

COMPONENTS:		ORIGINAL MEASUREMENTS:	
1. Sodium pyroselenite; $\text{Na}_2\text{Se}_2\text{O}_5$; [24458-98-8] 2. Water; H_2O ; [7732-18-5]		Janitzki, J. <i>Z. Anorg. Allgem. Chem.</i> <u>1932</u> , 205, 49-75.	
VARIABLES:		PREPARED BY:	
Temperature: 264 - 369 K		Mary R. Masson	
EXPERIMENTAL VALUES:			
t/°C	$\text{Na}_2\text{S}_2\text{O}_5$ mass %	$\text{Na}_2\text{S}_2\text{O}_5^a$ mol/kg	Solid ^b phase
- 9.3	31.66	1.632	C
0.0	38.45	2.200	C
+ 8.1	43.97	2.764	C
14.6	49.19	3.410	C
20.0	54.02	4.138	C
25.4	60.32	5.355	C
27.8	63.52	6.133	C
27.0	62.52	5.876	B
28.8	62.69	5.918	B
28.8	62.88	5.967	B
31.5	63.86*	6.224	B
32.0	63.14	6.034	B
32.0	63.10	6.023	B
34.9	63.61	6.157	B
37.3	64.63*	6.436	B
37.3	63.98	6.257	B
39.7	64.16	6.306	B
40.1	64.27	6.336	B
45.2	65.15	6.585	B
50.0	65.98	6.831	B
59.9	67.40	7.282	B
79.2	72.26	9.175	B
89.0	74.36	10.215	B
91.8	75.32	10.750	B
92.8	75.67	10.955	B
93.8	75.95	11.124	A
96.0	76.05	11.185	A
(continued on next page)			
AUXILIARY INFORMATION			
METHOD APPARATUS/PROCEDURE:		SOURCE AND PURITY OF MATERIALS:	
<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 establish whether equilibrium had been attained. The time required varied between 2½ and 145 hr. The solutions were analysed for SeO_2 by the methods of Norris and Fay (1). The solid phases were identified by analysis.</p>			
		ESTIMATED ERROR:	
		Temperature: -20 - 0°C ±0.2°C, 0 - 60°C ±0.1°C, 60 - 110°C ±0.3°C Analyses: no estimate possible.	
		REFERENCES:	
		1. Norris, J.F.; Fay, H. <i>Amer. Chem. J.</i> <u>1896</u> , 18, 703; <u>1900</u> , 23, 119.	

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EXPERIMENTAL VALUES (continued):				
t/°C	$\text{Na}_2\text{S}_2\text{O}_5$ mass %	$\text{Na}_2\text{S}_2\text{O}_5^{\text{a}}$ mol/kg	Solid ^b phase	
98.4	76.25	11.309	A	
101.4	76.61	11.537	A	
104.8	76.98	11.779	A	
109.5	77.57	12.181	A	
<p>^a Molalities calculated by the compiler.</p> <p>^b Solid phases: A - $\text{Na}_2\text{Se}_2\text{O}_5$, B - NaHSeO_3, C - $\text{NaHSeO}_3 \cdot 3\text{H}_2\text{O}$</p>				

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<p>VARIABLES:</p> <p>Temperature: 264 - 273 K Composition</p>	<p>PREPARED BY:</p> <p>Mary R. Masson</p>																																																
<p>EXPERIMENTAL VALUES:</p> <p style="text-align: center;">Compositions 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;">$\text{Na}_2\text{Se}_2\text{O}_5$ mol/dm³</th> <th style="text-align: center;">$\text{Na}_2\text{Se}_2\text{O}_5$ mass %</th> <th style="text-align: center;">$\text{Na}_2\text{Se}_2\text{O}_5^a$ mol/kg</th> <th style="text-align: center;">NaHSeO_3^a mol/kg</th> <th style="text-align: left;">Solid phase</th> </tr> </thead> <tbody> <tr> <td>-0.157</td> <td>0.02</td> <td>0.5665</td> <td>0.0201</td> <td>0.0401</td> <td>ice</td> </tr> <tr> <td>-0.360</td> <td>0.05</td> <td>1.406</td> <td>0.0502</td> <td>0.1005</td> <td>"</td> </tr> <tr> <td>-0.697</td> <td>0.1</td> <td>2.787</td> <td>0.1010</td> <td>0.2023</td> <td>"</td> </tr> <tr> <td>-1.34</td> <td>0.2</td> <td>5.44</td> <td>0.2025</td> <td>0.4066</td> <td>"</td> </tr> <tr> <td>-3.15</td> <td>0.5</td> <td>12.77</td> <td>0.5154</td> <td>1.041</td> <td>"</td> </tr> <tr> <td>-6.11</td> <td>1</td> <td>23.24</td> <td>1.066</td> <td>2.173</td> <td>"</td> </tr> <tr> <td>-9.3</td> <td>satd.</td> <td>31.66</td> <td>1.631</td> <td>3.361</td> <td>ice + $\text{NaHSeO}_3 \cdot 3\text{H}_2\text{O}$</td> </tr> </tbody> </table> <p>^a Molalities calculated by the compiler.</p>		t/°C	$\text{Na}_2\text{Se}_2\text{O}_5$ mol/dm ³	$\text{Na}_2\text{Se}_2\text{O}_5$ mass %	$\text{Na}_2\text{Se}_2\text{O}_5^a$ mol/kg	NaHSeO_3^a mol/kg	Solid phase	-0.157	0.02	0.5665	0.0201	0.0401	ice	-0.360	0.05	1.406	0.0502	0.1005	"	-0.697	0.1	2.787	0.1010	0.2023	"	-1.34	0.2	5.44	0.2025	0.4066	"	-3.15	0.5	12.77	0.5154	1.041	"	-6.11	1	23.24	1.066	2.173	"	-9.3	satd.	31.66	1.631	3.361	ice + $\text{NaHSeO}_3 \cdot 3\text{H}_2\text{O}$
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<p>METHOD APPARATUS/PROCEDURE:</p> <p>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.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>Sodium hydrogen selenite was prepared from selenious acid and sodium hydroxide.</p> <p>ESTIMATED ERROR:</p> <p>Temperature reproducibility 0.5%</p> <p>REFERENCES:</p> <p>1. Ostwald, W.; Luther, R. <i>Hand- und Hilfsbuch zur Ausführung physikochemischer Messungen</i>, 5th Ed., Akademische Verlag., Leipzig, <u>1931</u>.</p>																																																