

<b>COMPONENTS:</b> (1) Copper(I) oxide; $\text{Cu}_2\text{O}$ ; [1317-39-1] (2) Ammonium hydroxide; $\text{NH}_4\text{OH}$ ; [1336-21-6] (3) Water; $\text{H}_2\text{O}$ ; [7732-18-5]	<b>ORIGINAL MEASUREMENTS:</b> Donnan, F. G.; Thomas, J. S. <i>J. Chem. Soc.</i> <u>1912</u> , 99, 1788-96.																																																												
<b>VARIABLES:</b> Concentration of ammonium hydroxide at 25°C.	<b>PREPARED BY:</b> T. P. Dirkse																																																												
<b>EXPERIMENTAL VALUES:</b> <p style="text-align: center;">Solubility of <math>\text{Cu}_2\text{O}</math> in aqueous <math>\text{NH}_4\text{OH}</math> at 25°C.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Preparation 1<sup>a</sup></th> <th colspan="2" style="text-align: center;">Preparation 2<sup>a</sup></th> </tr> <tr> <th style="text-align: center;"><math>C_{\text{NH}_4\text{OH}}/\text{mol kg}^{-1}</math></th> <th style="text-align: center;"><math>C_{\text{Cu}}/\text{mol kg}^{-1}</math></th> <th style="text-align: center;"><math>C_{\text{NH}_4\text{OH}}/\text{mol kg}^{-1}</math></th> <th style="text-align: center;"><math>C_{\text{Cu}}/\text{mol kg}^{-1}</math></th> </tr> </thead> <tbody> <tr><td style="text-align: center;">0.23</td><td style="text-align: center;">0.00566</td><td style="text-align: center;">0.46</td><td style="text-align: center;">0.00665</td></tr> <tr><td style="text-align: center;">0.71</td><td style="text-align: center;">0.00791</td><td style="text-align: center;">0.48</td><td style="text-align: center;">0.01050</td></tr> <tr><td style="text-align: center;">0.81</td><td style="text-align: center;">0.01080</td><td style="text-align: center;">1.33</td><td style="text-align: center;">0.01555</td></tr> <tr><td style="text-align: center;">0.95</td><td style="text-align: center;">0.01095</td><td style="text-align: center;">1.67</td><td style="text-align: center;">0.01650</td></tr> <tr><td style="text-align: center;">1.59</td><td style="text-align: center;">0.01597</td><td style="text-align: center;">3.19</td><td style="text-align: center;">0.02127</td></tr> <tr><td style="text-align: center;">1.92</td><td style="text-align: center;">0.01645</td><td style="text-align: center;">4.24</td><td style="text-align: center;">0.02366</td></tr> <tr><td style="text-align: center;">2.17</td><td style="text-align: center;">0.01660</td><td style="text-align: center;">4.60</td><td style="text-align: center;">0.02510</td></tr> <tr><td style="text-align: center;">2.69</td><td style="text-align: center;">0.01924</td><td style="text-align: center;">6.00</td><td style="text-align: center;">0.02603</td></tr> <tr><td style="text-align: center;">4.04</td><td style="text-align: center;">0.02081</td><td></td><td></td></tr> <tr><td style="text-align: center;">4.36</td><td style="text-align: center;">0.02340</td><td></td><td></td></tr> <tr><td style="text-align: center;">4.78</td><td style="text-align: center;">0.02375</td><td></td><td></td></tr> <tr><td style="text-align: center;">5.56</td><td style="text-align: center;">0.02565</td><td></td><td></td></tr> <tr><td style="text-align: center;">7.20</td><td style="text-align: center;">0.02670</td><td></td><td></td></tr> </tbody> </table> <p><sup>a</sup> Preparation 2 was lighter in color than Preparation 1 and was considered to contain a much larger proportion of very small micro-crystalline particles.</p>		Preparation 1 <sup>a</sup>		Preparation 2 <sup>a</sup>		$C_{\text{NH}_4\text{OH}}/\text{mol kg}^{-1}$	$C_{\text{Cu}}/\text{mol kg}^{-1}$	$C_{\text{NH}_4\text{OH}}/\text{mol kg}^{-1}$	$C_{\text{Cu}}/\text{mol kg}^{-1}$	0.23	0.00566	0.46	0.00665	0.71	0.00791	0.48	0.01050	0.81	0.01080	1.33	0.01555	0.95	0.01095	1.67	0.01650	1.59	0.01597	3.19	0.02127	1.92	0.01645	4.24	0.02366	2.17	0.01660	4.60	0.02510	2.69	0.01924	6.00	0.02603	4.04	0.02081			4.36	0.02340			4.78	0.02375			5.56	0.02565			7.20	0.02670		
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<b>AUXILIARY INFORMATION</b>																																																													
<b>METHOD/APPARATUS/PROCEDURE:</b> Mixtures were prepared under a hydrogen atmosphere. The flasks were sealed and rotated in a thermostat at 25°C for 2 to 4 weeks and then were allowed to settle for a week while still in the thermostat. The total $\text{NH}_3$ content was determined by distilling over from an excess of alkali. The copper content was determined by electrolysis after excess of $\text{HNO}_3$ had been added to the sample.	<b>SOURCE AND PURITY OF MATERIALS:</b> Equal weights of $\text{CuSO}_4$ and sucrose were dissolved in water, and sufficient $\text{KOH}$ was added to redissolve all the precipitate. On standing at 70°C, $\text{Cu}_2\text{O}$ precipitated from the solution. It was collected, washed with water and then with alcohol and ether, and dried over $\text{H}_2\text{SO}_4$ in a vacuum. Stock $\text{NH}_4\text{OH}$ was prepared by distilling ordinary concentrated $\text{NH}_4\text{OH}$ over lime and collecting the vapor in distilled water.																																																												
<b>ESTIMATED ERROR:</b> No information is given.																																																													
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