
	760	1.013	0.644
Tetrachloromethane (carbon tetrachloride); CCl <sub>4</sub> ; [56-23-5]			
283.15	760	1.013	0.400
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. <i>J. Appl. Chem. Biotechnol.</i> <u>1972</u> , 22 623-650.	
		2. Gerrard, W. <i>Solubility of Gases and Liquids</i> . Plenum Press, New York. <u>1976</u> . Chapter 1.	

<p>COMPONENTS:</p> <p>1. Methanamine, (methylanine); CH<sub>5</sub>N; [74-89-5]</p> <p>2. Tetrachloromethane (carbon tetrachloride); CCl<sub>4</sub>; [56-23-5]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Wolff, H.; Würtz, R. <i>Ber. Bunsenges. Phys. Chem.</i> <u>1968</u>, 72, 101-109.</p>																																																																												
<p>VARIABLES:</p> <p>Composition, temperature</p>	<p>PREPARED BY:</p> <p>P. G. T. Fogg</p>																																																																												
<p>EXPERIMENTAL VALUES:</p> <p>Variation of total vapor pressure/Torr with variation of temperature and of mole fraction of CH<sub>5</sub>N in the liquid phase, <math>x_{\text{CH}_5\text{N}}</math></p> <table border="1" data-bbox="228 564 1041 1108"> <thead> <tr> <th></th> <th colspan="3">T/K</th> </tr> <tr> <th><math>x_{\text{CH}_5\text{N}}</math></th> <th>253.15</th> <th>273.15</th> <th>293.15</th> </tr> </thead> <tbody> <tr><td>0</td><td>10.0</td><td>33.0</td><td>90.5</td></tr> <tr><td>0.0099</td><td>18.5</td><td>51.6</td><td>126.6</td></tr> <tr><td>0.0250</td><td>30.6</td><td>79.4</td><td>181.2</td></tr> <tr><td>0.0511</td><td>48.1</td><td>121.0</td><td>265.2</td></tr> <tr><td>0.0783</td><td>69.0</td><td>160.9</td><td>341.4</td></tr> <tr><td>0.1016</td><td>79.4</td><td>193.8</td><td>416.0</td></tr> <tr><td>0.128</td><td>91.7</td><td>227.6</td><td>486.5</td></tr> <tr><td>0.154</td><td>103.7</td><td>256.2</td><td>536.9</td></tr> <tr><td>0.201</td><td>127.1</td><td>313.0</td><td>662.7</td></tr> <tr><td>0.254</td><td>149.2</td><td>369.0</td><td>783.6</td></tr> <tr><td>0.301</td><td>165.6</td><td>413.5</td><td>882.6</td></tr> <tr><td>0.353</td><td>184.2</td><td>461.3</td><td>991.4</td></tr> <tr><td>0.401</td><td>199.9</td><td>503.1</td><td>1078.6</td></tr> <tr><td>0.454</td><td>217.8</td><td>547.9</td><td>1179.9</td></tr> <tr><td>0.502</td><td>232.4</td><td>587.0</td><td>1268.6</td></tr> <tr><td>0.553</td><td>248.2</td><td>625.9</td><td>1347.3</td></tr> <tr><td>0.605</td><td>264.1</td><td>667.2</td><td>1452.3</td></tr> </tbody> </table> <p style="text-align: right;">Cont.</p>			T/K			$x_{\text{CH}_5\text{N}}$	253.15	273.15	293.15	0	10.0	33.0	90.5	0.0099	18.5	51.6	126.6	0.0250	30.6	79.4	181.2	0.0511	48.1	121.0	265.2	0.0783	69.0	160.9	341.4	0.1016	79.4	193.8	416.0	0.128	91.7	227.6	486.5	0.154	103.7	256.2	536.9	0.201	127.1	313.0	662.7	0.254	149.2	369.0	783.6	0.301	165.6	413.5	882.6	0.353	184.2	461.3	991.4	0.401	199.9	503.1	1078.6	0.454	217.8	547.9	1179.9	0.502	232.4	587.0	1268.6	0.553	248.2	625.9	1347.3	0.605	264.1	667.2	1452.3
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<p>METHOD/APPARATUS/PROCEDURE:</p> <p>Apparatus described previously was used (1), (2). Liquid mixtures of accurately known composition were introduced into a cell held in a thermostat controlled to <math>\pm 0.02^\circ\text{C}</math>. The total vapor pressure was measured by a mercury manometer but contact between vapor and mercury was avoided by using a sensitive quartz spiral manometer as a null instrument with pressure of vapor balanced against that of carbon dioxide. Metal taps were used so as to avoid contact between vapor and tap grease.</p> <p>The authors calculated activity coefficients of each component from the vapor pressure data by a method described by Barker (3). Constants for Redlich-Kister equations (4) were evaluated and reported. The compositions of the vapor phase were also calculated by the authors.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <ol style="list-style-type: none"> <li>1. Prepared from commercial <i>reinst</i> methylammonium chloride; repeatedly fractionated until the first and last fractions had vapor pressures which differed by less than the limits of error of the pressure measurements (1).</li> <li>2. Merck "Uvasol".</li> </ol> <p>ESTIMATED ERROR:</p> <p><math>\delta T/K = \pm 0.02</math> (estimated by authors)</p> <p>REFERENCES:</p> <ol style="list-style-type: none"> <li>1. Wolff, H.; Höpfner, A. <i>Z. Elektrochem.</i> <u>1962</u>, 66, 149.</li> <li>2. Wolff, H.; Höppel, H.-E. <i>Ber. Bunsenges. Phys. Chem.</i> <u>1966</u>, 70, 874</li> <li>3. Barker, J.A. <i>Aust. J. Chem.</i> <u>1953</u>, 6, 207.</li> <li>4. Redlich, O.; Kister, A.T. <i>Ind. Eng. Chem.</i> <u>1948</u>, 27, 345.</li> </ol>																																																																												

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Methanamine, (methylanine); CH <sub>5</sub> N; [74-89-5]		Wolff, H.; Würtz, R. <i>Ber. Bunsenges. Phys. Chem.</i> <u>1968</u> , 72, 101-109.	
2. Tetrachloromethane (carbon tetrachloride); CCl <sub>4</sub> ; [56-23-5]			
VARIABLES:		PREPARED BY:	
Composition, temperature		P. G. T. Fogg	
EXPERIMENTAL VALUES: Cont.			
		T/K	
<sup>w</sup> CH <sub>5</sub> N	253.15	273.15	293.15
0.652	277.9	703.6	1533.6
0.700	292.6	743.2	1616.9
0.801	323.4	820.1	1795.0
0.900	357.0	903.9	1978.2
1	394.2	1001.8	2191.7
760 Torr = 1 atm = 1.013 x 10 <sup>5</sup> Pa			
Constants for calculation of activity coefficients from the Redlich-Kister equations given below			
T/K	A	B	C
253.15	0.650	-0.085	0.051
263.15	0.630	-0.071	0.027
273.15	0.587	-0.051	0.023
283.15	0.563	-0.036	0.025
293.15	0.524	-0.030	0.025
$\ln f_1 = A x_2^2 - B x_2^2 (1 - 4 x_1) + C x_2^2 (1 - 8 x_1 + 12 x_1^2)$ $\ln f_2 = A x_1^2 + B x_1^2 (1 - 4 x_2) + C x_1^2 (1 - 8 x_2 + 12 x_2^2)$			
where $f_1$ = activity coefficient of methylanine			
$f_2$ = activity coefficient of carbon tetrachloride			
$x_1$ = mole fraction of methylanine in the liquid phase			
$x_2$ = mole fraction of carbon tetrachloride in the liquid phase			

COMPONENTS:			ORIGINAL MEASUREMENTS:
1. Methanamine, (methylamine); $\text{CH}_5\text{N}$ ; [74-89-5]  2. Bromobenzene; $\text{C}_6\text{H}_5\text{Br}$ ; [108-86-1]			Gerrard, W.  <i>Solubility of Gases, and Liquids,</i> <i>Plenum, 1976, Chapter 10.</i>
VARIABLES:			PREPARED BY:
Pressure			C. L. Young
EXPERIMENTAL VALUES:			
T/K	P/mmHg	P/ $10^5\text{Pa}$	Mole fraction of methylamine in liquid, $x_{\text{CH}_3\text{NH}_2}$
283.15	100	0.133	0.055
	200	0.267	0.105
	300	0.400	0.158
	400	0.533	0.212
	500	0.667	0.270
	600	0.800	0.333
	700	0.933	0.404
	760	1.013	0.454
AUXILIARY INFORMATION			
METHOD/APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
<p>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].</p>		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. <i>J. Appl. Chem. Biotechnol.</i> <u>1972</u> , 22 623-650. 2. Gerrard, W. <i>Solubility of Gases and Liquids.</i> Plenum Press, New York. <u>1976</u> . Chapter 1.	

COMPONENTS:			ORIGINAL MEASUREMENTS:	
1. Methanamine (Methylamine); $\text{CH}_5\text{N}$ ; [74-89-5] 2. 1-Bromo-3-methylbenzene ( <i>m</i> -bromotoluene); $\text{C}_7\text{H}_7\text{Br}$ ; [95-46-5]			Gerrard, W. <i>Solubility of Gases and Liquids</i> , <i>Plenum 1976</i> , Chapter 10.	
VARIABLES:			PREPARED BY:	
Pressure			C. L. Young	
EXPERIMENTAL VALUES:				
T/K	P/mmHg	P/ $10^5$ Pa	Mole fraction of methylamine in liquid, $x_{\text{CH}_3\text{NH}_2}$	
283.15	100	0.133	0.044	
	200	0.267	0.089	
	300	0.400	0.136	
	400	0.533	0.185	
	500	0.667	0.235	
	600	0.800	0.288	
	700	0.933	0.350	
	760	1.013	0.395	
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.	
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			1. Gerrard, W. <i>J. Appl. Chem. Biotechnol.</i> <u>1972</u> , 22 623-650 2. Gerrard, W. <i>Solubility of Gases and Liquids</i> , <i>Plenum Press, New York.</i> <u>1976</u> . Chapter 1.	

COMPONENTS:			ORIGINAL MEASUREMENTS:
1. Methanamine (methylamine); $\text{CH}_5\text{N}$ ; [74-89-5]			Gerrard, W.
2. 1-Bromonaphthalene; $\text{C}_{10}\text{H}_7\text{Br}$ ; [90-11-9]			<i>Solubility of Gases and Liquids</i> , Plenum, 1976, Chapter 10.
VARIABLES:			PREPARED BY:
Pressure			C. L. Young
EXPERIMENTAL VALUES:			
T/K	P/mmHg	P/ $10^5$ Pa	Mole fraction of methylamine in liquid, $x_{\text{CH}_3\text{NH}_2}$
283.15	100	0.133	0.048
	200	0.267	0.095
	300	0.400	0.144
	400	0.533	0.191
	500	0.667	0.242
	600	0.800	0.295
	700	0.933	0.356
	760	1.013	0.397
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: $\delta T/\text{K} = \pm 0.1$ ; $\delta x/x = \pm 3\%$ (estimated by compiler).	
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		1. Gerrard, W. <i>J. Appl. Chem. Biotechnol.</i> 1972, 22, 623-650.	
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<b>COMPONENTS:</b> 1. Methanamine (Methylamine); $\text{CH}_5\text{N}$ ; [74-89-5] 2. 2,2,2-Trichloroethanol, (1,1,1-trichloro-2-hydroxy- ethane); $\text{C}_2\text{H}_3\text{Cl}_3\text{O}$ ; [115-20-8]			<b>ORIGINAL MEASUREMENTS:</b> Gerrard, W.  <i>Solubility of Gases and Liquids</i> , <i>Plenum 1976</i> , Chapter 10.
<b>VARIABLES:</b> Temperature, pressure			<b>PREPARED BY:</b> C. L. Young
<b>EXPERIMENTAL VALUES:</b>			Mole fraction of methylamine in liquid, $x_{\text{CH}_3\text{NH}_2}$
T/K	P/mmHg	P/ $10^5$ Pa	
273.15	100	0.133	0.524
	200	0.267	0.581
	300	0.400	0.628
	400	0.533	0.676
	500	0.667	0.722
	600	0.800	0.766
	700	0.933	0.815
278.15	760	1.013	0.848
	760	0.933	0.760
283.15	760	1.013	0.781
	100	0.133	0.494
	200	0.267	0.552
	300	0.400	0.588
	400	0.533	0.624
	500	0.667	0.655
	600	0.800	0.683
	700	0.933	0.710
293.15	760	1.013	0.723
	100	0.133	0.464
	200	0.267	0.515
	300	0.400	0.548
	400	0.533	0.576
	500	0.667	0.600
	600	0.800	0.622
700	0.933	0.642	
760	1.013	0.653	
<b>AUXILIARY INFORMATION</b>			
<b>METHOD/APPARATUS/PROCEDURE:</b> 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].			<b>SOURCE AND PURITY OF MATERIALS:</b> 1. British Drug Houses or Cambrian Gases sample.  2. Purified and attested by conventional procedures.
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