

COMPONENTS: (1) Benzenesulfonamide, 4-amino-N,N-dimethyl-; $C_8H_{12}N_2O_2S$; [1709-39-7] (2) Methane, trichloro-; $CHCl_3$; [67-66-3]	ORIGINAL MEASUREMENTS: Kitao, K.; Kubo, K.; Morishita, T.; Yata, N.; Kamada, A. <i>Chem. Pharm. Bull.</i> <u>1973</u> , <i>21</i> , 2417-26.
VARIABLES: One temperature: 37°C	PREPARED BY: R. Piekos
EXPERIMENTAL VALUES: <p>Solubility of 4-amino-N,N-dimethylbenzenesulfonamide in $CHCl_3$ at 37°C is 95.9 mmol dm^{-3} solution.</p>	
AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE: <p>One ml of the sulfonamide soln in $CHCl_3$ at equilibrium was taken into a test tube. After evapn of the solvent, the residue was dissolved in EtOH, the soln was properly dild with deionized water and the concn of the sulfonamide was detd by diazotization.</p>	SOURCE AND PURITY OF MATERIALS: <p>The sulfonamide was synthesized by the authors. Its purity was not specified. Neither source nor the purity of the $CHCl_3$ was specified.</p>
	ESTIMATED ERROR: Soly: not specified. Temp: $\pm 1^\circ C$ (authors).
	REFERENCES:

<p>COMPONENTS:</p> <p>(1) Acetamide, N-[(4-aminophenyl)sulfonyl]- (sulfacetamide); $C_8H_{10}N_2O_3S$; [144-80-9]</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>
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CRITICAL EVALUATION:

Solubility values for sulfacetamide in water at different temperatures are shown in Table I. The value of Gussyakov, Likhoh'ot and Kutna (7) refer to the temperature range of 294-298K and were not further considered. Two sets of concurring values existed for 293K, three values quite close to $3 \times 10^{-2} \text{ mol dm}^{-3}$, and three values agreeing quite closely to $2.3 \times 10^{-2} \text{ mol dm}^{-3}$. Sapozhnikova and Postovskii's (1) value of $2.94 \times 10^{-2} \text{ mol kg}^{-1}$ refers to an equilibrium time of one hour considered insufficient for saturation, and is larger than the equilibrium values (3,4,6). Shkadova (8), at equilibrium though the value given was about 25% higher than the others given at 293K. Rohdewald (9) used an equilibration time (with agitation) of 2 hours also considered insufficient saturation time. Additionally, the value is higher than those for appropriately equilibrated samples given by three workers (3,4,6). There is a possibility that Rohdewald's high values could be due to a metastable phase. Gussyakov et al. (3,4) and Likhoh'ot (6), using 8-24 hours equilibration and satisfactory analytical methods over a seven year period (1960-1967) gave values within a rather narrow range. The recommended value for sulfacetamide can be stated as being $2.33 \times 10^{-2} \text{ mol dm}^{-3}$. At 310K the value of Langecker (2) was determined using a boiled sample ($\approx 373K$), then allowing the system to stand at 310K for an unspecified length of time. The value $6.53 \times 10^{-2} \text{ mol dm}^{-3}$ is about 15% greater than the average of the other values, thus not considered further. The method used by Kaneniwa, Watari and Iijima (10) of 3-5 days saturation is sometimes required of these types of organic solutes. The value given by these workers is $5.6 \times 10^{-2} \text{ mol dm}^{-3}$. The value of Sapozhnikova and Postovskii (1), $5.48 \times 10^{-2} \text{ mol kg}^{-1}$ was obtained after one hour of equilibration. Generally one hour is considered as being a pre-saturation solubility, the closeness of the value to that given by Kaneniwa et al. (10) allows the value to be conditionally acceptable. Therefore, the value of $5.54 \times 10^{-2} \text{ mol dm}^{-3}$ suggested here must necessarily be a tentative assignment.

Table I: Solubility of Sulfacetamide in water, 293K and 310K

Reference	10^2 mol dm^{-3} (*indicates mol kg^{-1})		
	293K	303K	310K
1	2.94*	-	5.48*
2	-	-	6.53
3	2.34*	-	-
4	2.34	-	-
5	-	4.14	-
6	2.3	-	-
7	2.334 (294-298K)	-	-
8	3.02*	-	-
9	2.93	-	-
10	-	-	5.60

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