

COMPONENTS:	EVALUATOR:					
1. Hydrogen sulfide; H <sub>2</sub> S; [7783-06-4] 2. Ammonia; NH <sub>3</sub> ; [7664-4-17] 3. Water; H <sub>2</sub> O; [7732-18-5]	Peter G.T. Fogg, Department of Applied Chemistry and Life Sciences, Polytechnic of North London, Holloway, London N7 8DB, U.K.  February 1987					
<b>CRITICAL EVALUATION:</b>						
<p>The original measurements on this system were published by van Krevelen, Hoftijzer, and Huntjens (1). Other work has since been published (2-7) and data cover temperatures from 293.15 K to 373.15 K and a wide range of concentrations of ammonia and of hydrogen sulfide. Direct comparison of different sets of data is only possible to a limited extent because of differing ranges of conditions studied by different authors but the general pattern of behaviour is the same. The concentration of hydrogen sulfide in solution increases with partial pressure of the gas and with concentration of ammonia in solution and decreases as the temperature is raised.</p> <p>One apparent discrepancy between two sets of data has been found by the evaluator:</p>						
Authors	T/K	Wt.% in liquid		Wt.% in gas		
		H <sub>2</sub> S	NH <sub>3</sub>	H <sub>2</sub> S	NH <sub>3</sub>	
Oratovskii <i>et al.</i> (2)	353.2	3.0	5.45	33.9	33.6	
Ginzburg <i>et al.</i> (3)	353.8	3.20	5.04	26.02	36.02	
<p>Models for the behaviour of the system have been published by van Krevelen <i>et al.</i> (1), by Edwards <i>et al.</i> (8) and by Beutier &amp; Renon (7). These can only be partially correlated with experimental data.</p> <p>Van Krevelen <i>et al.</i> (1) investigated the systems H<sub>2</sub>S-NH<sub>3</sub>-NH<sub>4</sub>Cl-H<sub>2</sub>O and H<sub>2</sub>S-NH<sub>3</sub>-(NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> and showed that data are consistent with those for the H<sub>2</sub>S-NH<sub>3</sub>-H<sub>2</sub>O system.</p> <p>The system H<sub>2</sub>S-NH<sub>3</sub>-CO<sub>2</sub>-H<sub>2</sub>O was investigated by Badger and Silver (9), by Dryden (10), by van Krevelen <i>et al.</i> (1) and by Wilson, Gillespie and Owens (11). Data span a range of concentrations of components and temperatures from 298.2 K to 533.2 K. There appear to be no serious discrepancies between the sets of data but detailed comparison is not possible because of the differences in conditions investigated by the different groups. Van Krevelen <i>et al.</i> have shown that experimental data can be partially correlated with a simple model for the system. Correlation models have also been published by Wilson <i>et al.</i></p> <p>Golutvin <i>et al.</i> have studied the system H<sub>2</sub>S-NH<sub>3</sub>-CO<sub>2</sub>-H<sub>2</sub>O-phenol (4).</p>						
<p><u>References</u></p>						
<ol style="list-style-type: none"> <li>van Krevelen, D.W.; Hoftijzer, P.J.; Huntjens, F.J. <i>Recl. Trav. Chim. Pays-Bas</i> <u>1949</u>, <i>68</i>, 191-216.</li> <li>Oratovskii, V.I.; Gamol'skii, A.M.; Klimenko, N.N. <i>Zhur. Prikl. Khim.</i> <u>1964</u>, <i>37</i>, 2392-8.; <i>J. Appl. Chem. USSR</i> <u>1964</u>, <i>37</i>, 2363-7.</li> <li>Ginzburg, D.M.; Pikulina, N.S.; Litvin, V.P. <i>Zhur. Prikl. Khim.</i> <u>1965</u>, <i>38</i>, 2117-3.; <i>J. Appl. Chem. USSR</i> <u>1965</u>, <i>38</i>, 2071-3.</li> <li>Golutvin, Yu.M.; Malysheva, T.V.; Skorobogatova, V.I. <i>Izvest. Sibir. Otdel. Akad. Nauk. S.S.S.R.</i> <u>1958</u>, <i>No.8</i>, 83-87.</li> <li>Leyko, J. <i>Bull. Acad. Polon. Sci. Ser. sci. chim.</i> <u>1959</u>, <i>7</i>, 675-679.</li> </ol>						

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2. Ammonia; NH<sub>3</sub>; [7664-4-17]
3. Water; H<sub>2</sub>O; [7732-18-5]

## EVALUATOR:

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and Life Sciences,  
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February 1987

## CRITICAL EVALUATION:

6. Leyko, J.; Piatkiewicz, J.  
*Bull. Acad. Polon. Sci. Ser. sci. chim.* 1964, 12, 445-446.
7. Beutier, D.; Renon, H.  
*Ind. Eng. Chem. Proc. Des. Dev.* 1978, 17, 220-230.
8. Edwards, T.J.; Newman, J.; Prausnitz, J.M.  
*Amer. Inst. Chem. Eng. J.* 1975, 21(2), 248.
9. Badger, E.H.M.; Silver, L.  
*J. Soc. Chem. Ind.* 1938, 57, 110-112.
10. Dryden, I.G.C.  
*J. Soc. Chem. Ind.* 1947, 66, 59-64.
11. Wilson, G.M.; Gillespie, P.C.; Owens, J.L.  
*Proc. 64th Ann. Conv. Gas Processors Association*, 1955, 282-288.

<b>COMPONENTS:</b> 1. Hydrogen sulfide; H <sub>2</sub> S; [7783-06-4] 2. Ammonia; NH <sub>3</sub> ; [7664-41-7] 3. Water; H <sub>2</sub> O; [7732-18-5]	<b>ORIGINAL MEASUREMENTS:</b> van Krevelen, D.W.; Hoftijzer, P.J. Huntjens, F.J.  <i>Recl. Trav. Chim. Pays-Bas</i> <u>1949, 68, 191-216.</u>																																																																												
<b>VARIABLES:</b> Temperature, concentration of liquid phase.	<b>PREPARED BY:</b> P.G.T. Fogg																																																																												
<b>EXPERIMENTAL VALUES:</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th data-bbox="175 502 395 594" rowspan="2">Conc. of H<sub>2</sub>S in liquid* /mol dm<sup>-3</sup></th> <th data-bbox="422 502 600 594" rowspan="2">Conc. of NH<sub>3</sub> in liquid* /mol dm<sup>-3</sup></th> <th colspan="3" data-bbox="683 502 1130 527">Partial pressures of H<sub>2</sub>S / mmHg</th> </tr> <tr> <th data-bbox="683 574 787 594">293.2 K</th> <th data-bbox="869 574 974 594">313.2 K</th> <th data-bbox="1061 574 1166 594">333.2 K</th> </tr> </thead> <tbody> <tr><td>0.007</td><td>0.280</td><td>0.3</td><td>1.3</td><td></td></tr> <tr><td>0.060</td><td>0.280</td><td></td><td></td><td>2.6</td></tr> <tr><td>0.110</td><td>0.280</td><td>0.8</td><td>3.7</td><td>11.8</td></tr> <tr><td>0.120</td><td>0.585</td><td>0.3</td><td>1.5</td><td>4.9</td></tr> <tr><td>0.140</td><td>0.295</td><td></td><td></td><td>15.6</td></tr> <tr><td>0.145</td><td>0.575</td><td>0.6</td><td></td><td>8.7</td></tr> <tr><td>0.185</td><td>0.300</td><td>4.2</td><td>13.3</td><td>39.6</td></tr> <tr><td>0.220</td><td>1.060</td><td>0.9</td><td>2.6</td><td>9.4</td></tr> <tr><td>0.220</td><td>0.580</td><td>1.7</td><td>6.9</td><td>20.5</td></tr> <tr><td>0.285</td><td>0.585</td><td>3.0</td><td>12.7</td><td>35.5</td></tr> <tr><td>0.290</td><td>1.150</td><td>1.1</td><td>4.6</td><td>14.5</td></tr> <tr><td>0.355</td><td>1.720</td><td>1.1</td><td>4.0</td><td>12.9</td></tr> <tr><td>0.375</td><td>0.595</td><td>8.2</td><td>26.9</td><td></td></tr> </tbody> </table> <p data-bbox="175 1116 1057 1150">* total H<sub>2</sub>S &amp; NH<sub>3</sub> including that equivalent to ionic species.</p>					Conc. of H <sub>2</sub> S in liquid* /mol dm <sup>-3</sup>	Conc. of NH <sub>3</sub> in liquid* /mol dm <sup>-3</sup>	Partial pressures of H <sub>2</sub> S / mmHg			293.2 K	313.2 K	333.2 K	0.007	0.280	0.3	1.3		0.060	0.280			2.6	0.110	0.280	0.8	3.7	11.8	0.120	0.585	0.3	1.5	4.9	0.140	0.295			15.6	0.145	0.575	0.6		8.7	0.185	0.300	4.2	13.3	39.6	0.220	1.060	0.9	2.6	9.4	0.220	0.580	1.7	6.9	20.5	0.285	0.585	3.0	12.7	35.5	0.290	1.150	1.1	4.6	14.5	0.355	1.720	1.1	4.0	12.9	0.375	0.595	8.2	26.9	
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<b>METHOD/APPARATUS/PROCEDURE:</b> Solutions were prepared by passing H <sub>2</sub> S, NH <sub>3</sub> and steam through water with exclusion of air. Samples of vapor in equilibrium with the solution under test were absorbed by solutions of cadmium acetate in acetic acid which were then analysed. These analyses together with P-V-T data were used to calculate partial pressures of NH <sub>3</sub> & H <sub>2</sub> S. Another method consisted of passing a measured volume of N <sub>2</sub> at a measured total pressure through a series of vessels containing solution. H <sub>2</sub> S in the effluent gas was determined iodimetrically. The two methods gave similar results.		<b>SOURCE AND PURITY OF MATERIALS:</b>  No information																																																																											
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2. Ammonia; NH <sub>3</sub> ; [7664-41-7]				
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EXPERIMENTAL VALUES:				
Conc. of H <sub>2</sub> S in liquid* /mol dm <sup>-3</sup>	Conc. of NH <sub>3</sub> in liquid* /mol dm <sup>-3</sup>	Partial pressures of H <sub>2</sub> S / mmHg		
		293.2 K	313.2 K	333.2 K
0.398	0.795	4.4		
0.420	1.637	1.7		
0.435	1.730	1.6	6.4	19.4
0.440	2.270	1.4	5.0	16.0
0.455	1.175	3.4	12.5	38.6
0.550	2.870	1.6	5.9	18.5
0.580	1.190	6.7	23.6	66.9
0.585	2.310	2.3	8.1	26.0
0.590	3.460	1.3	4.7	17.6
0.690	1.780	4.9	18.0	54.7
0.730	2.920	2.8	10.0	31.8
0.860	1.780	9.4	32.6	98.6
0.875	2.260	6.0	22.3	68.0
1.110	2.860	6.7	31.4	94.2
1.150	2.400	12.2	43.2	135.9
1.165	1.790	18.4		182.3
1.440	2.930	15.8	54.4	151.9
1.540	2.350	27.1		
1.890	2.920	38.5	125.4	310.5

\* total H<sub>2</sub>S & NH<sub>3</sub> including that equivalent to ionic species.

<b>COMPONENTS:</b> 1. Hydrogen sulfide; H <sub>2</sub> S; [7783-06-4] 2. Ammonia; NH <sub>3</sub> ; [7664-41-7] 3. Water; H <sub>2</sub> O; [7732-18-5]	<b>ORIGINAL MEASUREMENTS:</b> Golutvin, Yu. M.; Malysheva, T.V.; Skorobogatova, V.I. <i>Izvest. Sibir. Otdel. Akad. Nauk.</i> <i>S.S.S.R. 1958, No.8, 83-7</i>																						
<b>VARIABLES:</b> Concentration of ammonia	<b>PREPARED BY:</b> P.G.T. Fogg																						
<b>EXPERIMENTAL VALUES:</b> <table border="1" data-bbox="142 506 1264 838"> <thead> <tr> <th>T/K</th> <th>Concentration of NH<sub>3</sub> /mol dm<sup>-3</sup></th> <th>Concentration of H<sub>2</sub>S /mol dm<sup>-3</sup></th> </tr> </thead> <tbody> <tr> <td rowspan="10">293.2</td> <td>0.70</td> <td>0.78</td> </tr> <tr> <td>0.88</td> <td>1.10</td> </tr> <tr> <td>1.19</td> <td>1.23</td> </tr> <tr> <td>1.82</td> <td>2.23</td> </tr> <tr> <td>2.24</td> <td>2.87</td> </tr> <tr> <td>3.80</td> <td>5.93</td> </tr> <tr> <td>4.98</td> <td>7.40</td> </tr> <tr> <td>5.26</td> <td>7.65</td> </tr> <tr> <td>6.16</td> <td>8.57</td> </tr> </tbody> </table> <p data-bbox="308 854 705 880">Total pressure = barometric</p> <p data-bbox="161 901 1201 952">Concentrations of NH<sub>3</sub> and of H<sub>2</sub>S include all ionic species derived from these compounds.</p>		T/K	Concentration of NH <sub>3</sub> /mol dm <sup>-3</sup>	Concentration of H <sub>2</sub> S /mol dm <sup>-3</sup>	293.2	0.70	0.78	0.88	1.10	1.19	1.23	1.82	2.23	2.24	2.87	3.80	5.93	4.98	7.40	5.26	7.65	6.16	8.57
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<b>METHOD/APPARATUS/PROCEDURE:</b> Hydrogen sulfide from a Kipp's apparatus was bubbled through aqueous solutions of ammonia of various concentrations for six hours. The total ammonia in the resulting solution was analysed by titration with hydrochloric acid and the total hydrogen sulfide by iodimetry.	<b>SOURCE AND PURITY OF MATERIALS:</b> 1. from a Kipp's apparatus. <b>ESTIMATED ERROR:</b> $\delta T/K = \pm 0.1$ <b>REFERENCES:</b>																						

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<b>METHOD/APPARATUS/PROCEDURE:</b> Nitrogen was bubbled through the thermostatted samples of the solution under test. The content of NH <sub>3</sub> , H <sub>2</sub> S and H <sub>2</sub> O in the gas stream was determined by analysis.	<b>SOURCE AND PURITY OF MATERIALS:</b> No information  <b>ESTIMATED ERROR:</b>  <b>REFERENCES:</b>																																																																											

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VARIABLES:					PREPARED BY:					
Temperature, concentration of H <sub>2</sub> S and NH <sub>3</sub> in the liquid phase.					P.G.T. Fogg					
EXPERIMENTAL VALUES:										
T/K	Wt% in liquid**		Mole fraction in liquid*		Wt% in gas		Mole fraction in gas*		Partial press./bar*	
	H <sub>2</sub> S	NH <sub>3</sub>	H <sub>2</sub> S	NH <sub>3</sub>	H <sub>2</sub> S	NH <sub>3</sub>	H <sub>2</sub> S	NH <sub>3</sub>	H <sub>2</sub> S	NH <sub>3</sub>
343.2	2.0	4.0	0.011	0.043	24.1	33.1	0.141	0.387	0.088	0.241
	3.0	5.5	0.016	0.059	31.9	36.0	0.194	0.437	0.152	0.341
	4.0	6.3	0.021	0.068	40.4	34.2	0.258	0.436	0.239	0.404
	5.0	7.1	0.027	0.077	48.1	31.2	0.321	0.417	0.342	0.444
	6.0	7.5	0.032	0.081	55.4	27.6	0.388	0.387	0.476	0.475
	7.0	8.0	0.038	0.087	61.0	24.2	0.444	0.352	0.593	0.470
	8.0	8.3	0.044	0.091	66.1	21.2	0.499	0.320	0.743	0.476
	9.0	8.5	0.049	0.093	70.9	18.1	0.554	0.283	0.908	0.464
	10.0	8.7	0.055	0.096	75.4	15.1	0.610	0.244	1.113	0.445
<p>* estimated by the compiler. Partial pressures were assumed to be proportional to mole fractions in the gas phase. The partial pressure of water was taken as the product of mole fraction of water in the liquid phase and the vapor pressure of pure water.</p> <p>** total H<sub>2</sub>S &amp; NH<sub>3</sub> including that equivalent to ionic species.</p>										
AUXILIARY INFORMATION										
METHOD/APPARATUS/PROCEDURE:					SOURCE AND PURITY OF MATERIALS:					
A solution of ammonium sulfide (140-200 g dm <sup>-3</sup> ) was evaporated at a rate of 0.8-1.0 g min <sup>-1</sup> from a thermostatted steel vessel of volume 100 cm <sup>3</sup> . At various times the evaporation was discontinued, the vessel and contents weighed and samples analysed for NH <sub>3</sub> and H <sub>2</sub> S. Compositions of the vapor phase were calculated from the rates of change of composition of the liquid phase as described in in ref. (1).					1 & 2 analytical grade ammonium sulfide used.					
					ESTIMATED ERROR:					
					$\delta T/K = \pm 0.05$ (authors)					
					REFERENCES:					
					1. Yarym-Agaev, N.L.; Kogan, E.A. <i>Zh. Fiz. Khim.</i> 1956, 30 (11), 2150.					

<b>COMPONENTS:</b> 1. Hydrogen sulfide; H <sub>2</sub> S; [7783-06-4] 2. Ammonia; NH <sub>3</sub> ; [7664-41-7] 3. Water; H <sub>2</sub> O; [7732-18-5]	<b>ORIGINAL MEASUREMENTS:</b> Leyko, J.; Piatkiewicz, J. <i>Bull. Acad. Polon. Sci. Ser. sci. chim.</i> , <u>1964</u> , 12, 445-446.																											
<b>VARIABLES:</b> Temperature	<b>PREPARED BY:</b> P.G.T. Fogg																											
<b>EXPERIMENTAL VALUES:</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Conc. of H<sub>2</sub>S in liquid /mol dm<sup>-3</sup></th> <th rowspan="2">Conc. of NH<sub>2</sub> in liquid /mol dm<sup>-3</sup></th> <th rowspan="2">T/K</th> <th colspan="3">Partial pressures</th> </tr> <tr> <th>P<sub>H<sub>2</sub>S</sub>/atm</th> <th>P<sub>NH<sub>3</sub></sub>/atm</th> <th>P<sub>H<sub>2</sub>O</sub>/atm</th> </tr> </thead> <tbody> <tr> <td rowspan="4" style="text-align: center;">1.91</td> <td rowspan="4" style="text-align: center;">6.15</td> <td style="text-align: center;">353.2</td> <td style="text-align: center;">0.35</td> <td style="text-align: center;">0.95</td> <td style="text-align: center;">0.35</td> </tr> <tr> <td style="text-align: center;">363.2</td> <td style="text-align: center;">0.51</td> <td style="text-align: center;">1.31</td> <td style="text-align: center;">0.53</td> </tr> <tr> <td style="text-align: center;">373.2</td> <td style="text-align: center;">0.75</td> <td style="text-align: center;">1.66</td> <td style="text-align: center;">0.79</td> </tr> <tr> <td style="text-align: center;">383.2</td> <td style="text-align: center;">1.17</td> <td style="text-align: center;">2.05</td> <td style="text-align: center;">1.18</td> </tr> </tbody> </table>		Conc. of H <sub>2</sub> S in liquid /mol dm <sup>-3</sup>	Conc. of NH <sub>2</sub> in liquid /mol dm <sup>-3</sup>	T/K	Partial pressures			P <sub>H<sub>2</sub>S</sub> /atm	P <sub>NH<sub>3</sub></sub> /atm	P <sub>H<sub>2</sub>O</sub> /atm	1.91	6.15	353.2	0.35	0.95	0.35	363.2	0.51	1.31	0.53	373.2	0.75	1.66	0.79	383.2	1.17	2.05	1.18
Conc. of H <sub>2</sub> S in liquid /mol dm <sup>-3</sup>	Conc. of NH <sub>2</sub> in liquid /mol dm <sup>-3</sup>				T/K	Partial pressures																						
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		383.2	1.17	2.05	1.18																							
<b>AUXILIARY INFORMATION</b>																												
<b>METHOD/APPARATUS/PROCEDURE:</b> Liquid under test was contained in a thermostatted pressure vessel connected to a manometer. Samples of the gas phase were taken through a valve into an evacuated gas sampling pipette and analysed by chemical methods.	<b>SOURCE AND PURITY OF MATERIALS:</b> No information																											
	<b>ESTIMATED ERROR:</b> $\delta P/P = \pm 5\%$ (authors)																											
	<b>REFERENCES:</b>																											



COMPONENTS:					ORIGINAL MEASUREMENTS:					
1. Hydrogen sulfide; H <sub>2</sub> S; [7783-06-4]					Oratovskii, V.I.; Gamol'skii, A.M.; Klimenko, N.N.  <i>Zhur.Prik.Khim.</i> 1964, 37, 2392-2398. <i>J.Appl.Chem. USSR</i> 1964, 37, 2363-7.					
2. Ammonia; NH <sub>3</sub> ; [7664-41-7]										
3. Water; H <sub>2</sub> O; [7732-18-5]										
EXPERIMENTAL VALUES:										
T/K	Wt% in liquid**		Mole fraction in liquid*		Wt% in gas		Mole fraction in gas*		Partial press./bar*	
	H <sub>2</sub> S	NH <sub>3</sub>	H <sub>2</sub> S	NH <sub>3</sub>	H <sub>2</sub> S	NH <sub>3</sub>	H <sub>2</sub> S	NH <sub>3</sub>	H <sub>2</sub> S	NH <sub>3</sub>
353.2	2.0	4.2	0.011	0.045	25.4	31.4	0.149	0.370	0.139	0.344
	3.0	5.45	0.016	0.058	33.9	33.6	0.208	0.413	0.241	0.479
	4.0	6.45	0.021	0.069	41.8	32.8	0.269	0.422	0.375	0.588
	5.0	7.1	0.027	0.077	49.5	29.7	0.334	0.401	0.545	0.642
	6.0	7.6	0.032	0.082	56.4	26.1	0.398	0.368	0.713	0.659
	7.0	7.95	0.038	0.087	62.8	22.5	0.463	0.332	0.936	0.671
	8.0	8.15	0.044	0.089	68.4	19.0	0.525	0.292	1.178	0.655
	9.0	8.35	0.049	0.092	73.9	15.5	0.591	0.248	1.502	0.630
	10.0	8.45	0.055	0.093	78.8	12.0	0.656	0.200	1.823	0.556
	363.2	1.0	3.0	0.005	0.032	12.2	22.4	0.068	0.248	0.067
2.0		4.45	0.011	0.047	25.1	32.2	0.147	0.378	0.205	0.527
3.0		5.75	0.016	0.061	32.3	35.8	0.197	0.436	0.347	0.768
4.0		6.8	0.021	0.073	38.4	35.8	0.242	0.451	0.501	0.933
5.0		7.6	0.027	0.082	44.7	34.0	0.292	0.445	0.693	1.057
6.0		8.15	0.032	0.088	50.3	31.4	0.340	0.425	0.895	1.119
7.0		8.6	0.038	0.094	55.4	28.5	0.388	0.399	1.108	1.140
8.0		9.4	0.044	0.103	60.4	25.3	0.437	0.367	1.335	1.121
9.0		9.35	0.049	0.103	65.4	22.1	0.491	0.332	1.649	1.115
10.0		9.5	0.055	0.105	70.3	18.7	0.547	0.291	1.988	1.058
* estimated by the compiler. Partial pressures were assumed to be proportional to mole fractions in the gas phase. The partial pressure of water was taken as the product of mole fraction of water in the liquid phase and the vapor pressure of pure water.										
** total H <sub>2</sub> S & NH <sub>3</sub> including that equivalent to ionic species.										

COMPONENTS:				ORIGINAL MEASUREMENTS:							
1. Hydrogen sulfide; H <sub>2</sub> S; [7783-06-4]				Ginzburg, D.M.; Pikulina, N.S.; Litvin, V.P.							
2. Ammonia; NH <sub>3</sub> ; [7664-41-7]				Zhur.Prik.Khim. 1965, 38, 2117-9. J.Appl.Chem. USSR 1965, 38, 2071-3.							
3. Water; H <sub>2</sub> O; [7732-18-5]											
VARIABLES:				PREPARED BY:							
Temperature, concentration in liquid.				P.G.T. Fogg							
EXPERIMENTAL VALUES:											
T/K	Wt% in liquid**		Mole fraction in liquid*		Wt% in gas		Mole fraction in gas*		Partial press./bar*		
	H <sub>2</sub> S	NH <sub>3</sub>	H <sub>2</sub> S	NH <sub>3</sub>	H <sub>2</sub> S	NH <sub>3</sub>	H <sub>2</sub> S	NH <sub>3</sub>	H <sub>2</sub> S	NH <sub>3</sub>	
335.7	9.24	8.80	0.0508	0.0968	61.84	23.51	0.4529	0.3445	0.459	0.349	
337.7	8.90	10.03	0.0488	0.1101	51.46	32.35	0.3507	0.4411	0.355	0.447	
340.2	7.28	7.00	0.0397	0.0764	64.67	18.31	0.4847	0.2746	0.491	0.278	
341.5	7.10	7.22	0.0387	0.0787	63.98	19.67	0.4768	0.2933	0.483	0.297	
342.4	7.00	9.01	0.0381	0.0980	40.15	40.06	0.2547	0.5084	0.258	0.515	
342.6	7.04	8.90	0.0383	0.0969	41.10	39.10	0.2623	0.4992	0.266	0.506	
345.8	5.21	4.99	0.0282	0.0540	61.33	16.11	0.4505	0.2368	0.456	0.240	
347.6	5.00	7.16	0.0270	0.0772	27.10	43.80	0.1597	0.5165	0.162	0.523	
347.7	5.00	5.11	0.0270	0.0552	65.10	11.70	0.4921	0.1769	0.499	0.179	
347.8	5.01	7.20	0.0270	0.0777	27.40	43.90	0.1617	0.5185	0.164	0.525	
Total pressure = 1 atm = 1.01325 bar											
* estimated by the compiler. Partial pressures were assumed to be proportional to mole fractions in the gas phase.											
** total H <sub>2</sub> S & NH <sub>3</sub> including that equivalent to ionic species.											
AUXILIARY INFORMATION											
METHOD/APPARATUS/PROCEDURE:						SOURCE AND PURITY OF MATERIALS:					
Partial pressures of NH <sub>3</sub> , H <sub>2</sub> S and H <sub>2</sub> O over solutions of NH <sub>3</sub> and H <sub>2</sub> S were measured by a static method described in ref. (1). The NH <sub>3</sub> content of the solutions were determined by titration against HCl solution (0.1 mol dm <sup>-3</sup> ) and that of H <sub>2</sub> S by iodimetry.						No information					
						ESTIMATED ERROR:					
						REFERENCES:					
						1. Ginzburg, D.M. Zh. Fiz. Khim. 1965, 38 (10), 2197.					

COMPONENTS:					ORIGINAL MEASUREMENTS:					
1. Hydrogen sulfide; H <sub>2</sub> S; [7783-06-4]					Ginzburg, D.M.; Pikulina, N.S.;					
2. Ammonia; NH <sub>3</sub> ; [7664-41-7]					Litvin, V.P.					
3. Water; H <sub>2</sub> O; [7732-18-5]					Zhur.Prik.Khim. 1965, 38, 2117-9. J.Appl.Chem. USSR 1965, 38, 2071-3.					
EXPERIMENTAL VALUES:										
T/K	Wt% in liquid**		Mole fraction in liquid*		Wt% in gas		Mole fraction in gas*		Partial press./bar*	
	H <sub>2</sub> S	NH <sub>3</sub>	H <sub>2</sub> S	NH <sub>3</sub>	H <sub>2</sub> S	NH <sub>3</sub>	H <sub>2</sub> S	NH <sub>3</sub>	H <sub>2</sub> S	NH <sub>3</sub>
348.5	4.54	6.98	0.0244	0.0751	30.70	37.94	0.1852	0.4578	0.188	0.464
348.7	4.67	6.86	0.0251	0.0739	32.17	38.30	0.1955	0.4657	0.198	0.472
349.2	4.39	6.78	0.0236	0.0729	29.70	41.10	0.1778	0.4923	0.180	0.499
350.3	3.08	7.04	0.0165	0.0753	4.09	58.34	0.0213	0.6088	0.022	0.617
353.2	3.08	3.03	0.0165	0.0325	52.10	12.90	0.3619	0.1793	0.367	0.182
353.8	3.20	5.04	0.0171	0.0540	26.02	36.02	0.1533	0.4246	0.155	0.430
354.1	3.00	3.10	0.0161	0.0332	49.81	13.91	0.3409	0.1905	0.345	0.193
354.4	3.06	5.00	0.0164	0.0535	21.60	36.24	0.1244	0.4175	0.126	0.423
354.7	2.80	5.04	0.0150	0.0539	18.50	36.30	0.1048	0.4116	0.106	0.417
355.6	1.00	5.19	0.0053	0.0550	0.10	49.90	0.0005	0.5138	0.001	0.521
359.3	2.08	3.12	0.0111	0.0333	25.80	23.50	0.1531	0.2790	0.155	0.283
360.4	1.25	3.06	0.0066	0.0325	8.63	32.02	0.0467	0.3468	0.047	0.351
360.7	1.80	2.94	0.0096	0.0313	17.10	26.50	0.0968	0.3003	0.098	0.304
362.4	1.13	1.12	0.0060	0.0119	33.56	7.57	0.2100	0.0948	0.213	0.096
363.6	0.94	1.19	0.0050	0.0126	27.53	11.88	0.1662	0.1435	0.168	0.145
363.6	1.00	1.15	0.0053	0.0122	30.20	9.80	0.1852	0.1203	0.188	0.122
363.8	0.91	1.15	0.0048	0.0122	26.71	11.66	0.1606	0.1402	0.163	0.142
Total pressure = 1 atm = 1.01325 bar										
* estimated by the compiler. Partial pressures were assumed to be proportional to mole fractions in the gas phase.										
** total H <sub>2</sub> S & NH <sub>3</sub> including that equivalent to ionic species.										

<b>COMPONENTS:</b> 1. Hydrogen sulfide; H <sub>2</sub> S; [7783-06-4] 2. Ammonia; NH <sub>3</sub> ; [7664-41-7] 3. Water; H <sub>2</sub> O; [7732-18-5]	<b>ORIGINAL MEASUREMENTS:</b> Sponsored by API (Brigham Young University, 1975) ; quoted by: Beutier, D.; Renon, H.  <i>Ind.Eng.Chem.Proc.Des.Dev.</i> 1978, 17, 220-230.																																								
<b>VARIABLES:</b>  Concentrations	<b>PREPARED BY:</b>  P.G.T. Fogg																																								
<b>EXPERIMENTAL VALUES:</b>  T/K = 353.15  <table border="1" data-bbox="105 582 1211 1022"> <thead> <tr> <th data-bbox="105 582 343 705">Conc. of NH<sub>3</sub> in liquid /mol dm<sup>-3</sup></th> <th data-bbox="343 582 651 705">Conc. of H<sub>2</sub>S in liquid /mol dm<sup>-3</sup></th> <th colspan="2" data-bbox="651 582 1211 623">Partial pressures</th> </tr> <tr> <td></td> <td></td> <th data-bbox="651 623 930 664">P<sub>NH<sub>3</sub></sub> /mmHg</th> <th data-bbox="930 623 1211 664">P<sub>H<sub>2</sub>S</sub> /mmHg</th> </tr> </thead> <tbody> <tr><td>0.960</td><td>0.971</td><td>12.0</td><td>2389</td></tr> <tr><td>1.063</td><td>1.452</td><td>4.36</td><td>8556</td></tr> <tr><td>2.332</td><td>1.151</td><td>136.0</td><td>319</td></tr> <tr><td>5.112</td><td>1.143</td><td>574</td><td>94.8</td></tr> <tr><td>5.538</td><td>5.305</td><td>72.6</td><td>12140</td></tr> <tr><td>9.245</td><td>7.935</td><td>208</td><td>9506</td></tr> <tr><td>10.201</td><td>5.983</td><td>597</td><td>1916</td></tr> <tr><td>22.627</td><td>5.561</td><td>2285</td><td>241</td></tr> </tbody> </table> <p data-bbox="364 1052 889 1093" style="text-align: center;">760 mmHg = 1 atm = 1.01325 bar</p>		Conc. of NH <sub>3</sub> in liquid /mol dm <sup>-3</sup>	Conc. of H <sub>2</sub> S in liquid /mol dm <sup>-3</sup>	Partial pressures				P <sub>NH<sub>3</sub></sub> /mmHg	P <sub>H<sub>2</sub>S</sub> /mmHg	0.960	0.971	12.0	2389	1.063	1.452	4.36	8556	2.332	1.151	136.0	319	5.112	1.143	574	94.8	5.538	5.305	72.6	12140	9.245	7.935	208	9506	10.201	5.983	597	1916	22.627	5.561	2285	241
Conc. of NH <sub>3</sub> in liquid /mol dm <sup>-3</sup>	Conc. of H <sub>2</sub> S in liquid /mol dm <sup>-3</sup>	Partial pressures																																							
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<b>AUXILIARY INFORMATION</b>																																									
<b>METHOD/APPARATUS/PROCEDURE:</b>  No information	<b>SOURCE AND PURITY OF MATERIALS:</b>  No information  <b>ESTIMATED ERROR:</b>  <b>REFERENCES:</b>																																								

<b>COMPONENTS:</b> 1. Hydrogen sulfide; H <sub>2</sub> S; [7783-06-4] 2. Ammonia; NH <sub>3</sub> ; [7664-41-7] 3. Water; H <sub>2</sub> O; [7732-18-5] 4. Ammonium chloride NH <sub>4</sub> Cl; [12125-02-9]	<b>ORIGINAL MEASUREMENTS:</b> van Krevelen, D.W.; Hoftijzer, P.J. Huntjens, F.J.  <i>Recl. Trav. Chim. Pays-Bas</i> <u>1949, 68, 191-216.</u>																																								
<b>VARIABLES:</b> Concentrations of components in liquid phase.	<b>PREPARED BY:</b> P.G.T. Fogg																																								
<b>EXPERIMENTAL VALUES:</b>  T/K = 293.15  <table border="1" data-bbox="152 588 1271 1044"> <thead> <tr> <th>Concn. of H<sub>2</sub>S in liquid* /mol dm<sup>-3</sup></th> <th>Concn. of NH<sub>3</sub> in liquid* /mol dm<sup>-3</sup></th> <th>Concn. of NH<sub>4</sub>Cl /mol dm<sup>-3</sup></th> <th>Partial pressure of H<sub>2</sub>S /mmHg</th> </tr> </thead> <tbody> <tr><td>0.202</td><td>0.753</td><td>0.374</td><td>6.2</td></tr> <tr><td>0.201</td><td>1.102</td><td>0.748</td><td>9.0</td></tr> <tr><td>0.200</td><td>1.495</td><td>1.122</td><td>12.9</td></tr> <tr><td>0.200</td><td>1.852</td><td>1.496</td><td>14.4</td></tr> <tr><td>0.198</td><td>2.215</td><td>1.870</td><td>17.3</td></tr> <tr><td>0.195</td><td>2.600</td><td>2.244</td><td>21.4</td></tr> <tr><td>0.198</td><td>2.946</td><td>2.618</td><td>24.6</td></tr> <tr><td>0.201</td><td>3.315</td><td>2.992</td><td>27.6</td></tr> <tr><td>0.194</td><td>3.670</td><td>3.366</td><td>33.7</td></tr> </tbody> </table> * total H <sub>2</sub> S and NH <sub>3</sub> including that equivalent to ionic species		Concn. of H <sub>2</sub> S in liquid* /mol dm <sup>-3</sup>	Concn. of NH <sub>3</sub> in liquid* /mol dm <sup>-3</sup>	Concn. of NH <sub>4</sub> Cl /mol dm <sup>-3</sup>	Partial pressure of H <sub>2</sub> S /mmHg	0.202	0.753	0.374	6.2	0.201	1.102	0.748	9.0	0.200	1.495	1.122	12.9	0.200	1.852	1.496	14.4	0.198	2.215	1.870	17.3	0.195	2.600	2.244	21.4	0.198	2.946	2.618	24.6	0.201	3.315	2.992	27.6	0.194	3.670	3.366	33.7
Concn. of H <sub>2</sub> S in liquid* /mol dm <sup>-3</sup>	Concn. of NH <sub>3</sub> in liquid* /mol dm <sup>-3</sup>	Concn. of NH <sub>4</sub> Cl /mol dm <sup>-3</sup>	Partial pressure of H <sub>2</sub> S /mmHg																																						
0.202	0.753	0.374	6.2																																						
0.201	1.102	0.748	9.0																																						
0.200	1.495	1.122	12.9																																						
0.200	1.852	1.496	14.4																																						
0.198	2.215	1.870	17.3																																						
0.195	2.600	2.244	21.4																																						
0.198	2.946	2.618	24.6																																						
0.201	3.315	2.992	27.6																																						
0.194	3.670	3.366	33.7																																						
<b>AUXILIARY INFORMATION</b>																																									
<b>METHOD / APPARATUS / PROCEDURE:</b> Solutions of gases were prepared by passing H <sub>2</sub> S, NH <sub>3</sub> and steam through water with exclusion of air. Samples of vapor in equilibrium with the solution under test, to which the salt had been added, were absorbed by solutions of cadmium acetate in acetic acid which were then analysed. These analyses together with P-V-T data were used to calculate partial pressures of NH <sub>3</sub> & H <sub>2</sub> S. Another method consisted of passing a measured volume of N <sub>2</sub> at a measured total pressure through a series of vessels containing solution. H <sub>2</sub> S in the effluent gas was determined iodometrically. The two methods gave similar results.	<b>SOURCE AND PURITY OF MATERIALS:</b>  No information  <b>ESTIMATED ERROR:</b>  <b>REFERENCES:</b>																																								

<b>COMPONENTS:</b> 1. Hydrogen sulfide; H <sub>2</sub> S; [7783-06-4] 2. Ammonia; NH <sub>3</sub> ; [7664-41-7] 3. Water; H <sub>2</sub> O; [7732-18-5] 4. Ammonium sulfate (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> ; [7783-20-2]	<b>ORIGINAL MEASUREMENTS:</b> van Krevelen, D.W.; Hoftijzer, P.J. Huntjens, F.J. <i>Recl. Trav. Chim. Pays-Bas</i> 1949, 68, 191-216.																																				
<b>VARIABLES:</b> Concentrations of components in solution.	<b>PREPARED BY:</b> P.G.T. Fogg																																				
<b>EXPERIMENTAL VALUES:</b>  T/K = 293.15 <table border="1" data-bbox="123 596 1225 1036"> <thead> <tr> <th>Concn. of H<sub>2</sub>S in liquid* /mol dm<sup>-3</sup></th> <th>Concn. of NH<sub>3</sub> in liquid* /mol dm<sup>-3</sup></th> <th>Concn. of (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> /mol dm<sup>-3</sup></th> <th>Partial pressure of H<sub>2</sub>S /mmHg</th> </tr> </thead> <tbody> <tr><td>0.202</td><td>0.705</td><td>0.1515</td><td>5.2</td></tr> <tr><td>0.200</td><td>1.314</td><td>0.4545</td><td>7.3</td></tr> <tr><td>0.201</td><td>1.651</td><td>0.606</td><td>9.2</td></tr> <tr><td>0.201</td><td>1.968</td><td>0.7575</td><td>9.6</td></tr> <tr><td>0.198</td><td>2.286</td><td>0.909</td><td>10.6</td></tr> <tr><td>0.195</td><td>2.615</td><td>1.0605</td><td>11.8</td></tr> <tr><td>0.194</td><td>2.851</td><td>1.212</td><td>12.9</td></tr> <tr><td>0.194</td><td>3.213</td><td>1.3635</td><td>13.8</td></tr> </tbody> </table> * total H <sub>2</sub> S and NH <sub>3</sub> including that equivalent to ionic species		Concn. of H <sub>2</sub> S in liquid* /mol dm <sup>-3</sup>	Concn. of NH <sub>3</sub> in liquid* /mol dm <sup>-3</sup>	Concn. of (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> /mol dm <sup>-3</sup>	Partial pressure of H <sub>2</sub> S /mmHg	0.202	0.705	0.1515	5.2	0.200	1.314	0.4545	7.3	0.201	1.651	0.606	9.2	0.201	1.968	0.7575	9.6	0.198	2.286	0.909	10.6	0.195	2.615	1.0605	11.8	0.194	2.851	1.212	12.9	0.194	3.213	1.3635	13.8
Concn. of H <sub>2</sub> S in liquid* /mol dm <sup>-3</sup>	Concn. of NH <sub>3</sub> in liquid* /mol dm <sup>-3</sup>	Concn. of (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> /mol dm <sup>-3</sup>	Partial pressure of H <sub>2</sub> S /mmHg																																		
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<b>AUXILIARY INFORMATION</b>																																					
<b>METHOD/APPARATUS/PROCEDURE:</b> <p>Solutions of gases were prepared by passing H<sub>2</sub>S, NH<sub>3</sub> and steam through water with exclusion of air. Samples of vapor in equilibrium with the solution under test, to which the salt had been added, were absorbed by solutions of cadmium acetate in acetic acid which were then analysed. These analyses together with P-V-T data were used to calculate partial pressures of NH<sub>3</sub> &amp; H<sub>2</sub>S. Another method consisted of passing a measured volume of N<sub>2</sub> at a measured total pressure through a series of vessels containing solution. H<sub>2</sub>S in the effluent gas was determined iodimetrically. The two methods gave similar results.</p>	<b>SOURCE AND PURITY OF MATERIALS:</b> No information  <b>ESTIMATED ERROR:</b>  <b>REFERENCES:</b>																																				

COMPONENTS:			ORIGINAL MEASUREMENTS:		
1. Hydrogen sulfide; H <sub>2</sub> S; [7783-06-4] 2. Ammonia; NH <sub>3</sub> ; [7664-41-7] 3. Carbon dioxide; CO <sub>2</sub> ; [124-38-9] 4. Water; H <sub>2</sub> O; [7732-18-5]			Badger, E.H.M; Silver, L.  <i>J. Soc. Chem. Ind.</i> <u>1938</u> , 57, 110-112.		
VARIABLES:			PREPARED BY:		
Concentration in liquid.			P.G.T. Fogg		
EXPERIMENTAL VALUES:					
H <sub>2</sub> S conc. in liquid* /mol dm <sup>-3</sup>	NH <sub>3</sub> conc. in liquid* /mol dm <sup>-3</sup>	CO <sub>2</sub> conc. in liquid* /mol dm <sup>-3</sup>	P <sub>H<sub>2</sub>S</sub> /mmHg	P <sub>NH<sub>3</sub></sub> /mmHg	P <sub>CO<sub>2</sub></sub> /mmHg
0.189	1.189	0.41	3.21	4.11	1.45
0.1935	1.1935	0.49	5.12	2.92	3.50
0.390	1.390	0.495	12.56	2.42	3.70
0.045	1.045	0.50	0.00	2.72	3.65
0.380	1.380	0.6375	26.97	1.54	13.10
0.097	1.097	0.66	5.29	1.35	12.15
0.192	1.192	0.67	11.14	1.31	13.10
0.1955	1.1955	0.6875	15.25	1.30	19.00
0.192	1.192	0.70	15.95	0.89	20.45
0.1925	1.1925	0.745	27.38	0.90	29.20
0.0915	1.0915	0.77	12.20	0.71	35.15
0.088	1.088	0.79			42.45
0.0945	1.0945	0.80			45.10
0.088	1.088	0.815	13.06	0.55	
0.0945	1.0945	0.8175	16.91	0.57	
T/K = 293.2      760 mmHg = 1 atm = 1.01325 bar					
* total H <sub>2</sub> S, NH <sub>3</sub> and CO <sub>2</sub> including that equivalent to ionic species.					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
A stream of nitrogen was passed through a series of thermostatted coils containing a solution of H <sub>2</sub> S, CO <sub>2</sub> and NH <sub>3</sub> under test. The gases in the emergent stream were estimated by chemical methods.			No information		
			ESTIMATED ERROR:		
			REFERENCES:		

<b>COMPONENTS:</b> 1. Hydrogen sulfide; H <sub>2</sub> S; [7783-06-4] 2. Ammonia; NH <sub>3</sub> ; [7664-41-7] 3. Carbon dioxide; CO <sub>2</sub> ; [124-38-9] 3. Water; H <sub>2</sub> O; [7732-18-5]	<b>ORIGINAL MEASUREMENTS:</b>  Dryden, I.G.C.  <i>J.Soc. Chem. Ind.</i> <u>1947</u> , 66. 59-64.																								
<b>VARIABLES:</b>  Temperature	<b>PREPARED BY:</b>  P.G.T. Fogg																								
<b>EXPERIMENTAL VALUES:</b>  Solutions were prepared by saturating aqueous ammonia with mixtures of H <sub>2</sub> S and CO <sub>2</sub> under a total pressure equal to barometric. <table border="1" data-bbox="193 588 1079 807"> <thead> <tr> <th>T/K</th> <th>[NH<sub>3</sub>] / mol dm<sup>-3</sup></th> <th>K'<sub>3</sub></th> <th>γ</th> </tr> </thead> <tbody> <tr> <td>293.2</td> <td>0.51</td> <td>1.40 ± 0.02</td> <td>2.14</td> </tr> <tr> <td>293.2</td> <td>0.99</td> <td>1.81 ± 0.05</td> <td>2.04</td> </tr> <tr> <td>293.2</td> <td>1.95</td> <td>2.50 ± 0.02</td> <td>1.88</td> </tr> <tr> <td>308.2</td> <td>1.00</td> <td>1.35 ± 0.015</td> <td>1.95</td> </tr> <tr> <td>323.2</td> <td>1.00</td> <td>1.07 ± 0.015</td> <td>1.83</td> </tr> </tbody> </table> $K'_3 = \frac{[\text{CO}_2] P_{\text{H}_2\text{S}}}{[\text{H}_2\text{S}] P_{\text{CO}_2}}$ <p>The concentration term [NH<sub>3</sub>] includes the concentration of NH<sub>4</sub><sup>+</sup> and any other species derived from NH<sub>3</sub> which is present in solution. In the same way [CO<sub>2</sub>] and [H<sub>2</sub>S] include all species such as HCO<sub>3</sub><sup>-</sup> and HS<sup>-</sup> derived from CO<sub>2</sub> and H<sub>2</sub>S respectively.</p> $\gamma = \frac{2 [\text{CO}_2] + 2 [\text{H}_2\text{S}]}{[\text{NH}_3]}$		T/K	[NH <sub>3</sub> ] / mol dm <sup>-3</sup>	K' <sub>3</sub>	γ	293.2	0.51	1.40 ± 0.02	2.14	293.2	0.99	1.81 ± 0.05	2.04	293.2	1.95	2.50 ± 0.02	1.88	308.2	1.00	1.35 ± 0.015	1.95	323.2	1.00	1.07 ± 0.015	1.83
T/K	[NH <sub>3</sub> ] / mol dm <sup>-3</sup>	K' <sub>3</sub>	γ																						
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<b>AUXILIARY INFORMATION</b>																									
<b>METHOD/APPARATUS/PROCEDURE:</b> Solutions under test were prepared by passing H <sub>2</sub> S or H <sub>2</sub> S/CO <sub>2</sub> into aqueous ammonium carbonate and/or ammonia. Nitrogen was passed through Drechsel bottles in series containing a solution under test. The H <sub>2</sub> S in the emergent nitrogen stream was absorbed in cadmium acetate solution and estimated iodometrically. The solution in the last Drechsel bottle was analysed for CO <sub>2</sub> by precipitation of CaCO <sub>3</sub> and for H <sub>2</sub> S by precipitation of CdS and subsequent estimation of the CdS by iodimetry.	<b>SOURCE AND PURITY OF MATERIALS:</b>  1. from a Kipp's apparatus. <table border="1" data-bbox="679 1610 1229 1739"> <tbody> <tr> <td><b>ESTIMATED ERROR:</b></td> </tr> <tr> <td><b>REFERENCES:</b></td> </tr> </tbody> </table>	<b>ESTIMATED ERROR:</b>	<b>REFERENCES:</b>																						
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COMPONENTS:				ORIGINAL MEASUREMENTS:		
1. Hydrogen sulfide; H <sub>2</sub> S; [7783-06-4] 2. Ammonia; NH <sub>3</sub> ; [7664-41-7] 3. Carbon dioxide; CO <sub>2</sub> ; [124-38-9] 4. Water; H <sub>2</sub> O; [7732-18-5]				Dryden, I.G.C.  <i>J. Soc. Chem. Ind.</i> <u>1947</u> , 66, 59-64.		
EXPERIMENTAL VALUES:						
Solutions under test were prepared by passing an appropriate amount of H <sub>2</sub> S into a mixture of ammonium carbonate (1.5 mol dm <sup>-3</sup> ) and ammonia (1.5 mol dm <sup>-3</sup> )						
NH <sub>3</sub> concn. in liquid* /mol dm <sup>-3</sup>	H <sub>2</sub> S concn. in liquid* /mol dm <sup>-3</sup>	R	k <sub>20</sub>	CO <sub>2</sub> concn. in liquid*† /mol dm <sup>-3</sup>	P <sub>H<sub>2</sub>S</sub> <sup>†</sup> /mmHg	P <sub>H<sub>2</sub>S</sub> <sup>†</sup> /bar
0.47	0.20	0.37	965	0.050	3.74	0.004989
0.47	0.20	1.33	210	0.180	17.20	0.022927
0.48	0.20	0.75	640	0.105	5.64	0.007523
0.49	0.205	1.10	363	0.157	10.20	0.013596
0.49	0.2075	1.47	148	0.208	25.32	0.033753
0.49	0.195	0.885	475	0.131	7.413	0.009883
0.49	0.21	0.19	985	0.027	3.850	0.005133
0.49	0.195	0.37	1005	0.055	3.504	0.004672
0.51	0.205	0.53	720	0.081	5.141	0.006854
0.955	0.20	1.165	342	0.439	10.560	0.014079
0.98	0.195	1.00	535	0.392	6.582	0.008775
0.98	0.21	1.50	124	0.577	30.581	0.040771
0.98	0.2175	0.765	1045	0.292	3.758	0.005010
0.98	0.20	0.295	2420	0.115	1.492	0.001989
1.00	0.2075	0.85	750	0.337	4.996	0.006661
1.00	0.2075	1.57	132	0.622	28.385	0.037843
1.01	0.05	1.28	310	0.614	2.912	0.003882
1.02	0.06	1.07	655	0.514	1.654	0.002205
1.02	0.185	0.70	1120	0.292	2.983	0.003977
1.02	0.05	0.83	1075	0.403	0.840	0.001120
1.02	0.20	0.55	1480	0.226	2.440	0.003253
1.03	0.05	1.07	650	0.524	1.389	0.001852
1.04	0.2075	1.35	202	0.562	18.549	0.024730
1.04	0.05	0.41	3120	0.203	0.289	0.000385
1.05	0.0525	0.61	1810	0.304	0.524	0.000699
1.05	0.055	0.21	6000	0.104	0.166	0.000221
1.10	0.105	0.58	1830	0.289	1.036	0.001381
1.10	0.105	0.795	1055	0.396	1.797	0.002396
1.10	0.10	1.24	335	0.620	5.390	0.007186
1.11	0.0525	1.50	150	0.793	6.320	0.008426
T/K = 293.2      Total pressure = 760 mmHg = 1.01325 bar						

COMPONENTS:				ORIGINAL MEASUREMENTS:		
1. Hydrogen sulfide; H <sub>2</sub> S; [7783-06-4] 2. Ammonia; NH <sub>3</sub> ; [7664-41-7] 3. Carbon dioxide; CO <sub>2</sub> ; [124-38-9] 4. Water; H <sub>2</sub> O; [7732-18-5]				Dryden, I.G.C.  <i>J. Soc. Chem. Ind.</i> <u>1947</u> , 66, 59-64.		
EXPERIMENTAL VALUES:						
Solutions under test were prepared by passing an appropriate amount of H <sub>2</sub> S into a mixture of ammonium carbonate (1.5 mol dm <sup>-3</sup> ) and ammonia (1.5 mol dm <sup>-3</sup> )						
NH <sub>3</sub> concn. in liquid* /mol dm <sup>-3</sup>	H <sub>2</sub> S concn. in liquid* /mol dm <sup>-3</sup>	R	k <sub>20</sub>	CO <sub>2</sub> concn. in liquid*† /mol dm <sup>-3</sup>	P <sub>H<sub>2</sub>S</sub> <sup>†</sup> /mmHg	P <sub>H<sub>2</sub>S</sub> <sup>†</sup> /bar
1.12	0.105	0.205	5400	0.104	0.351	0.000468
1.13	0.115	1.59	124	0.807	16.747	0.022327
1.14	0.105	1.01	575	0.523	3.297	0.004396
1.16	0.205	0.64	1180	0.306	3.137	0.004182
1.18	0.205	0.85	680	0.414	5.444	0.007258
1.18	0.21	1.29	239	0.626	15.866	0.021153
1.18	0.19	1.48	152	0.733	22.571	0.030092
1.20	0.19	1.06	424	0.535	8.092	0.010788
1.20	0.21	0.20	2700	0.099	1.404	0.001872
1.21	0.195	0.40	2180	0.203	1.615	0.002153
1.46	0.2075	0.44	2440	0.276	1.536	0.002048
1.47	0.185	0.63	1560	0.405	2.141	0.002854
1.48	0.215	0.89	720	0.563	5.392	0.007189
1.48	0.2075	0.235	3750	0.150	0.999	0.001332
1.48	0.205	1.005	525	0.641	7.051	0.009400
1.48	0.19	1.54	117	0.993	29.324	0.039095
1.48	0.2075	1.32	208	0.840	18.014	0.024016
1.52	0.17	0.84	970	0.567	3.165	0.004220
T/K = 293.2            Total pressure = 760 mmHg = 1.01325 bar						
R = $\frac{\text{conc. of CO}_2}{\text{conc. of NH}_3 - \text{conc. of H}_2\text{S}}$						
All concentrations in this expression refer to the liquid phase and are measured in mol dm <sup>-3</sup> . They include ionic and other species derived from the gases.						
k <sub>20</sub> = total conc. of H <sub>2</sub> S in the liquid phase / conc. in the gas phase						
* total H <sub>2</sub> S, NH <sub>3</sub> and CO <sub>2</sub> including that equivalent to ionic and other species derived from the gases.						
† calculated by the compiler.						

COMPONENTS:			ORIGINAL MEASUREMENTS:		
1. Hydrogen sulfide; H <sub>2</sub> S; [7783-06-4] 2. Ammonia; NH <sub>3</sub> ; [7664-41-7] 3. Carbon dioxide; CO <sub>2</sub> ; [124-38-9] 4. Water; H <sub>2</sub> O; [7732-18-5]			van Krevelen, D.W.; Hoftijzer, P.J. Huntjens, F.J.  <i>Recl. Trav. Chim. Pays-Bas</i> 1949, 68, 191-216.		
VARIABLES:			PREPARED BY:		
Temperature, concentration of components in liquid phase.			P.G.T. Fogg		
EXPERIMENTAL VALUES:					
T/K	H <sub>2</sub> S concn. in liquid* /mol dm <sup>-3</sup>	NH <sub>3</sub> concn. in liquid* /mol dm <sup>-3</sup>	CO <sub>2</sub> concn. in liquid* /mol dm <sup>-3</sup>	Partial pressure of H <sub>2</sub> S/mmHg	Partial pressure of H <sub>2</sub> S/bar**
293.2	0.180	0.79	0.25	4.5	0.0060
	0.180	1.14	0.41	4.2	0.0056
	0.210	2.25	1.40	18.0	0.0240
	0.291	1.24	0.75	49.0	0.0653
	0.360	2.16	0.95	14.8	0.0197
	0.60	2.15	0.40	8.4	0.0112
313.2	0.160	0.74	0.38	27.8	0.0371
	0.180	0.79	0.25	13.3	0.0177
	0.180	1.14	0.41	12.3	0.0164
	0.184	1.17	0.41	11.7	0.0156
	0.210	2.25	1.40	37.6	0.0501
	0.290	1.13	0.21	12.1	0.0161
	0.350	0.70	0.104	32.3	0.0431
	0.360	2.16	0.94	38.4	0.0512
	0.600	2.15	0.40	27.0	0.0360
333.2	0.124	1.298	0.656	25.8	0.0344
	0.140	1.02	0.62	63.7	0.0849
	0.150	0.74	0.36	53.5	0.0713
	0.180	0.79	0.25	32.0	0.0427
	0.180	1.14	0.41	30.0	0.0400
	0.184	1.17	0.41	29.5	0.0393
	0.200	2.25	1.34	59.5	0.0793
	0.234	1.289	0.645	77.0	0.1026
	0.290	1.130	0.21	32.8	0.0437
	0.350	0.700	0.104	80.4	0.1072
	0.360	2.160	0.95	84.4	0.1125
	0.60	2.150	0.40	77.5	0.1033
* total H <sub>2</sub> S, NH <sub>3</sub> and CO <sub>2</sub> including that equivalent to ionic species.					
** calculated by the compiler.					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE			SOURCE AND PURITY OF MATERIALS		
Samples of vapor in equilibrium with the solution under test, were analysed by chemical methods. These analyses together with P-V-T data were used to calculate the partial pressure of H <sub>2</sub> S. Another method consisted of passing a measured volume of N <sub>2</sub> at a measured total pressure through a series of vessels containing solution. H <sub>2</sub> S in the effluent gas was determined iodimetrically. The two methods gave similar results.			No information		
			ESTIMATED ERROR:		
			REFERENCES:		

T/°F		T/K*		Component	Composition /mole%		Partial pressure /psia	Partial pressure /bar*
					liquid	vapor		
200	366.48	NH <sub>3</sub>	2.00	6.09	1.50	0.103		
		CO <sub>2</sub>	0.57	33.99	8.38	0.578		
		H <sub>2</sub> S	0.51	17.45	4.30	0.296		
		H <sub>2</sub> O	96.92	42.47	10.49	0.723		
		total	100.00	100.00	24.67	1.701		
200	366.48	NH <sub>3</sub>	2.06	13.25	2.20	0.152		
		CO <sub>2</sub>	0.26	8.80	1.45	0.100		
		H <sub>2</sub> S	0.51	11.85	1.96	0.135		
		H <sub>2</sub> O	97.17	66.10	11.09	0.765		
		total	100.00	100.00	16.70	1.151		
200	366.48	NH <sub>3</sub>	17.76	35.52	23.44	1.616		
		CO <sub>2</sub>	3.84	17.36	11.46	0.790		
		H <sub>2</sub> S	4.08	32.65 <sup>†</sup>	21.55	1.486		
		H <sub>2</sub> O	74.32	14.47 <sup>†</sup>	9.55	0.658		
		total	100.00	100.00	66.00	4.551		
300	422.04	NH <sub>3</sub>	2.00	6.81	8.86	0.611		
		CO <sub>2</sub>	0.24	27.14	35.31	2.434		
		H <sub>2</sub> S	0.49	13.78	17.93	1.236		
		H <sub>2</sub> O	97.27	52.27	68.00	4.688		
		total	100.00	100.00	130.10	8.970		

\* estimated by compiler.

† water content too low to measure but calculated by authors using Raoult's law with correction for pressure enhancement.

AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Rocked static equilibrium cells were used for measurements. These were electrically heated and insulated with fibreglass. Pressures were measured with a 3-D Instruments precision pressure gauge. Platinum resistance thermometers were used to measure and control temperature. The vapor phase was analysed either by gas chromatography or by absorbing and weighing the components with NH <sub>3</sub> absorbed by HCl, H <sub>2</sub> S by CdSO <sub>4</sub> , H <sub>2</sub> O by Drierite® and CO <sub>2</sub> by Ascarite®. Samples of liquid phase were allowed to come to ambient temperature and pressure and the components estimated. Further details in refs. 1 & 2.	No information
	ESTIMATED ERROR:
	REFERENCES:
	1. Owens, J.L.; Cunningham, J.R.; Wilson, G.M. <i>Research Report RR-65</i> , Gas Processors Association, Tulsa, Oklahoma 1983.
	2. Wilson, G.M.; Owens, J.L.; Cunningham, J.R. <i>Research Report RR-52</i> , Gas Processors Association, Tulsa, Oklahoma 1982.

COMPONENTS:			ORIGINAL MEASUREMENTS:			
1. Hydrogen sulfide; H <sub>2</sub> S; [7783-06-4]			Wilson, G.M.; Gillespie, P.C.;			
2. Ammonia; NH <sub>3</sub> ; [7664-41-7];			Owens, J.L.			
3. Carbon dioxide; CO <sub>2</sub> ; [124-38-9]			<i>Proc. 64th Ann. Conv. Gas Processors</i>			
4. Water; H <sub>2</sub> O; [7732-18-5]			<i>Association, 1985, 282-288</i>			
EXPERIMENTAL VALUES:						
T/°F	T/K*	Component	Composition /mole%		Partial pressure /psia	Partial pressure /bar*
			liquid	vapor		
300	422.04	NH <sub>3</sub>	2.12	8.33	11.74	0.809
		CO <sub>2</sub>	0.29	30.87	43.52	3.001
		H <sub>2</sub> S	0.53	14.44	20.37	1.404
		H <sub>2</sub> O	97.06	46.36	65.37	4.507
		total	100.00	100.00	141.00	9.722
300	422.04	NH <sub>3</sub>	17.32	15.69	96.02	6.620
		CO <sub>2</sub>	4.19	43.83	268.24	18.494
		H <sub>2</sub> S	3.82	29.12 <sup>†</sup>	178.21	12.287
		H <sub>2</sub> O	74.67	11.36 <sup>†</sup>	69.53	4.794
		total	100.00	100.00	612.00	42.196
300	422.04	NH <sub>3</sub>	2.16	0.336	4.54	0.313
		CO <sub>2</sub>	1.44	67.80	915.21	63.102
		H <sub>2</sub> S	1.73	23.84 <sup>†</sup>	321.84	22.190
		H <sub>2</sub> O	94.72	8.03 <sup>†</sup>	108.41	7.475
		total	100.00	100.00	1350.00	93.079
400	477.59	NH <sub>3</sub>	2.03	6.56	32.47	2.239
		CO <sub>2</sub>	0.26	28.55	141.3	9.742
		H <sub>2</sub> S	0.57	15.50	76.71	5.289
		H <sub>2</sub> O	97.14	49.39	244.5	16.858
		total	100.00	100.00	494.98	34.128
400	477.59	NH <sub>3</sub>	2.14	5.06	31.37	2.163
		CO <sub>2</sub>	0.44	35.86	222.3	15.327
		H <sub>2</sub> S	0.83	20.16	125.0	8.618
		H <sub>2</sub> O	96.59	38.92	241.3	16.637
		total	100.00	100.00	619.97	42.745
400	477.59	NH <sub>3</sub>	17.30	14.70	426.30	29.392
		CO <sub>2</sub>	3.43	49.77	1443.33	99.514
		H <sub>2</sub> S	3.56	17.83 <sup>†</sup>	517.07	35.651
		H <sub>2</sub> O	75.70	17.70 <sup>†</sup>	513.30	35.391
		total	100.00	100.00	2900.00	199.948
400	477.59	NH <sub>3</sub>	1.80	1.46	30.37	2.094
		CO <sub>2</sub>	1.44	56.03	1165.42	80.353
		H <sub>2</sub> S	1.84	21.70 <sup>†</sup>	451.36	31.120
		H <sub>2</sub> O	94.74	20.81 <sup>†</sup>	432.85	29.844
		total	100.00	100.00	2080.00	143.411
500	533.15	NH <sub>3</sub>	2.12	5.89	70.39	4.853
		CO <sub>2</sub>	0.313	15.04	179.73	12.392
		H <sub>2</sub> S	0.523	8.63	103.13	7.111
		H <sub>2</sub> O	97.05	70.44	841.75	58.037
		total	100.00	100.00	1195.00	82.392
500	533.15	NH <sub>3</sub>	2.12	4.86	78.00	5.378
		CO <sub>2</sub>	0.575	22.88	376.22	25.939
		H <sub>2</sub> S	0.883	13.24	212.50	14.651
		H <sub>2</sub> O	96.42	59.02	947.28	65.313
		total	100.00	100.00	1605.00	110.661
500	533.15	NH <sub>3</sub>	1.86	2.31	66.30	4.571
		CO <sub>2</sub>	2.13	38.04	1091.75	75.274
		H <sub>2</sub> S	1.97	15.56 <sup>†</sup>	446.57	30.790
		H <sub>2</sub> O	94.04	44.09 <sup>†</sup>	1265.38	87.245
		total	100.00	100.00	2870.00	197.880

\*estimated by compiler.

<sup>†</sup>water content too low to measure but calculated by authors using Raoult's law with correction for pressure enhancement.

COMPONENTS:				ORIGINAL MEASUREMENTS:				
1. Hydrogen sulfide; H <sub>2</sub> S; [7783-06-4] 2. Ammonia; NH <sub>3</sub> ; [7664-41-7]; 3. Carbon dioxide; CO <sub>2</sub> ; [124-38-9] 4. Water; H <sub>2</sub> O; [7732-18-5] 5. Carbon monoxide; CO; [630-08-0] 6. Nitrogen; N <sub>2</sub> ; [7727-37-9] 7. Methane; CH <sub>4</sub> ; [74-82-8] 8. Hydrogen; H <sub>2</sub> ; [1333-74-0]				Wilson, G.M.; Gillespie, P.C.; Owens, J.L.  <i>Proc. 64th Ann. Conv. Gas Processors Association, 1985, 282-288.</i>				
VARIABLES:				PREPARED BY:				
Temperature, composition of gas and liquid phase.				P.G.T. Fogg				
EXPERIMENTAL VALUES:								
T/°F	T/K*	Total pressure		Component	Composition		Partial pressure	
		/psia	/kPa*		liquid	vapor	/psia	/kPa*
100	310.93	33.4	230	NH <sub>3</sub>	2.11	0.85	0.28	1.93
				CO <sub>2</sub>	0.27	0.065	0.022	0.152
				H <sub>2</sub> S	0.53	0.47	0.16	1.10
				H <sub>2</sub> O	97.09	2.33	0.78	5.38
				CO	a	25.99	8.68	59.85
				N <sub>2</sub>	a	9.99	3.34	23.03
				CH <sub>4</sub>	a	12.96	4.33	29.85
				H <sub>2</sub>	a	47.35	15.81	109.00
100	310.93	500	3447	NH <sub>3</sub>	2.11	0.067	0.34	2.34
				CO <sub>2</sub>	0.27	0.0029	0.015	0.103
				H <sub>2</sub> S	0.53	0.028	0.14	0.97
				H <sub>2</sub> O	97.05	0.19	0.93	6.41
				CO	0.0101	26.89	134.5	927.3
				N <sub>2</sub>	0.0025	10.32	51.60	355.77
				CH <sub>4</sub>	0.0063	13.44	67.21	463.40
				H <sub>2</sub>	0.0255	49.06	245.30	1691.28
<sup>a</sup> too small to measure.  * estimated by compiler.								
AUXILIARY INFORMATION								
METHOD/APPARATUS/PROCEDURE:				SOURCE AND PURITY OF MATERIALS:				
Rocked static equilibrium cells were used for measurements. These were electrically heated and insulated with fibreglass. Pressures were measured with a 3-D Instruments precision pressure gauge. Platinum resistance thermometers were used to measure and control temperature. The vapor phase was analysed either by gas chromatography or by absorbing and weighing the components with NH <sub>3</sub> absorbed by HCl, H <sub>2</sub> S by CdSO <sub>4</sub> , H <sub>2</sub> O by Drierite® and CO <sub>2</sub> by Ascarite®. Samples of liquid phase were allowed to come to ambient temperature and pressure and the components estimated. Further details in refs. 1 & 2.				No information				
				ESTIMATED ERROR:				
				REFERENCES:				
				1. Owens, J.L.; Cunningham, J.R.; Wilson, G.M. <i>Research Report RR-65, Gas Processors Association, Tulsa, Oklahoma, 1983</i>				
				2. Wilson, G.M.; Owens, J.L.; Cunningham, J.R. <i>Research Report RR-52, Gas Processors Association, Tulsa, Oklahoma, 1982.</i>				

COMPONENTS:				ORIGINAL MEASUREMENTS:				
1. Hydrogen sulfide; H <sub>2</sub> S; [7783-06-4] 2. Ammonia; NH <sub>3</sub> ; [7664-41-7]; 3. Carbon dioxide; CO <sub>2</sub> ; [124-38-9] 4. Water; H <sub>2</sub> O; [7732-18-5] 5. Carbon monoxide; CO; [630-08-0] 6. Nitrogen; N <sub>2</sub> ; [7727-37-9] 7. Methane; CH <sub>4</sub> ; [74-82-8] 8. Hydrogen; H <sub>2</sub> ; [1333-74-0]				Wilson, G.M.; Gillespie, P.C.; Owens, J.L.  <i>Proc. 64th Ann. Conv. Gas Processors Association, 1985, 282-288.</i>				
EXPERIMENTAL VALUES:								
T/°F	T/K*	Total pressure		Component	Composition		Partial pressure	
		/psia	/kPa*		liquid	vapor	/psia	/kPa*
100	310.93	1000	6895	NH <sub>3</sub>	2.11	0.036	0.36	2.48
				CO <sub>2</sub>	0.27	0.0012	0.012	0.083
				H <sub>2</sub> S	0.53	0.015	0.15	1.03
				H <sub>2</sub> O	97.01	0.093	0.93	6.41
				CO	0.021	26.93	269.3	1856.8
				N <sub>2</sub>	0.0052	10.33	103.4	712.9
				CH <sub>4</sub>	0.013	13.46	134.6	928.0
				H <sub>2</sub>	0.047	49.13	491.3	3387.4
200	366.48	500	3447	NH <sub>3</sub>	2.05	0.48	2.40	16.55
				CO <sub>2</sub>	0.25	0.32	1.61	11.10
				H <sub>2</sub> S	0.51	0.47	2.37	16.34
				H <sub>2</sub> O	97.15	2.24	11.21	77.29
				CO	0.0080	24.60	123.0	848.1
				N <sub>2</sub>	0.0025	9.53	47.6	328.2
				CH <sub>4</sub>	0.0058	12.58	62.9	433.7
				H <sub>2</sub>	0.0229	49.76	248.9	1716.1
200	366.48	500	3447	NH <sub>3</sub>	2.07	0.083	0.41	2.83
				CO <sub>2</sub>	1.62	28.46	142.3	981.1
				H <sub>2</sub> S	0.54	4.74	23.72	163.54
				H <sub>2</sub> O	95.74	2.16	10.79	74.39
				CO	-	13.17	65.85	454.02
				N <sub>2</sub>	-	5.01	25.07	172.85
				CH <sub>4</sub>	-	9.18	45.90	316.47
				H <sub>2</sub>	-	37.20	185.9	1281.7
200	366.48	1000	6895	NH <sub>3</sub>	2.02	0.28	2.75	18.96
				CO <sub>2</sub>	0.26	0.18	1.75	12.07
				H <sub>2</sub> S	0.52	0.26	2.64	18.20
				H <sub>2</sub> O	97.13	1.12	11.20	77.22
				CO	0.0162	24.58	245.8	1694.7
				N <sub>2</sub>	0.0048	9.84	98.4	678.4
				CH <sub>4</sub>	0.0103	12.68	126.8	874.3
				H <sub>2</sub>	0.0411	51.06	510.6	3520.5
300	422.04	500	3447	NH <sub>3</sub>	2.11	1.86	9.32	64.26
				CO <sub>2</sub>	0.25	9.90	49.52	341.43
				H <sub>2</sub> S	0.50	4.19	20.96	144.51
				H <sub>2</sub> O	97.10	13.07	65.35	450.57
				CO	0.0020	8.60	43.01	296.54
				N <sub>2</sub>	0.0019	7.89	39.46	272.07
				CH <sub>4</sub>	0.0053	11.69	58.45	403.00
				H <sub>2</sub>	0.0284	42.80	213.9	1474.8

\* estimated by compiler.

COMPONENTS:				ORIGINAL MEASUREMENTS:				
1. Hydrogen sulfide; H <sub>2</sub> S; [7783-06-4] 2. Ammonia; NH <sub>3</sub> ; [7664-41-7]; 3. Carbon dioxide; CO <sub>2</sub> ; [124-38-9] 4. Water; H <sub>2</sub> O; [7732-18-5] 5. Carbon monoxide; CO; [630-08-0] 6. Nitrogen; N <sub>2</sub> ; [7727-37-9] 7. Methane; CH <sub>4</sub> ; [74-82-8] 8. Hydrogen; H <sub>2</sub> ; [1333-74-0]				Wilson, G.M.; Gillespie, P.C.; Owens, J.L.  <i>Proc. 64th Ann. Conv. Gas Processors            Association, 1985, 282-288.</i>				
EXPERIMENTAL VALUES:								
T/°F	T/K*	Total pressure		Component	Composition		Partial pressure	
		/psia	/kPa*		liquid	vapor	/psia	/kPa*
300	422.04	500	3447	NH <sub>3</sub>	2.02	1.57	7.84	54.05
				CO <sub>2</sub>	0.60	29.20	146.0	1006.6
				H <sub>2</sub> S	0.52	4.68	23.40	161.34
				H <sub>2</sub> O	96.83	13.93	69.64	480.15
				CO	0	0	0	0
				N <sub>2</sub>	0.0024	6.40	32.02	220.77
				CH <sub>4</sub>	0.0065	10.09	50.44	347.77
				H <sub>2</sub>	0.0227	34.13	170.6	1176.2
300	422.04	1000	6895	NH <sub>3</sub>	2.01	0.69	6.94	47.85
				CO <sub>2</sub>	0.94	29.13	291.3	2008.4
				H <sub>2</sub> S	0.48	2.72	27.24	187.81
				H <sub>2</sub> O	96.49	6.69	66.94	461.54
				CO	0	0	0	0
				N <sub>2</sub>	0.0056	7.57	75.72	522.07
				CH <sub>4</sub>	0.0150	12.24	122.4	843.9
				H <sub>2</sub>	0.0560	40.96	409.5	2823.4
300	422.04	1000	6895	NH <sub>3</sub>	2.09	0.99	9.91	68.33
				CO <sub>2</sub>	0.18	4.28	42.80	295.10
				H <sub>2</sub> S	0.43	2.55	25.47	175.61
				H <sub>2</sub> O	97.20	6.54	65.37	450.71
				CO	0.0119	17.52	175.2	1208.0
				N <sub>2</sub>	0.0064	9.95	99.5	686.0
				CH <sub>4</sub>	0.0163	14.19	141.9	978.4
				H <sub>2</sub>	0.0637	43.98	439.9	3033.0
400	477.59	1000	6895	NH <sub>3</sub>	2.13	3.27	32.70	225.46
				CO <sub>2</sub>	0.45	22.28	222.8	1536.2
				H <sub>2</sub> S	0.84	12.44	124.5	858.4
				H <sub>2</sub> O	96.51	23.99	239.8	1653.4
				CO	0	0	0	0
				N <sub>2</sub>	0.0057	8.13	81.3	560.5
				CH <sub>4</sub>	0.0111	10.02	100.2	690.9
				H <sub>2</sub>	0.0571	19.87	198.7	1370.0
400	477.59	1000	6895	NH <sub>3</sub>	2.02	3.15	31.52	217.32
				CO <sub>2</sub>	0.77	27.15	271.5	1871.9
				H <sub>2</sub> S	0.61	8.18	81.77	563.78
				H <sub>2</sub> O	96.52	23.87	238.7	1645.8
				CO	0	0	0	0
				N <sub>2</sub>	0.0062	4.62	46.21	318.61
				CH <sub>4</sub>	0.0155	7.27	72.72	501.39
				H <sub>2</sub>	0.0556	25.76	257.6	1776.1

\* estimated by compiler.



<p>COMPONENTS:</p> <ol style="list-style-type: none"> <li>Hydrogen sulfide; H<sub>2</sub>S; [7783-06-4]</li> <li>Carbon dioxide; CO<sub>2</sub>; [124-38-9]</li> <li>Ammonia; NH<sub>3</sub>; [7664-41-7]</li> <li>Phenol; C<sub>6</sub>H<sub>6</sub>O; [108-95-2]</li> <li>Water; H<sub>2</sub>O; [7732-18-5]</li> </ol>	<p>ORIGINAL MEASUREMENTS:</p> <p>Golutvin, Yu. M.; Malysheva, T.V.; Skorobogatova, V.I.</p> <p><i>Izvest. Sibir. Otdel. Akad. Nauk. S.S.S.R.</i> 1958, No.8, 83-7.</p>																																																																								
<p>VARIABLES:</p> <p>Pressure of H<sub>2</sub>S &amp; CO<sub>2</sub></p>	<p>PREPARED BY:</p> <p>P.G.T. Fogg</p>																																																																								
<p>EXPERIMENTAL VALUES:</p> <p>Concentration of NH<sub>3</sub> before dissolution of H<sub>2</sub>S &amp; CO<sub>2</sub> = 0.0086 mol dm<sup>-3</sup>  Concentration of phenol before dissolution of H<sub>2</sub>S &amp; CO<sub>2</sub> = 0.0194 mol dm<sup>-3</sup></p> <table border="1" data-bbox="246 613 1042 1267"> <thead> <tr> <th colspan="2">Liquid phase</th> <th>Gas phase</th> </tr> <tr> <th>Conc. of H<sub>2</sub>S</th> <th>Conc. of CO<sub>2</sub></th> <th>P<sub>H<sub>2</sub>S</sub> / P<sub>CO<sub>2</sub></sub></th> </tr> <tr> <th>/mol dm<sup>-3</sup></th> <th>/mol dm<sup>-3</sup></th> <th></th> </tr> </thead> <tbody> <tr><td>0.000000</td><td>0.56960</td><td>0.0000</td></tr> <tr><td>0.024410</td><td>0.51930</td><td>0.0934</td></tr> <tr><td>0.058980</td><td>0.49870</td><td>0.3452</td></tr> <tr><td>0.062910</td><td>0.53830</td><td>0.4248</td></tr> <tr><td>0.063620</td><td>0.51370</td><td>0.2898</td></tr> <tr><td>0.071900</td><td>0.50350</td><td>0.4859</td></tr> <tr><td>0.078410</td><td>0.50330</td><td>0.4702</td></tr> <tr><td>0.089720</td><td>0.48910</td><td>0.5620</td></tr> <tr><td>0.109800</td><td>0.44220</td><td>0.5772</td></tr> <tr><td>0.133600</td><td>0.43280</td><td>0.8758</td></tr> <tr><td>0.136380</td><td>0.43070</td><td>0.7232</td></tr> <tr><td>0.184500</td><td>0.40810</td><td>1.0330</td></tr> <tr><td>0.199120</td><td>0.37210</td><td>1.3610</td></tr> <tr><td>0.298700</td><td>0.25220</td><td>2.9180</td></tr> <tr><td>0.317300</td><td>0.26090</td><td>2.8840</td></tr> <tr><td>0.381900</td><td>0.19600</td><td>4.4830</td></tr> <tr><td>0.404900</td><td>0.18320</td><td>4.6960</td></tr> <tr><td>0.417800</td><td>0.15380</td><td>5.1484</td></tr> <tr><td>0.477300</td><td>0.14178</td><td>7.1750</td></tr> <tr><td>0.498700</td><td>0.08856</td><td>15.6900</td></tr> <tr><td>0.599000</td><td>0.00000</td><td></td></tr> </tbody> </table> <p>T/K = 293.2; Total pressure = 1.013 bar</p> <p>Concentrations of H<sub>2</sub>S, CO<sub>2</sub> &amp; NH<sub>3</sub> include all ionic species derived from these compounds.</p>		Liquid phase		Gas phase	Conc. of H <sub>2</sub> S	Conc. of CO <sub>2</sub>	P <sub>H<sub>2</sub>S</sub> / P <sub>CO<sub>2</sub></sub>	/mol dm <sup>-3</sup>	/mol dm <sup>-3</sup>		0.000000	0.56960	0.0000	0.024410	0.51930	0.0934	0.058980	0.49870	0.3452	0.062910	0.53830	0.4248	0.063620	0.51370	0.2898	0.071900	0.50350	0.4859	0.078410	0.50330	0.4702	0.089720	0.48910	0.5620	0.109800	0.44220	0.5772	0.133600	0.43280	0.8758	0.136380	0.43070	0.7232	0.184500	0.40810	1.0330	0.199120	0.37210	1.3610	0.298700	0.25220	2.9180	0.317300	0.26090	2.8840	0.381900	0.19600	4.4830	0.404900	0.18320	4.6960	0.417800	0.15380	5.1484	0.477300	0.14178	7.1750	0.498700	0.08856	15.6900	0.599000	0.00000	
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<p>METHOD/APPARATUS/PROCEDURE:</p> <p>Premixed hydrogen sulfide and carbon dioxide were bubbled through an aqueous solution of ammonia and phenol in a thermostatted saturator for 4.5 to 5 hrs. The gas and liquid phases were analysed by chemical methods.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <ol style="list-style-type: none"> <li>from a Kipp's apparatus.</li> <li>by action of hydrochloric acid on marble chips.</li> </ol> <p>ESTIMATED ERROR:</p> <p>δT/K = ± 0.1 (authors)</p> <p>REFERENCES:</p>																																																																								