

<p>COMPONENTS:</p> <p>(1) Benzenesulfonamide, 4-amino-N-(4-methyl-2-thiazolyl)- (sulfamethylthiazole); $C_{10}H_{11}N_3O_2S_2$; [515-59-3]</p> <p>(2) Water</p>	<p>EVALUATOR:</p> <p>Anthony N. Paruta Department of Pharmaceutics University of Rhode Island Kingston, Rhode Island, USA and Ryszard Piekos Faculty of Pharmacy, University of Gdansk Gdansk, Poland 1986</p>
<p>CRITICAL EVALUATION:</p> <p>Sulfamethylthiazole solubilities in water at 310K have been reported by three groups (1-3). In 1940, Roblin et al. (1), using a correct technique gave a solubility value of $1.07 \times 10^{-3} \text{ mol dm}^{-3}$. Durel and Allinne's (2) is $0.965 \times 10^{-3} \text{ mol dm}^{-3}$. In this case, however, no details are provided for the analytical method or error estimate, but it is considered of sufficient accuracy to use in the average result. Sapozhnikova and Postovskii (3) provide a value at 310K of $0.869 \times 10^{-3} \text{ mol kg}^{-1}$. The short equilibrium time of one hour probably mitigate against being a saturation value and was not considered further. The simple average of the two acceptable values allow for a recommended value of $1.02 \times 10^{-3} \text{ mol dm}^{-3}$ in water at 310K.</p> <p>REFERENCES:</p> <p>(1) Roblin, R.O., Jr.; Williams, J.H.; Winnek, P.S.; English, J.P. <i>J. Am. Chem. Soc.</i> <u>1940</u>, <u>62</u>, 2002-5.</p> <p>(2) Durel, M.P.; Allinne, M. <i>Bull. Soc. Med. Hop. Paris III</i> <u>1941</u>, 251-9.</p> <p>(3) Sapozhnikova, N.V.; Postovskii, I.Ya. <i>Zh. Prikl. Khim.</i> <u>1944</u>, <u>17</u>, 427-34.</p>	

<p>COMPONENTS:</p> <p>(1) Benzenesulfonamide, 4-amino-N-(4-methyl-2-thiazolyl)-(sulfamethylthiazole); $C_{10}H_{11}N_3O_2S_2$; [515-59-3]</p> <p>(2) Water; H_2O; [7732-18-5]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Roblin, R. O., Jr.; Williams, J. H.; Winnek, P. S.; English, J. P. <i>J. Am. Chem. Soc.</i> <u>1940</u>, <i>62</i>, 2002-5.</p>
<p>VARIABLES:</p> <p>One temperature: 37°C</p>	<p>PREPARED BY:</p> <p>R. Piekos</p>
<p>EXPERIMENTAL VALUES:</p> <p>Solubility of sulfamethylthiazole in water at 37°C is 28.9 mg/100 cm³ solution (1.07 x 10⁻³ mol dm⁻³, compiler).</p>	
<p>AUXILIARY INFORMATION</p>	
<p>METHOD/APPARATUS/PROCEDURE:</p> <p>Excess sulfamethylthiazole in water was heated and stirred on a steam bath for 30 min. The suspension was then agitated for 24 h in a thermostat at 37°C. A sample of the satd soln was withdrawn through a glass filter, dild, and analyzed by the Marshall method (1) using a General Electric recording spectrophotometer for comparing the colors developed with those of the standards.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>Sulfamethylthiazole had mp of 237-8°C (cor) consistent with the literature data. Purity of the water was not specified.</p>
	<p>ESTIMATED ERROR:</p> <p>Nothing specified</p>
	<p>REFERENCES:</p> <p>1. Bratton, A. C.; Marshall, E. K., Jr. <i>J. Pharmacol.</i> <u>1939</u>, <i>66</i>, 4.</p>

COMPONENTS: (1) Benzenesulfonamide, 4-amino-N-(4-methyl-2-thiazolyl)-(sulfamethylthiazole); $C_{10}H_{11}N_3O_2S_2$; [515-59-3] (2) Water; H_2O ; [7732-18-5]	ORIGINAL MEASUREMENTS: Durel, M.P. ; Allinne, M. <i>Bull. Soc. Med. Hop. Paris III</i> <u>1941</u> , 251-9.
VARIABLES: One temperature: 37°C	PREPARED BY: R. Piekos
EXPERIMENTAL VALUES: <p style="text-align: center;">Solubility of sulfamethylthiazole in water at 37°C is 0.26 g/liter (9.65×10^{-4} mol dm⁻³, compiler).</p>	
AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE: A mixt of sulfamethylthiazole and water was agitated for 24 hours at 37°C.	SOURCE AND PURITY OF MATERIALS: Source and purity of sulfamethylthiazole was not specified. Distilled water was used. ESTIMATED ERROR: Nothing specified REFERENCES:

<p>COMPONENTS:</p> <p>(1) Benzenesulfonamide, 4-amino-N-(4-methyl-2-thiazolyl)-(sulfamethylthiazole); $C_{10}H_{11}N_3O_2S_2$; [515-59-3]</p> <p>(2) Water; H_2O; [7732-18-5]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Sapozhnikova, N. V.; Postovskii, I. Ya. <i>Zh. Prikl. Khim.</i> <u>1944</u>, <i>17</i>, 427-34.</p>																				
<p>VARIABLES:</p> <p>Temperature</p>	<p>PREPARED BY:</p> <p>R. Piekos</p>																				
<p>EXPERIMENTAL VALUES:</p> <table border="1" data-bbox="381 620 1071 1020"> <thead> <tr> <th rowspan="2">t/°C</th> <th colspan="2">Solubility</th> </tr> <tr> <th>Weight%</th> <th>$10^2 \text{ mol kg}^{-1} \text{ water}^a$</th> </tr> </thead> <tbody> <tr> <td>20</td> <td>0.0088</td> <td>3.47</td> </tr> <tr> <td>37</td> <td>0.0220</td> <td>8.69</td> </tr> <tr> <td>50</td> <td>0.0423</td> <td>1.67</td> </tr> <tr> <td>75</td> <td>0.130</td> <td>5.14</td> </tr> <tr> <td>99</td> <td>0.390 ; 0.333^b</td> <td>15.46; 13.19</td> </tr> </tbody> </table> <p>^a Calculated by compiler</p> <p>^b Calculated from the heat of dissolution ($9,866 \text{ cal mol}^{-1}$)</p>		t/°C	Solubility		Weight%	$10^2 \text{ mol kg}^{-1} \text{ water}^a$	20	0.0088	3.47	37	0.0220	8.69	50	0.0423	1.67	75	0.130	5.14	99	0.390 ; 0.333 ^b	15.46; 13.19
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<p>METHOD/APPARATUS/PROCEDURE:</p> <p>Sulfamethylthiazole was dissolved in water to form a satd soln which was occasionally agitated in a glass vessel immersed in a thermostat. The equilibrium was usually attained after 1 h. Five- to 100-cm^3 samples of the satd soln were placed in Pt crucibles or dishes and evapd to dryness at temps lower than $110\text{-}115^\circ\text{C}$. The residue was dried to const wt at $105\text{-}110^\circ\text{C}$ and weighed.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>Pure, recrystd sulfamethylthiazole was used. Its mp conformed to that reported in the literature.</p> <p>Purity of the water was not specified.</p> <p>ESTIMATED ERROR:</p> <p>Soly: quite reliable results were obtained over the temp range $20\text{-}75^\circ\text{C}$. At higher temps the accuracy was pure due to evapn of water during sampling (authors). Temp: $\pm 0.05^\circ\text{C}$ (authors).</p> <p>REFERENCES:</p>																				

COMPONENTS: (1) Benzenesulfonamide, 4-amino-N-(4-methyl-2-thiazolyl)- (sulfamethylthiazole); $C_{10}H_{11}N_3O_2S_2$; [515-59-3] (2) Phosphoric acid, disodium salt; Na_2HPO_4 ; [7558-94-4] (3) Water; H_2O ; [7732-18-5]	ORIGINAL MEASUREMENTS: Krüger-Thiemer, E. <i>Arch. Dermatol. Syphilis</i> <u>1942</u> , 183, 90-116.
VARIABLES: One temperature: ca 20°C; one pH: 8.74	PREPARED BY: R. Piekos
EXPERIMENTAL VALUES: <p style="text-align: center;">Solubility of sulfamethylthiazole in a 0.705 M (10%) Na_2HPO_4 solution of pH 8.74, at room temperature (about 20°C), is 0.058 g% (2.15 x 10⁻³ mol dm⁻³ solution, compiler).</p>	
AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE: Sulfamethylthiazole (0.5 g) was dissolved in 10 cm ³ of the 0.705 M (10%) Na_2HPO_4 soln of pH 8.74, shaken for 2 h at room temp (about 20°C), and filtered. A 1-cm ³ aliquot of the filtrate was withdrawn, cooled, acidified with 1 cm ³ of 2N HCl, and the sulfonamide content was detd colorimetrically by the method of Marshall modified by Kimmig (1) using an Authenrieth colorimeter. The pH was detd on an ultraionograph using a glass electrode.	SOURCE AND PURITY OF MATERIALS: Sulfamethylthiazole was the product manufd by Sanebo under the name Ultraseptyl. The source and purity of the remaining materials was not specified. ESTIMATED ERROR: Soly: precision ±5% (author) Temp: not specified pH : ±0.05 pH unit (author) REFERENCES: 1. Kimmig, J. <i>Arch. Dermatol.</i> <u>1938</u> , 176, 722; <i>Erg. Hyg.</i> <u>1941</u> , 24, 398.

COMPONENTS: (1) Benzenesulfonamide, 4-amino-N-4-methyl-2-thiazolyl)- (sulfamethylthiazole); $C_{10}H_{11}N_3O_2S_2$; [515-59-3] (2) Phosphoric acid, monopotassium salt; KH_2PO_4 ; [7778-77-0] (3) Water; H_2O ; [7732-18-5]	ORIGINAL MEASUREMENTS: Krlger-Thiemer, E. <i>Arch. Dermatol. Syphilis</i> <u>1942</u> , 183, 90-116.
VARIABLES: One temperature: ca 20°C; one pH: 4.37	PREPARED BY: R. Piekos
EXPERIMENTAL VALUES: <p style="text-align: center;">Solubility of sulfamethylthiazole in a 0.735 M (10%) KH_2PO_4 solution of pH 4.37, at room temperature (about 20°C), is 0.0094 g% (3.5×10^{-4} mol dm⁻³ solution, compiler).</p>	
AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE: Sulfamethylthiazole (0.5 g) was dissolved in 10 cm ³ of the 0.735 M (10%) KH_2PO_4 soln of pH 4.37, shaken for 2 h at room temp (about 20°C), and filtered. A 1-cm ³ aliquot of the filtrate was withdrawn, cooled, acidified with 1 cm ³ of 2N HCl, and the sulfonamide content was detd colorimetrically by the method of Marshall modified by Kimmig (1) using an Authenrieth colorimeter. The pH was detd on an ultraionograph using a glass electrode.	SOURCE AND PURITY OF MATERIALS: Sulfamethylthiazole was the product manufd by Sanebo under the name Ultraseptyl. The source and purity of the remaining materials was not specified. ESTIMATED ERROR: Soly: precision ±5% (author) Temp: not specified pH : ±0.05 pH unit (author)
	REFERENCES: 1. Kimmig, J. <i>Arch. Dermatol.</i> <u>1938</u> , 176, 722; <i>Erg. Hyg.</i> <u>1941</u> , 24, 398.

COMPONENTS:				ORIGINAL MEASUREMENTS:			
(1) Benzenesulfonamide, 4-amino-N-(4-methyl-2-thiazolyl)- (sulfamethylthiazole); $C_{10}H_{11}N_3O_2S_2$; [515-59-3]				Krüger-Thiemer, E. <i>Arch. Dermatol. Syphilis</i> <u>1942</u> , 183, 90-116.			
(2) Phosphoric acid, disodium salt; Na_2HPO_4 ; [7558-94-4]							
(3) Phosphoric acid, monopotassium salt; KH_2PO_4 ; [7778-77-0]				PREPARED BY: R. Piekos			
(4) Water; H_2O ; [7732-18-5]							
VARIABLES:							
Temperature, pH							
EXPERIMENTAL VALUES:							
Composition of 1/15 M phosphate buffer solutions				Solubility			
			pH	Room temp (ca 20°C)		37°C	
Na_2HPO_4	KH_2PO_4	%content		g%	10^3 mol dm^{-3} solution ^a	g%	10^3 mol dm^{-3} solution ^a
1.0	99.0	0.91	4.944	0.021	0.780	-	-
10.0	90.0	0.91	5.906	0.021	0.780	0.023	0.854
61.1	38.9	0.93	7.005	0.022	0.817	0.028	1.040
9.5	0.5	0.733 ^b	7.510	0.0178	0.661	-	-
94.7	5.3	0.95	8.018	0.042	1.559	-	-
^a Calculated by compiler ^b Molar content: 10% buffer solution							
AUXILIARY INFORMATION							
METHOD/APPARATUS/PROCEDURE:				SOURCE AND PURITY OF MATERIALS:			
Sulfamethylthiazole (0.5 g) was dissolved in 10 cm^3 of a buffer soln, shaken for 2 h at 20°C (or left for 48 h at 37°C), and filtered at respective temp. A 1-cm^3 aliquot of the filtrate was withdrawn, cooled (dild for expts at 37°C), acidified with 1 cm^3 of 2N HCl, and the sulfonamide contents was detd colorimetrically by the method of Marshall modified by Kimmig (1) using an Autenrieth colorimeter. The pH was detd on an ultraionograph using a glass electrode.				Sulfamethylthiazole was the product manufd by Sanebo under the name Ultraseptyl. The source and purity of the remaining materials was not specified.			
				ESTIMATED ERROR: Soly: precision $\pm 5\%$ (author) Temp: not specified pH : ± 0.05 pH unit (author)			
				REFERENCES: 1. Kimmig, J. <i>Arch. Dermatol.</i> <u>1938</u> , 176, 722; <i>Erg. Hyg.</i> <u>1941</u> , 24, 398.			

COMPONENTS:				ORIGINAL MEASUREMENTS:			
(1) Benzenesulfonamide, 4-amino-N-(4-methyl-2-thiazolyl)-(sulfamethylthiazole); $C_{10}H_{11}N_3O_2S_2$; [515-59-3]				Gutierrez, F. H. <i>Anales fis. quim. (Madrid)</i> <u>1945</u> , <i>41</i> , 537-60.			
(2) 2-Propanone (acetone); C_3H_6O ; [67-64-1]							
VARIABLES:				PREPARED BY:			
Temperature				R. Piekos			
EXPERIMENTAL VALUES:							
$t/^\circ C$	G^a	E^b	$X_g/1^c$	mol/l ^d acetone	mmol/mol acetone	$1:X_g^e$	$1 + X_{cc}^f$
0	1.068	1.050	8.700	32.3	2.30	93.63	114.90
5	1.125	1.112	9.099	33.7	2.42	88.88	109.90
10	1.410	1.361	11.322	42.0	3.04	70.92	88.32
15	1.504	1.482	11.988	44.5	3.24	66.49	83.35
20	1.677	1.649	13.268	49.3	3.64	59.63	75.37
25	1.813	1.783	14.236	52.9	3.93	55.16	70.24
30	2.152	2.107	16.771	62.1	4.64	46.47	60.44
35	2.505	2.445	19.371	71.9	5.40	39.92	51.62
40	2.903	2.822	22.278	82.7	6.26	34.44	44.84
45	3.513	3.394	26.798	99.5	7.57	28.46	37.32
50	4.524	4.328	34.179	126.9	9.76	23.10	29.25
$a_G = \frac{p}{P-p} \cdot 100$, where p and P are the weights of solute and solution, resp. $b_E = \frac{G}{G+100} \cdot 100$; $c_g/1$ acetone; d should be mmol/l acetone (compiler); e_g of acetone required to dissolve 1 g of solute; f_v volume (cm^3) of acetone required to dissolve 1 g of solute.							
AUXILIARY INFORMATION							
METHOD/APPARATUS/PROCEDURE:				SOURCE AND PURITY OF MATERIALS:			
A special all-glass app was constructed enabling the prepn of satd solns, agitation by bubbling a stream of acetone-satd N, filtration, and distn off the solvent without contact with air. Two exchangeable dissoln vessels of 15 and 8 cm^3 working capacity were used depending on the soly of solute. The app was immersed in a thermostat. The vols of acetone used were 15 or 5 cm^3 , and the equilibration time was 2-2.5 h. The satd solns were filtered, weighed, the solvent was distd off, the residues were dried at 105 $^\circ C$, weighed, and examd for the presence of solvated acetone.				The source of the materials was not specified. Pure, anhyd acetone was used. The absence of impurities and water was confirmed by procedures of the German Pharmacopeia VI and Spanish Pharmacopeia VIII. The purity of sulfamethylthiazole was not specified.			
				ESTIMATED ERROR:			
				Soly: measurements were repeated until 2 values not differing in the second decimal were obtained (author). Temp: $\pm 0.1^\circ C$ (author).			
REFERENCES:							