

<p>COMPONENTS:</p> <ol style="list-style-type: none"> 1. Sodium sulfite; Na_2SO_3; [7757-833-7] 2. Sodium sulfate; Na_2SO_4; [7757-82-6] 3. Sodium chloride; NaCl; [7647-14-5] 4. Water; H_2O; [7732-18-5] 	<p>ORIGINAL MEASUREMENTS:</p> <p>Durymanova, M.A.; Telepneva, A.E.; Zagrebina, L.A.</p> <p><i>Zh. Neorg. Khim.</i> 1971, 16, 500-3; <i>Russ. J. Inorg. Chem. (eng. Transl.)</i> 1971, 16, 264-6.</p>
<p>VARIABLES:</p> <p>One temperature: 298 K Concentrations of the components</p>	<p>PREPARED BY:</p> <p>Mary R. Masson</p>
<p>EXPERIMENTAL VALUES:</p> <div style="text-align: center;"> </div> <p>(continued on next page)</p>	
<p>AUXILIARY INFORMATION</p>	
<p>METHOD APPARATUS/PROCEDURE:</p> <p>The experiments were done under isothermal conditions in an ordinary water thermostat; 7 days were required for equilibrium to be reached.</p> <p>Sodium sulfite was determined iodometrically, sodium chloride by titration with mercury nitrate, and sodium sulfate gravimetrically by precipitation of the sulfate with barium chloride.</p> <p>The compositions of the solids were determined by Schreinemakers' method, and by chemical and crystal-optical analyses.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>Chemically pure grade sodium chloride and sodium sulfate were used. Sodium sulfite was prepared by saturating cp sodium carbonate with 100% of sulfur dioxide.</p> <hr/> <p>ESTIMATED ERROR:</p> <p>Temperature: ± 0.05 K Analyses: no estimate possible.</p> <hr/> <p>REFERENCES:</p>

COMPONENTS:				ORIGINAL MEASUREMENTS:				
1. Sodium sulfite; Na_2SO_3 ; [7757-83-7]				Durymanova, M.A.; Telepneva, A.E.; Zagrebina, L.A.				
2. Sodium sulfate; Na_2SO_4 ; [7757-82-6]				Zh. Neorg. Khim. 1971, 16, 500-3; Russ. J. Inorg. Chem. (Eng. Transl.) 1971, 16, 264-6.				
3. Sodium chloride; NaCl ; [7647-14-5]								
4. Water; H_2O ; [7732-18-5]								
EXPERIMENTAL VALUES (continued):								
	Na_2SO_3 mass %	NaCl mass %	Na_2SO_4 mass %	Na_2SO_3^a mol/kg	NaCl^a mol/kg	Na_2SO_4^a mol/kg	Solid ^c phase	
I	-	14.20	15.00	0.	3.432	1.492	A,B	
	3.89	14.33	12.40	0.445	3.534	1.258	A,B	
	4.03	14.25	12.66	0.463	3.531	1.291	A,B	
	6.14	14.15	11.56	0.715	3.553	1.194	A,B	
II	7.49	13.95	10.61	0.875	3.513	1.099	A,B,C	
	7.94	14.00	10.39	0.931	3.540	1.081	A,B,C	
III	-	22.90	6.90	0.	5.582	0.692	A,D	
	2.00	22.80	7.05	0.233	5.725	0.728	A,D	
	3.70	20.63	6.89	0.427	5.132	0.705	A,D	
	3.75	20.84	6.69	0.433	5.189	0.685	A,D	
	4.10	26.50	6.90	0.520	7.255	0.777	A,D	
	4.43	20.78	6.68	0.516	5.221	0.690	A,C,D	
IV	4.97	20.71	6.83	0.584	5.251	0.712	A,C,D	
	4.98	20.20	7.20	0.584	5.112	0.750	A,C,D	
	5.60	22.90	-	0.621	5.480	0.	A,C,D	
V	4.20	22.50	2.80	0.473	5.461	0.280	C,D	
	4.43	22.46	3.48	0.505	5.520	0.352	C,D	
	4.31	21.78	4.96	0.496	5.405	0.506	C,D	
	4.16	21.84	5.53	0.482	5.458	0.569	C,D	
	6.85	16.09	9.58	0.805	4.080	0.999	A,C	
	12.67	6.16	14.66	1.511	1.585	1.552	B,E	
	13.71	4.83	15.57	1.651	1.254	1.664	B,E	
	14.49	3.39	15.92	1.737	0.876	1.693	B,E	
	15.60	1.73	15.43	1.841	0.440	1.616	B,E	
	16.80	-	14.50	1.940	0.	1.486	B,E	
VII	14.70	11.30	-	1.576	2.613	0.	C,E	
	13.60	11.50	2.50	1.490	2.718	0.243	C,E	
	13.29	11.27	5.50	1.508	2.757	0.554	C,E	
	12.10	10.80	6.60	1.362	2.621	0.659	C,E	
	12.61	11.28	7.49	1.458	2.813	0.768	C,E	
	11.59	11.19	8.85	1.345	2.801	0.911	C,E	
	11.92	11.50	9.45	1.409	2.931	0.991	C,E	
	11.55	11.02	10.14	1.362	2.802	1.061	C,E	
	10.90	10.00	10.50	1.261	2.494	1.078	C,E	
	11.52	10.85	11.70	1.386	2.816	1.249	C,E	
	VIII	11.20	10.60	13.93	1.383	2.822	1.526	B,C,E
		9.60	9.70	13.50	1.133	2.470	1.414	B,C,E

a Molalities calculated by the compiler.

b Solid phases: A - solid solutions of Na_2SO_4 with a little Na_2SO_3 ,
 B - solid solutions of $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$,
 C - solid solutions of Na_2SO_3 with a little Na_2SO_4 ,
 D - NaCl ,
 E - solid solutions of $\text{Na}_2\text{SO}_3 \cdot 7\text{H}_2\text{O}$ and $\text{Na}_2\text{SO}_4 \cdot 7\text{H}_2\text{O}$

COMPONENTS:		ORIGINAL MEASUREMENTS:				
1. Sodium sulfite; Na ₂ SO ₃ ; [7757-83-7]		Durymanova, N.A.; Telepneva, A.E.				
2. Sodium sulfate; Na ₂ SO ₄ ; [7757-82-6]		Zh. Priklad. Khim. 1972, 45, 1610-12; J. Appl. Chem. USSR (Eng. Transl.) 1972, 45, 1680-2.				
3. Sodium chloride; NaCl; [7647-14-5]						
4. Water; H ₂ O; [7732-18-5]						
VARIABLES:		PREPARED BY:				
Concentrations of the components One temperature: 373 K		Mary R. Masson				
EXPERIMENTAL VALUES:						
<u>Composition of equilibrium solutions at 100°C</u>						
Na ₂ SO ₃ mass %	NaCl mass %	Na ₂ SO ₄ mass %	Na ₂ SO ₃ ^a mol/kg	NaCl ^a mol/kg	Na ₂ SO ₄ ^a mol/kg	Solid ^b phase
2.1	27.0	-	0.235	6.516	0.	F + B
2.1	26.2	1.6	0.238	6.395	0.543	F + B
2.0	25.0	2.3	0.224	6.051	0.774	F,B,C
2.3	25.8	2.4	0.263	6.352	0.821	F,B,C
2.2	25.7	2.3	0.250	6.300	0.784	F,B,C
1.4	25.6	3.4	0.160	6.294	1.162	F,C
1.3	25.5	3.7	0.148	6.278	1.266	F,C
0.9	25.5	4.0	0.103	6.269	1.367	F,C,D
0.8	25.5	3.9	0.091	6.251	1.329	F,D
-	25.9	4.4	0.	6.359	1.502	F,D
1.1	23.4	4.8	0.123	5.664	1.615	C,D
1.6	20.8	7.1	0.180	5.049	2.396	C,D
1.5	17.8	7.9	0.163	4.184	2.581	C,D
2.6	12.2	12.0	0.282	2.852	3.899	C,D
3.6	9.3	15.5	0.399	2.223	5.149	C,D
4.5	6.0	18.4	0.502	1.444	6.156	C,D
5.1	3.0	22.1	0.580	0.735	7.531	C,D
6.5	-	24.8	0.751	0.	8.587	C,D
2.5	23.8	3.1	0.281	5.768	1.044	B,C
2.6	23.3	3.2	0.291	5.623	1.074	B,C
3.6	19.8	4.5	0.396	4.699	1.485	B,C
(continued on next page)						
AUXILIARY INFORMATION						
METHOD APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:			
The systems were studied under isothermal conditions in a thermostat filled with glycerol. Equilibrium was reached after 5 days. Sodium sulfite was determined iodometrically, sodium chloride by titration with mercuric nitrate solution, and sodium sulfate by precipitation of the sulfate as barium sulfate, and weighing. The identities of the solids were determined by Schreinemakers' method.			Sodium chloride and sodium sulfate were of c.p. grade. Sodium sulfite was prepared by saturating aqueous c.p. sodium carbonate with the stoichiometric amount of sulfur dioxide.			
			ESTIMATED ERROR: Temperature: ±0.5 K Analyses: no estimate possible.			
			REFERENCES:			

COMPONENTS:

1. Sodium sulfite; Na_2SO_3 ; [7757-83-7]
2. Sodium sulfate; Na_2SO_4 ; [7757-82-6]
3. Sodium chloride; NaCl ; [7647-14-5]
4. Water; H_2O ; [7732-18-5]

ORIGINAL MEASUREMENTS:

Durymanova, M.A.; Telepneva, A.E.

Zh. Priklad. Khim. 1972, 45, 1610-12; *J. Appl. Chem. USSR (Eng. Transl.)* 1972, 45, 1680-2.

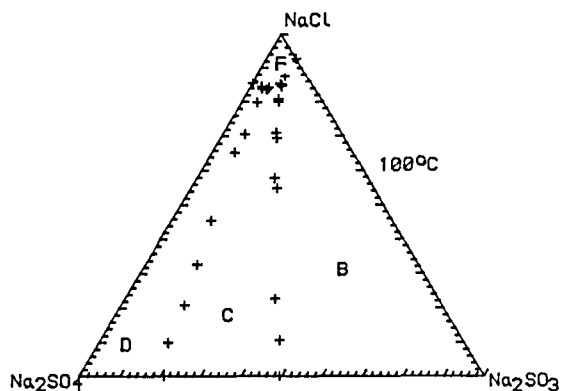
EXPERIMENTAL VALUES (continued):

Composition of equilibrium solutions at 100°C

Na_2SO_3 mass %	NaCl mass %	Na_2SO_4 mass %	Na_2SO_3^a mol/kg	NaCl^a mol/kg	Na_2SO_4^a mol/kg	Solid ^b phase
3.8	19.1	4.6	0.416	4.508	1.509	B,C
5.2	15.7	6.3	0.567	3.690	2.058	B,C
7.6	19.6	8.6	0.939	5.224	3.186	B,C
10.1	6.2	11.0	1.102	1.459	3.599	B,C
12.4	3.0	12.7	1.368	0.714	4.202	B,C
14.4	-	14.75	1.613	0.	4.952	B,C

^a Molalities calculated by the compiler.

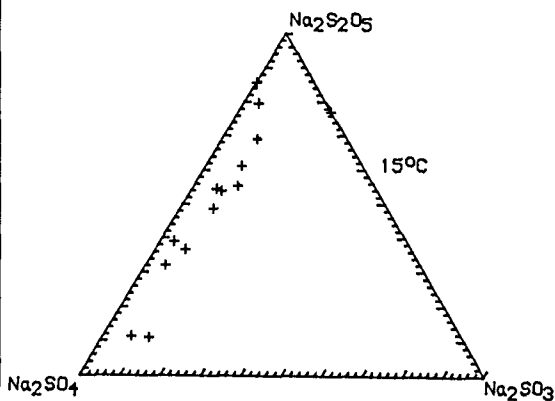
- ^b Solid phases: B - mixture of Na_2SO_3 with a small amount of Na_2SO_4
 C - mixture of 25% Na_2SO_3 with 75% Na_2SO_4
 D - mixture of Na_2SO_4 with a small amount of Na_2SO_3
 F - NaCl



COMPONENTS: 1. Sodium sulfite; Na_2SO_3 ; [7757-83-7] 2. Sodium pyrosulfite; $\text{Na}_2\text{S}_2\text{O}_5$; [7681-57-4] 3. Sodium sulfate; Na_2SO_4 ; [7757-82-6] 4. Water; H_2O ; [7732-18-5]	ORIGINAL MEASUREMENTS: Kuznetsova, A.G.; Yaroshenko, L.B. <i>Zh. Priklad. Khim.</i> 1981, 54, 2197-2201; <i>J. Appl. Chem. USSR (Eng. Transl.)</i> 1981, 54, 1929-32.																																																																																																																								
VARIABLES: Concentrations of the components One temperature: 298 K	PREPARED BY: Mary R. Masson																																																																																																																								
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<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Na_2SO_3</th> <th>NaHSO_3</th> <th>Na_2SO_4</th> <th>Na_2SO_3^a</th> <th>NaHSO_3^a</th> <th>Na_2SO_4^a</th> </tr> <tr> <th>mass %</th> <th>mass %</th> <th>mass %</th> <th>mol/kg</th> <th>mol/kg</th> <th>mol/kg</th> </tr> </thead> <tbody> <tr><td>15.150</td><td>5.170</td><td>13.910</td><td>1.828</td><td>0.755</td><td>1.489</td></tr> <tr><td>14.180</td><td>4.850</td><td>13.610</td><td>1.670</td><td>0.692</td><td>1.422</td></tr> <tr><td>13.900</td><td>5.300</td><td>13.510</td><td>1.641</td><td>0.769</td><td>1.415</td></tr> <tr><td>10.320</td><td>7.260</td><td>11.070</td><td>1.148</td><td>0.978</td><td>1.09</td></tr> <tr><td>3.140</td><td>16.560</td><td>12.230</td><td>0.366</td><td>2.338</td><td>1.265</td></tr> <tr><td>8.060</td><td>16.030</td><td>13.200</td><td>1.020</td><td>2.456</td><td>1.482</td></tr> <tr><td>9.620</td><td>14.600</td><td>12.560</td><td>1.207</td><td>2.219</td><td>1.399</td></tr> <tr><td>3.580</td><td>34.820</td><td>7.250</td><td>0.523</td><td>6.157</td><td>0.939</td></tr> <tr><td>7.560</td><td>30.910</td><td>6.310</td><td>1.086</td><td>5.379</td><td>0.804</td></tr> <tr><td>9.930</td><td>23.750</td><td>4.440</td><td>1.273</td><td>3.688</td><td>0.505</td></tr> <tr><td>9.300</td><td>25.260</td><td>4.300</td><td>1.207</td><td>3.970</td><td>0.495</td></tr> <tr><td>11.670</td><td>27.990</td><td>5.060</td><td>1.675</td><td>4.866</td><td>0.644</td></tr> <tr><td>12.050</td><td>25.880</td><td>1.970</td><td>1.591</td><td>4.138</td><td>0.231</td></tr> <tr><td>10.950</td><td>23.860</td><td>3.850</td><td>1.416</td><td>3.738</td><td>0.442</td></tr> <tr><td>11.010</td><td>24.960</td><td>7.230</td><td>1.538</td><td>4.223</td><td>0.896</td></tr> <tr><td>10.500</td><td>24.330</td><td>7.090</td><td>1.434</td><td>4.026</td><td>0.859</td></tr> <tr><td>11.720</td><td>11.320</td><td>12.990</td><td>1.454</td><td>1.701</td><td>1.430</td></tr> <tr><td>13.120</td><td>13.210</td><td>12.210</td><td>1.694</td><td>2.066</td><td>1.399</td></tr> </tbody> </table> <p>^a Molalities calculated by the compiler. Solid phases: A - $\text{Na}_2\text{SO}_3 \cdot 7\text{H}_2\text{O}$, B - $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$, C - $\text{Na}_2\text{S}_2\text{O}_5 \cdot 6\text{Na}_2\text{SO}_4$, D - $\text{Na}_2\text{S}_2\text{O}_5$</p>		Na_2SO_3	NaHSO_3	Na_2SO_4	Na_2SO_3^a	NaHSO_3^a	Na_2SO_4^a	mass %	mass %	mass %	mol/kg	mol/kg	mol/kg	15.150	5.170	13.910	1.828	0.755	1.489	14.180	4.850	13.610	1.670	0.692	1.422	13.900	5.300	13.510	1.641	0.769	1.415	10.320	7.260	11.070	1.148	0.978	1.09	3.140	16.560	12.230	0.366	2.338	1.265	8.060	16.030	13.200	1.020	2.456	1.482	9.620	14.600	12.560	1.207	2.219	1.399	3.580	34.820	7.250	0.523	6.157	0.939	7.560	30.910	6.310	1.086	5.379	0.804	9.930	23.750	4.440	1.273	3.688	0.505	9.300	25.260	4.300	1.207	3.970	0.495	11.670	27.990	5.060	1.675	4.866	0.644	12.050	25.880	1.970	1.591	4.138	0.231	10.950	23.860	3.850	1.416	3.738	0.442	11.010	24.960	7.230	1.538	4.223	0.896	10.500	24.330	7.090	1.434	4.026	0.859	11.720	11.320	12.990	1.454	1.701	1.430	13.120	13.210	12.210	1.694	2.066	1.399
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METHOD/APPARATUS/PROCEDURE: The isothermal procedure was used. The desired amounts of salts and water were loaded into a vessel and stirred for 6 hr in a thermostat. Sodium hydrogen sulfite in the solution was determined by oxidation with hydrogen peroxide and titration of the H_2SO_4 liberated; sulfite plus hydrogen sulfite was determined iodometrically; and sulfite, hydrogen sulfite plus sulfate was determined as sulfate by titration with barium chloride (nitchromazo indicator) after oxidation with hydrogen peroxide. The solid phases were dried in air after washing with ethyl acetone. The solid phase composition was determined by the coordinate chain method of Noskov (1), and checked by chemical analysis.	SOURCE AND PURITY OF MATERIALS: "Chemically pure" grade sodium sulfate and sodium pyrosulfate, and "special-purity" sodium sulfite was used.																																																																																																																								
ESTIMATED ERROR: Temperature: a thermostat was used, but the error was not stated. Analyses: no estimate possible.																																																																																																																									
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COMPONENTS: 1. Sodium sulfite; Na_2SO_3 ; [7757-83-7] 2. Sodium pyrosulfite; $\text{Na}_2\text{S}_2\text{O}_5$; [7681-57-4] 3. Sodium sulfate; Na_2SO_4 ; [7757-82-6] 4. Water; H_2O ; [7732-18-5]				ORIGINAL MEASUREMENTS: Sotova, N.N.; Kuznetsova, A.G. Torocheshnikov, N.S. <i>Zh. Priklad. Khim.</i> <u>1978</u> , <i>51</i> , 940-3; <i>J. Appl. Chem. USSR (Eng. Transl.)</i> <u>1978</u> , <i>51</i> , 905-8.			
VARIABLES: One temperature: 273 K Concentrations of the components				PREPARED BY: Mary R. Masson			
EXPERIMENTAL VALUES: <u>Composition of equilibrium solutions at 0°C</u>							
Na_2SO_3	' NaHSO_3 '	SO_2 total	Na_2SO_4	Na_2SO_3^a	' NaHSO_3 ' ^a	Na_2SO_4^a	Solid ^b
mass %	mass %	mass %	mass %	mol/kg	mol/kg	mol/kg	phase
11.94	0.0	6.11	1.60	1.096	0.	0.130	A,B
11.82	2.39	7.47	1.25	1.109	0.272	0.104	A,B
10.92	4.40	8.25	0.91	1.034	0.505	0.076	A,B
10.46	8.04	10.25	0.65	1.026	0.056	0.057	A,B
9.59	8.16	8.89	0.51	0.931	0.959	0.044	A,B
10.21	12.3	12.74	0.35	1.050	1.532	0.032	A,B
9.09	11.67	11.8	0.42	0.915	1.423	0.038	A,B
9.27	16.19	14.67	0.06	0.987	2.089	0.006	A,B
8.03	16.65	14.32	0.04	0.846	2.125	0.004	A,B
0.0	34.6	21.3	0.61	0.	5.132	0.066	A,C
0.77	35.48	22.21	0.1	0.096	5.357	0.011	A,C
4.54	32.64	22.37	0.0	0.573	4.993	0.	B,C
5.11	34.82	24.0	0.20	0.677	5.589	0.024	B,C
5.03	33.07	22.89	0.23	0.647	5.153	0.026	A,B,C
^a Molalities calculated by the compiler.							
^b Solid phases: A - $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$, B - $\text{Na}_2\text{SO}_3 \cdot 7\text{H}_2\text{O}$, C - $\text{Na}_2\text{S}_2\text{O}_5 \cdot 6\text{H}_2\text{O}$							
Note: the original paper includes a diagram with another dimension (water number).							
AUXILIARY INFORMATION							
METHOD APPARATUS/PROCEDURE: The isothermal method was used. The appropriate salts were added to eutonic solutions of the three-component systems. The systems were equilibrated for 6 hr, and the components determined as before (1).				SOURCE AND PURITY OF MATERIALS. Analytical-grade sodium pyrosulfite and sodium sulfate, and ultrapure sodium sulfite were used.			
				ESTIMATED ERROR: Temperature: ± 0.2 K			
				REFERENCES. 1. Sotova, N.N.; Kuznetsova, A.G.; Torocheshnikov, N.S. <i>Zh. Priklad. Khim.</i> <u>1978</u> , <i>51</i> , 779.			

COMPONENTS: 1. Sodium sulfite; Na_2SO_3 ; [7757-83-7] 2. Sodium pyrosulfite; $\text{Na}_2\text{S}_2\text{O}_5$; [7681-57-4] 3. Sodium sulfate; Na_2SO_4 ; [7757-82-6] 4. Water; H_2O ; [7732-18-5]	ORIGINAL MEASUREMENTS: Kuznetsova, A.G.; Sedova, V.A. *VINITI Deposited Document 1981, 5711-81.																																																																																																
VARIABLES: Temperature: 288 K Composition	PREPARED BY: Mary R. Masson																																																																																																
EXPERIMENTAL VALUES: <p style="text-align: center;"><u>Composition of saturated solutions</u></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Na_2SO_3</th> <th>$\text{Na}_2\text{S}_2\text{O}_5$</th> <th>$\text{Na}_2\text{SO}_4$</th> <th>$\text{Na}_2\text{SO}_3^a$</th> <th>$\text{Na}_2\text{S}_2\text{O}_5^a$</th> <th>$\text{Na}_2\text{SO}_4^a$</th> </tr> <tr> <th>mass %</th> <th>mass %</th> <th>mass %</th> <th>mol/kg</th> <th>mol/kg</th> <th>mol/kg</th> </tr> </thead> <tbody> <tr><td>8.60</td><td>29.00</td><td>0.</td><td>1.093</td><td>2.445</td><td>0.</td></tr> <tr><td>0.</td><td>34.10</td><td>5.70</td><td>0.</td><td>2.980</td><td>0.667</td></tr> <tr><td>2.92</td><td>2.78</td><td>19.70</td><td>0.311</td><td>0.196</td><td>1.859</td></tr> <tr><td>1.86</td><td>3.05</td><td>21.92</td><td>0.202</td><td>0.219</td><td>2.109</td></tr> <tr><td>1.87</td><td>12.38</td><td>24.44</td><td>0.242</td><td>1.062</td><td>2.806</td></tr> <tr><td>2.50</td><td>12.50</td><td>19.05</td><td>0.301</td><td>0.997</td><td>2.034</td></tr> <tr><td>1.29</td><td>14.99</td><td>22.12</td><td>0.166</td><td>1.280</td><td>2.528</td></tr> <tr><td>2.53</td><td>15.10</td><td>13.42</td><td>0.291</td><td>1.152</td><td>1.370</td></tr> <tr><td>2.57</td><td>18.49</td><td>13.28</td><td>0.310</td><td>1.481</td><td>1.424</td></tr> <tr><td>2.26</td><td>20.83</td><td>15.09</td><td>0.290</td><td>1.772</td><td>1.719</td></tr> <tr><td>3.88</td><td>19.89</td><td>12.15</td><td>0.480</td><td>1.633</td><td>1.335</td></tr> <tr><td>3.37</td><td>23.30</td><td>11.41</td><td>0.432</td><td>1.979</td><td>1.297</td></tr> <tr><td>3.46</td><td>27.54</td><td>8.89</td><td>0.457</td><td>2.410</td><td>1.041</td></tr> <tr><td>1.47</td><td>31.60</td><td>6.62</td><td>0.193</td><td>2.756</td><td>0.773</td></tr> </tbody> </table> <p>^a Molalities calculated by the compiler.</p> <p>Compositions of remainders and of assumed solid phases are also given in the original paper.</p>		Na_2SO_3	$\text{Na}_2\text{S}_2\text{O}_5$	Na_2SO_4	Na_2SO_3^a	$\text{Na}_2\text{S}_2\text{O}_5^a$	Na_2SO_4^a	mass %	mass %	mass %	mol/kg	mol/kg	mol/kg	8.60	29.00	0.	1.093	2.445	0.	0.	34.10	5.70	0.	2.980	0.667	2.92	2.78	19.70	0.311	0.196	1.859	1.86	3.05	21.92	0.202	0.219	2.109	1.87	12.38	24.44	0.242	1.062	2.806	2.50	12.50	19.05	0.301	0.997	2.034	1.29	14.99	22.12	0.166	1.280	2.528	2.53	15.10	13.42	0.291	1.152	1.370	2.57	18.49	13.28	0.310	1.481	1.424	2.26	20.83	15.09	0.290	1.772	1.719	3.88	19.89	12.15	0.480	1.633	1.335	3.37	23.30	11.41	0.432	1.979	1.297	3.46	27.54	8.89	0.457	2.410	1.041	1.47	31.60	6.62	0.193	2.756	0.773
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METHOD APPARATUS/PROCEDURE: Solutions were equilibrated in glass test tubes fitted with spiral stirrers supplied with mercury seals. Freshly made salts were always used for each filling of a test tube. The anti-oxidant <i>p</i> -phenylenediamine was added to all solutions, and the work was done in an atmosphere of nitrogen, but experiments still had to be repeated often because of the formation of unacceptably high concentrations of sulfate. Sulfite was determined by reaction with iodine solution, ammonium was volatilized by reaction with alkali, and collected in acid, the excess of which was titrated, sodium was weighed as sodium sulfate, total sulfur was weighed as barium sulfate, and chloride was titrated by the Volhard method. If too much ammonia was found to have been lost, the experiment had to be repeated.	SOURCE AND PURITY OF MATERIALS: Ammonium chloride, sodium chloride and sodium sulfite heptahydrate were commercial reagents. The $\text{Na}_2\text{SO}_3 \cdot 7\text{H}_2\text{O}$ contained about 1% of sulfate. Ammonium sulfite was made by saturating aqueous ammonia with sulfur dioxide, with cooling and in the presence of <i>p</i> -phenylenediamine as anti-oxidant. The product usually contained 0.5 - 1% of sulfate. ESTIMATED ERROR: Analyses: 0.2% relative Temperature: no estimate given (toluene and mercury thermoregulators). REFERENCES:																																																																																																																																								

COMPONENTS:

1. Sodium sulfite; Na_2SO_3 ; [7757-83-7]
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3. Ammonium chloride; NH_4Cl ; [12125-02-9]
4. Sodium chloride; NaCl ; [7647-14-5]
5. Water; H_2O ; [7732-18-5]

ORIGINAL MEASUREMENTS:

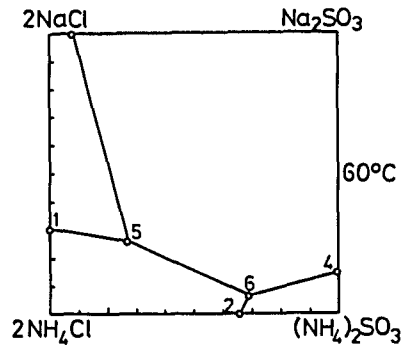
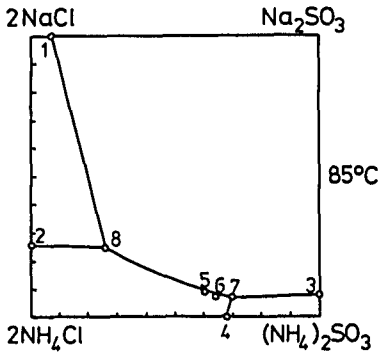
Zil'berman, Ya.I.; Ivanov, P.T.

Zh. Priklad. Khim. 1941, 14, 939-46.

EXPERIMENTAL VALUES (continued):

Compositions of equilibrium solutions expressed as molalities^b, mol/kg

Na_2SO_3	$(\text{NH}_4)_2\text{SO}_3$	NaCl	NH_4Cl
Temperature = 85°C			
0.251	0.	6.228	0.
0.	0.	3.385	9.570
1.098	11.821	0.	0.
0.	9.692	0.	8.997
1.091	5.216	0.	8.148
0.932	7.330	0.	9.150
1.096	9.989	0.	9.650
1.969	0.	0.	11.286
Temperature = 60°C			
0.	0.	3.262	7.539
0.	6.501	0.	6.597
0.254	0.	5.647	0.
1.423	8.335	0.	0.
1.826	0.080	0.	10.333
0.752	6.740	0.	6.582

^b Molalities calculated by the compiler.

COMPONENTS: 1. Sodium sulfite; Na_2SO_3 ; [7757-83-7] 2. Ammonium sulfite; $(\text{NH}_4)_2\text{SO}_3$; [10196-04-0] 3. Sodium chloride; NaCl ; [7647-14-5] 4. Ammonium chloride; NH_4Cl ; [12125-02-9] 5. Water; H_2O ; [7732-18-5]	ORIGINAL MEASUREMENTS: Labash, J.A.; Lusby, G.R. <i>Can. J. Chem.</i> <u>1955</u> , <i>33</i> , 787-796.																																																																																																																																																			
VARIABLES: Two temperatures: 293 and 333 K Concentrations of the components	PREPARED BY: Mary R. Masson																																																																																																																																																			
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METHOD APPARATUS/PROCEDURE: As for the ternary systems (1).	SOURCE AND PURITY OF MATERIALS: As (1). ESTIMATED ERROR: Temperature: ± 0.1 K Analyses: 0.2% for sulfite, ammonium, chloride, 0.4% for sodium and sulfate. REFERENCES: 1. Labash, J.A.; Lusby, G.R. <i>Can. J. Chem.</i> <u>1955</u> , <i>33</i> , 774-86.																																																																																																																																																			

COMPONENTS:

1. Sodium sulfite; Na_2SO_3 ; [7757-83-7]
2. Ammonium sulfite; $(\text{NH}_4)_2\text{SO}_3$; [10196-04-0]
3. Sodium chloride; NaCl ; [7647-14-5]
4. Ammonium chloride; NH_4Cl ; [12125-02-9]
5. Water; H_2O ; [7732-18-5]

ORIGINAL MEASUREMENTS:

Labash, J.A.; Lusby, G.R.

Can. J. Chem. 1955, 33, 787-796.

EXPERIMENTAL VALUES (continued):

Composition of equilibrium solutions, expressed as mass %

NaCl	NH_4Cl	$(\text{NH}_4)_2\text{SO}_3$	Na_2SO_3	Na_2SO_4	NH_4HSO_3	Solid ^a phase
Temperature = 60°C						
13.60	24.70	-	-	-	-	A, D
5.96	27.17	-	7.24	1.73	-	A, B, D
6.00	27.43	-	7.64	0.80	0.16 ^c	A, B, D
25.77	0.0	-	1.89	0.30	-	A, B
0.0	30.48	-	12.42	0.76	-	B, D
0.0	29.20	0.41	14.77	0.62	0.07	A, B, D
0.0	17.84	37.72	0.0	0.91 ^b	-	D, E
0.0	0.0	45.0	7.69	0.71	0.08	B, E
0.0	16.87	34.5	5.23	1.26	0.37	B, D, E
0.0	16.87	34.4	5.55	0.64	0.79	B, D, E
0.0	15.89	34.3	6.24	2.29	-	B, D, E
25.14	0.0	0.0	3.04	0.16	0.0	A, B
0.0	22.18	20.22	6.68	1.48	-	B, D
27.03	0.0	0.0	0.0	0.0	0.0	A
0.0	0.0	0.0	22.86	0.67	0.0	B
0.0	0.0	50.48	0.0	-	0.13	E
0.0	35.37	0.0	0.0	0.0	0.0	D

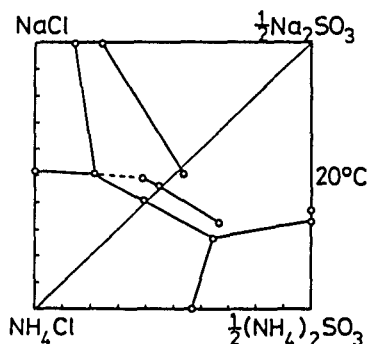
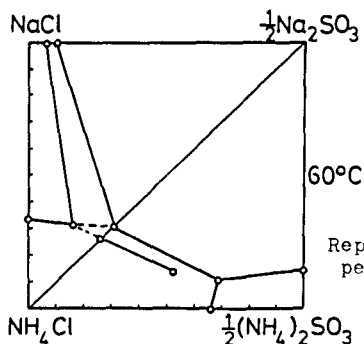
Composition of equilibrium solutions, expressed as mass % after equilibration for 6 - 7 weeks in rotating bottles.

Temperature = 60°C						
0.0	29.18	0.41	14.90	0.80	0.02	B, D?
0.0	29.04	0.52	14.66	0.75	-	B, D?
0.0	29.15	0.29	14.31	0.80	0.04	B, D?
0.0	28.80	0.87	14.32	0.84	-	B, D?
0.0	29.08	0.29	14.75	0.59	-	B, D?
0.0	28.98	0.41	14.59	0.98	-	B, D?
0.0	30.04	0.0	12.57	0.71	-	B, D?
0.0	29.35	0.0	12.31	0.86	-	B, D?
0.0	30.20	0.0	12.88	0.56	-	B, D?
0.23	29.98	0.0	12.59	0.84	0.04	B, D?
0.0	29.40	0.0	12.84	0.49	-	B, D?
0.0	29.82	0.17	12.36	1.35	-	B, D?

^a Solid phases: A - NaCl , B - Na_2SO_3 , C - $\text{Na}_2\text{SO}_3 \cdot 7\text{H}_2\text{O}$, D - NH_4Cl ,
E - $(\text{NH}_4)_2\text{SO}_3 \cdot \text{H}_2\text{O}$

^b $(\text{NH}_4)_2\text{SO}_4$ rather than Na_2SO_4

^c NaHSO_3 rather than NH_4HSO_4



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COMPONENTS: 1. Sodium sulfite; Na_2SO_3 ; [7757-83-7] 2. Ammonium sulfite; $(\text{NH}_4)_2\text{SO}_3$; [10196-04-0] 3. Sodium chloride; NaCl ; [7647-14-5] 4. Ammonium chloride; NH_4Cl ; [12125-02-9] 5. Water; H_2O ; [7732-18-5]	ORIGINAL MEASUREMENTS: Labash, J.A.; Lusby, G.R. <i>Can. J. Chem.</i> <u>1955</u> , 33, 787-796.
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EXPERIMENTAL VALUES (continued):

Compositions of equilibrium solutions expressed as molalities^d, mol/kg

NaCl	NH_4Cl	$(\text{NH}_4)_2\text{SO}_3$	Na_2SO_3	Na_2SO_4	NH_4HSO_3
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Temperature = 20°C

4.469	4.118	0.	0.	0.	
2.722	4.804	0.	1.011	0.071	
2.797	4.815	0.	1.054	0.051	
5.647	0.	0.	0.481	0.021	
0.098	6.587	0.	2.158	0.051	
1.089	5.719	0.	2.141	0.068	
0.	5.290	3.467	0.	0.151*	
0.	0.	4.171	2.099	0.128*	
0.	0.	3.981	2.459	0.177*	
0.	4.949	2.693	1.671	0.193	
0.	4.751	2.819	1.556	0.375	
0.	4.747	2.500	2.216	0.115	
0.	5.583	0.249	3.042	0.086	
5.218	0.	0.	0.840	0.086	
0.	6.249	0.	2.515	0.171	
6.125	0.	0.	0.	0.	
0.	0.	0.	2.076	0.069	
0.	0.	5.171	0.	0.055	
0.	7.006	0.	0.	0.	

Temperature = 60°C

3.772	7.484	0.	0.	0.	0.
1.761	8.773	0.	0.992	0.210	0.
1.771	8.846	0.	1.046	0.097	0.027
6.121	0.	0.	0.208	0.029	0.
0.	10.114	0.	1.749	0.095	0.
0.	9.938	0.064	2.133	0.079	0.013
0.	7.662	7.461	0.	0.158	0.
0.	0.	8.329	1.312	0.107	0.017
0.	7.551	7.112	0.993	0.212	0.089
0.	7.554	7.094	1.055	0.108	0.191
0.	7.196	7.154	1.199	0.391	0.
6.003	0.	0.	0.337	0.016	0.
0.	8.387	3.521	1.072	0.211	0.
6.339	0.	0.	0.	0.	0.
0.	0.	0.	2.372	0.062	0.
0.	0.	8.800	0.	0.	0.027
0.	10.231	0.	0.	0.	0.

Compositions of solutions from rotating bottle experiments, expressed as molalities^d, mol/kg

0.	9.975	0.065	2.162	0.103	0.004
0.	9.866	0.081	2.114	0.096	0.
0.	9.835	0.045	2.049	0.102	0.007
0.	9.759	0.136	2.059	0.107	0.
0.	9.833	0.045	2.117	0.075	0.
0.	9.843	0.064	2.103	0.125	0.
0.	9.908	0.	1.760	0.088	0.
0.	9.546	0.	1.699	0.105	0.
0.	10.018	0.	1.813	0.070	0.
0.070	9.952	0.	1.774	0.105	0.007
0.	9.597	0.	1.779	0.060	0.
0.	9.902	0.026	1.742	0.169	0.

^d Molalities calculated by the compiler.

COMPONENTS: 1. Sodium sulfite; Na_2SO_3 ; [7757-83-7] 2. 2-Naphthol; $\text{C}_{10}\text{H}_7\text{O}$; [135-19-3] 3. Sodium hydroxide; NaOH ; [1310-73-2] 4. Water; H_2O ; [7732-18-5]	ORIGINAL MEASUREMENTS: Kogan, I.M.; Planovskii, A.N.; Evdokimov, A.N. <i>Anilinokrasochnaya Prom.</i> 1934, 4, 34-7.																																																					
VARIABLES: Three temperatures: 363, 373 and 379 K Concentrations of the components	PREPARED BY: Mary R. Masson																																																					
EXPERIMENTAL VALUES: <p style="text-align: center;"><u>Composition of saturated solutions</u></p> <table border="1" data-bbox="87 531 1218 919"> <thead> <tr> <th rowspan="2">Solvent</th> <th colspan="3">[Na_2SO_3], g/100 ml solution</th> <th colspan="2">Data for 100°C soln.</th> </tr> <tr> <th>90°C</th> <th>100°C</th> <th>106°C</th> <th>Na_2SO_3^a mol/kg</th> <th>Na_2SO_3^a mass %</th> </tr> </thead> <tbody> <tr> <td>Water</td> <td>23.6</td> <td>23.3</td> <td>22.5</td> <td>1.897</td> <td>19.3</td> </tr> <tr> <td>1% NaOH</td> <td>22.7</td> <td>21.8</td> <td>21.3</td> <td>1.765</td> <td>18.2</td> </tr> <tr> <td>3% NaOH</td> <td>21.3</td> <td>20.7</td> <td>20.2</td> <td>1.683</td> <td>17.5</td> </tr> <tr> <td>5% NaOH</td> <td>19.6</td> <td>18.8</td> <td>18.5</td> <td>1.500</td> <td>15.9</td> </tr> <tr> <td>3.6% 2-Naphthol in 1% NaOH</td> <td>21.3</td> <td>20.9</td> <td>18.1</td> <td>1.660</td> <td>17.3</td> </tr> <tr> <td>10.8% 2-Naphthol in 3% NaOH</td> <td>17.4</td> <td>16.6</td> <td>15.7</td> <td>1.082</td> <td>12.0</td> </tr> <tr> <td>18% 2-Naphthol in 5% NaOH</td> <td>14.4</td> <td>11.4</td> <td>12.7</td> <td>-</td> <td>-</td> </tr> </tbody> </table> <p>^a Molalities and mass % values calculated by the compiler.</p> <p>Compiler's comment: The authors also give titration volumes which do not seem to correspond with the concentrations given in the tables: comparison with other work suggests that they made an error when reporting the titrant concentration or sample volume, and that the values listed here are the correct ones.</p>		Solvent	[Na_2SO_3], g/100 ml solution			Data for 100°C soln.		90°C	100°C	106°C	Na_2SO_3^a mol/kg	Na_2SO_3^a mass %	Water	23.6	23.3	22.5	1.897	19.3	1% NaOH	22.7	21.8	21.3	1.765	18.2	3% NaOH	21.3	20.7	20.2	1.683	17.5	5% NaOH	19.6	18.8	18.5	1.500	15.9	3.6% 2-Naphthol in 1% NaOH	21.3	20.9	18.1	1.660	17.3	10.8% 2-Naphthol in 3% NaOH	17.4	16.6	15.7	1.082	12.0	18% 2-Naphthol in 5% NaOH	14.4	11.4	12.7	-	-
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