

<p>COMPONENTS:</p> <p>1. Ammonium pyroselenite; $(\text{NH}_4)_2\text{Se}_2\text{O}_5$; [13597-78-9]</p> <p>2. Water; H_2O; [7732-18-5]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Janickis, J. <i>Z. Anorg. Allgem. Chem.</i> <u>1934</u>, 218, 89-103.</p>																																																												
<p>VARIABLES:</p> <p>Temperature: 258 - 343 K</p>	<p>PREPARED BY:</p> <p>Mary R. Masson</p>																																																												
<p>EXPERIMENTAL VALUES:</p> <table border="1" data-bbox="315 504 1052 927"> <thead> <tr> <th>t/°C</th> <th>$(\text{NH}_4)_2\text{Se}_2\text{O}_5$ mass %</th> <th>$(\text{NH}_4)_2\text{Se}_2\text{O}_5^a$ mol/kg</th> <th>Solid phase</th> </tr> </thead> <tbody> <tr><td>-15.0</td><td>49.62</td><td>3.595</td><td>B</td></tr> <tr><td>-10.0</td><td>52.86</td><td>4.092</td><td>B</td></tr> <tr><td>0.0</td><td>56.84</td><td>4.806</td><td>B</td></tr> <tr><td>+15.0</td><td>66.65</td><td>7.294</td><td>B</td></tr> <tr><td>20.0</td><td>69.50</td><td>8.316</td><td>B</td></tr> <tr><td>25.0</td><td>73.24</td><td>9.989</td><td>B</td></tr> <tr><td>30.0</td><td>79.74</td><td>14.364</td><td>B</td></tr> <tr><td>32.0</td><td>82.29</td><td>16.958</td><td>B</td></tr> <tr><td>32.0</td><td>86.23</td><td>22.855</td><td>A</td></tr> <tr><td>33.2</td><td>86.35</td><td>23.088</td><td>A</td></tr> <tr><td>34.0</td><td>86.43</td><td>23.245</td><td>A</td></tr> <tr><td>45.1</td><td>87.23</td><td>24.930</td><td>A</td></tr> <tr><td>57.2</td><td>88.78</td><td>28.878</td><td>A</td></tr> <tr><td>70.1</td><td>90.56</td><td>35.012</td><td>A</td></tr> </tbody> </table> <p>^a Molalities calculated by the compiler.</p> <p>^b Solid phases: A - $(\text{NH}_4)_2\text{Se}_2\text{O}_5$, B - $(\text{NH}_4)_2\text{Se}_2\text{O}_5 \cdot 3\text{H}_2\text{O}$</p>		t/°C	$(\text{NH}_4)_2\text{Se}_2\text{O}_5$ mass %	$(\text{NH}_4)_2\text{Se}_2\text{O}_5^a$ mol/kg	Solid phase	-15.0	49.62	3.595	B	-10.0	52.86	4.092	B	0.0	56.84	4.806	B	+15.0	66.65	7.294	B	20.0	69.50	8.316	B	25.0	73.24	9.989	B	30.0	79.74	14.364	B	32.0	82.29	16.958	B	32.0	86.23	22.855	A	33.2	86.35	23.088	A	34.0	86.43	23.245	A	45.1	87.23	24.930	A	57.2	88.78	28.878	A	70.1	90.56	35.012	A
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<p>METHOD APPARATUS/PROCEDURE:</p> <p>For each temperature, a saturated solution was prepared by stirring the salt in water inside a stoppered 4-cm diameter test-tube. Small samples of solution were removed at intervals for analysis, in order to test for attainment of equilibrium. The time required varied between 2½ and 24 hr. The solutions were analysed for SeO_2 by the method of Norris and Fay (1). The solid phases were identified by analysis.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>ESTIMATED ERROR: Temperature: -20 - 0°C ±0.2°C, 0 - 60°C ±0.1°C, 60 - 110°C ±0.3°C.</p> <p>REFERENCES: 1. Norris, J.F.; Fay, H. <i>Amer. Chem. J.</i> <u>1896</u>, 18, 703; <u>1900</u>, 23, 119.</p>																																																												

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VARIABLES: Temperature: 256 - 273 K Composition	PREPARED BY: Mary R. Masson																																																						
EXPERIMENTAL VALUES: <p style="text-align: center;">Composition of equilibrium solutions</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">t/°C</th> <th style="text-align: center;">$(\text{NH}_4)_2\text{Se}_2\text{O}_5$ mol/dm³</th> <th style="text-align: center;">$(\text{NH}_4)_2\text{Se}_2\text{O}_5$ mass %</th> <th style="text-align: center;">$(\text{NH}_4)_2\text{Se}_2\text{O}_5^{\text{a}}$ mol/kg</th> <th style="text-align: center;">$\text{NH}_4\text{HSeO}_3^{\text{a}}$ mol/kg</th> <th style="text-align: center;">Solid^b phase</th> </tr> </thead> <tbody> <tr><td>- 0.148</td><td>0.02</td><td>0.547</td><td>0.0201</td><td>0.0415</td><td>ice</td></tr> <tr><td>- 0.373</td><td>0.05</td><td>1.36</td><td>0.0503</td><td>0.1007</td><td>"</td></tr> <tr><td>- 0.697</td><td>0.1</td><td>2.69</td><td>0.1009</td><td>0.2021</td><td>"</td></tr> <tr><td>- 1.365</td><td>0.2</td><td>5.29</td><td>0.204</td><td>0.410</td><td>"</td></tr> <tr><td>- 3.18</td><td>0.5</td><td>12.57</td><td>0.525</td><td>1.059</td><td>"</td></tr> <tr><td>- 6.23</td><td>1.004</td><td>23.35</td><td>1.112</td><td>2.269</td><td>"</td></tr> <tr><td>-13.0</td><td>2.008</td><td>40.7</td><td>2.504</td><td>5.244</td><td>"</td></tr> <tr><td>-16.9</td><td>satd.</td><td>49.0</td><td>3.507</td><td>7.49</td><td>ice + $(\text{NH}_4)_2\text{Se}_2\text{O}_5 \cdot 3\text{H}_2\text{O}$</td></tr> </tbody> </table> <p>^a Molalities calculated by the compiler.</p>		t/°C	$(\text{NH}_4)_2\text{Se}_2\text{O}_5$ mol/dm ³	$(\text{NH}_4)_2\text{Se}_2\text{O}_5$ mass %	$(\text{NH}_4)_2\text{Se}_2\text{O}_5^{\text{a}}$ mol/kg	$\text{NH}_4\text{HSeO}_3^{\text{a}}$ mol/kg	Solid ^b phase	- 0.148	0.02	0.547	0.0201	0.0415	ice	- 0.373	0.05	1.36	0.0503	0.1007	"	- 0.697	0.1	2.69	0.1009	0.2021	"	- 1.365	0.2	5.29	0.204	0.410	"	- 3.18	0.5	12.57	0.525	1.059	"	- 6.23	1.004	23.35	1.112	2.269	"	-13.0	2.008	40.7	2.504	5.244	"	-16.9	satd.	49.0	3.507	7.49	ice + $(\text{NH}_4)_2\text{Se}_2\text{O}_5 \cdot 3\text{H}_2\text{O}$
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METHOD APPARATUS/PROCEDURE: Freezing points of prepared solutions were measured by use of a Beckman-type apparatus (1). Determinations were repeated until the desired reproducibility was attained. Each reported value is the mean of at least three determinations.	SOURCE AND PURITY OF MATERIALS: Ammonium pyroselenite was prepared from selenious acid and ammonia solution. ESTIMATED ERROR: Temperature reproducibility 0.5% REFERENCES: 1. Ostwald, W.; Luther, R. <i>Hand- und Hilfsbuch zur Ausföhrung physikochemischer Messungen</i> , 5th Ed., Akademische Verlag., Leipzig, <u>1931</u> .																																																						