

<b>COMPONENTS:</b> 1. Ammonium sulfite; (NH <sub>4</sub> ) <sub>2</sub> SO <sub>3</sub> ; [10196-04-0] 2. Ammonium hydrogen sulfite; NH <sub>4</sub> HSO <sub>3</sub> ; [10192-30-0] 3. Ammonium sulfate; (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> ; [7783-20-2] 4. Water; H <sub>2</sub> O; [7732-18-5]	<b>ORIGINAL MEASUREMENTS:</b>  Vasilenko, N.A. <i>Zh. Priklad. Khim.</i> <u>1953</u> , 26, 650-2.																																																																																																																																		
<b>VARIABLES:</b>  One temperature: 303 K Concentrations of the components	<b>PREPARED BY:</b>  Mary R. Masson																																																																																																																																		
<b>EXPERIMENTAL VALUES:</b> <u>Composition of equilibrium solutions expressed as mass %, at 30°C</u> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">NH<sub>4</sub>HSO<sub>3</sub></th> <th style="text-align: center;">(NH<sub>4</sub>)<sub>2</sub>SO<sub>3</sub></th> <th style="text-align: center;">(NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub></th> <th style="text-align: center;">H<sub>2</sub>SO<sub>3</sub></th> <th style="text-align: center;">Solid<sup>a</sup> phase</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">0.0</td><td style="text-align: center;">24.51</td><td style="text-align: center;">25.92</td><td style="text-align: center;">-</td><td style="text-align: center;">A + B</td></tr> <tr><td style="text-align: center;">0.0</td><td style="text-align: center;">24.14</td><td style="text-align: center;">25.56</td><td style="text-align: center;">-</td><td style="text-align: center;">A + B</td></tr> <tr><td 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<b>METHOD/APPARATUS/PROCEDURE:</b> An isothermal procedure.	<b>SOURCE AND PURITY OF MATERIALS:</b>           <b>ESTIMATED ERROR:</b>  No estimates possible.  <b>REFERENCES:</b>																																																																																																																																		

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**EXPERIMENTAL VALUES (continued):**

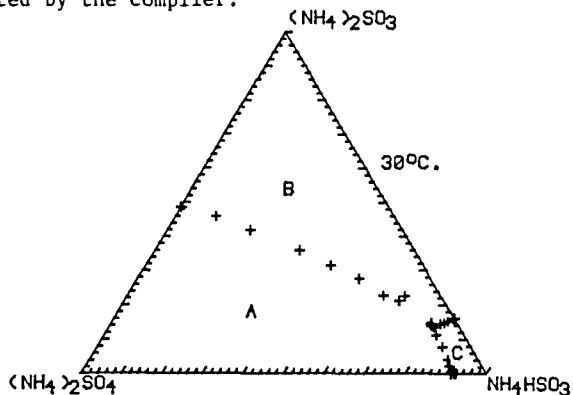
$\text{NH}_4\text{HSO}_3$	$(\text{NH}_4)_2\text{SO}_3$	$(\text{NH}_4)_2\text{SO}_4$	$\text{H}_2\text{SO}_3$	Solid <sup>a</sup> phase
74.57	0.0	5.97	0.54	A + C
73.82	0.0	6.98	0.47	A + C
73.34	0.0	6.19	0.74	A + C
73.58	0.0	6.14	0.64	A + C

Compositions of equilibrium solutions expressed as molalities<sup>b</sup>, mol/kg

$\text{NH}_4\text{HSO}_3$	$(\text{NH}_4)_2\text{SO}_3$	$(\text{NH}_4)_2\text{SO}_4$	$\text{H}_2\text{SO}_3$
0.	4.257	3.957	0.
0.	4.132	3.846	0.
1.020	4.021	3.400	0.
2.428	4.254	3.356	0.
4.881	4.200	2.920	0.
7.179	4.216	2.712	0.
10.118	4.356	2.453	0.
14.122	4.333	2.381	0.
16.777	4.484	2.058	0.
16.858	4.736	1.658	0.
33.526	5.000	2.164	0.
32.814	5.141	2.091	0.
33.985	5.372	2.030	0.
35.022	5.299	1.380	0.
35.027	5.338	1.029	0.
34.405	5.399	0.651	0.
34.322	5.606	0.138	0.
32.446	5.257	0.	0.
32.337	5.310	0.	0.
33.431	4.794	2.013	0.
33.873	3.998	2.124	0.
34.842	2.739	2.170	0.
34.240	1.375	2.172	0.
37.080	0.820	2.452	0.
37.329	0.317	2.357	0.
39.767	0.	2.388	0.348
39.767	0.	2.820	0.306
37.506	0.	2.374	0.457
37.801	0.	2.366	0.397

<sup>a</sup> Solid phases: A -  $(\text{NH}_4)_2\text{SO}_4$ , B -  $(\text{NH}_4)_2\text{SO}_3 \cdot \text{H}_2\text{O}$   
 C -  $(\text{NH}_4)_2\text{S}_2\text{O}_5$ .

<sup>b</sup> Molalities calculated by the compiler.



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1. Ammonium sulfite; $(\text{NH}_4)_2\text{SO}_3$ ; [10196-04-0] 2. Ammonium hydrogen sulfite; $\text{NH}_4\text{HSO}_3$ ; [10192-30-0] 3. Ammonium sulfate; $(\text{NH}_4)_2\text{SO}_4$ ; [7783-20-2] 4. Water; $\text{H}_2\text{O}$ ; [7732-18-5]			Vasilenko, N.A.  <i>Nauch.-Tekh. Inform. Byull. Nauch. Inst. po Udobren i Insektofungisidam</i> <u>1957</u> , (5-6), 105-10.			
VARIABLES:			PREPARED BY:			
One temperature: 283 K Concentrations of the components			Mary R. Masson			
EXPERIMENTAL VALUES:						
<u>Composition of equilibrium solutions at 10°C</u>						
$\text{NH}_4\text{HSO}_3$	$(\text{NH}_4)_2\text{SO}_3$	$(\text{NH}_4)_2\text{SO}_4$	$\text{NH}_4\text{HSO}_3^a$	$(\text{NH}_4)_2\text{SO}_3^a$	$(\text{NH}_4)_2\text{SO}_4^a$	Solid <sup>b</sup>
mass %	mass %	mass %	mol/kg	mol/kg	mol/kg	phase
0.0	19.0	27.0	0.	3.030	3.784	A + B
1.20	18.41	27.89	0.231	3.019	4.020	A + B
6.65	17.18	25.68	1.329	2.930	3.849	A + B
13.99	16.40	21.58	2.939	2.940	3.400	A + B
22.49	15.26	18.03	5.132	2.971	3.086	A + B
29.97	14.92	14.76	7.494	3.184	2.768	A + B
38.86	13.00	11.91	10.822	3.090	2.488	A + B
49.54	11.28	9.09	16.612	3.228	2.286	A + B
58.20	8.93	7.41	23.065	3.020	2.203	A + B
60.12	9.37	7.47	26.328	3.502	2.454	A + B
61.20	7.91	7.11	25.967	2.864	2.263	A,B,C
61.81	6.97	6.97	25.718	2.475	2.175	A + C
64.21	4.50	7.25	26.950	1.612	2.282	A + C
68.08	0.0	7.39	28.003	0.	2.280	A + C
69.00	0.0	6.50	28.416	0.	2.008	A + C
62.66	10.73	2.86	26.620	3.890	0.911	B + C
63.00	10.00	0.0	23.543	3.189	0.	B + C
<sup>a</sup> Molalities calculated by the compiler. <sup>b</sup> Solid phases: A - $(\text{NH}_4)_2\text{SO}_4$ , B - $(\text{NH}_4)_2\text{SO}_3 \cdot \text{H}_2\text{O}$ , C - $(\text{NH}_4)_2\text{S}_2\text{O}_5$ .						
AUXILIARY INFORMATION						
METHOD APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:			
An isothermal procedure.						
			ESTIMATED ERROR:			
			No estimates possible.			
			REFERENCES:			