COMPONENTS:	EVALUATOR:
1. Copper(I) sulfite; Cu_2SO_3; [35788-00-2] 2. Water; H_2O; [7732-18-5]	H.D. Lutz, Dept. of Chemistry, University of Siegen, FR Germany. May 1983.

CRITICAL EVALUATION:

Copper(I) sulfite crystallizes from aqueous solution in the form of the hemihydrate $Cu_2SO_3.1/2H_2O$ [35788-00-2] (Etard's salt) (1,2).   The monohydrate, $Cu_2SO_3.1H_2O$ [10294-49-2] (Rogojski's salt) (3) has not been confirmed (2). $Cu_2SO_3.1/2H_2O$ is claimed to be insoluble in water, alcohol and ether (1).   Numerical data on the solubility of copper(I)sulfite were given by Margulis et al. (4), who reported the existence of the hydrate $Cu_2SO_3.9/2H_2O$ [35788-00-2].   The solubility of this hydrate increases from 2.2 mg Cu/dm^3 (c(Cu_2SO_3) = 1.73 x 10^{-5} mol dm^{-3}) at 293 K to 26 mg Cu/dm^3 (2.04 x 10^{-4} mol dm^{-3}) at 363 K.

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1. Etard, A. *C.R. Hebd. Seances Acad. Sci.* 1882, *95*, 36 and 137.

2. Dasent, W.E.; Morrison, D. *J. Inorg. Nucl. Chem.* 1964, *26*, 1122.

3. Rogojski, J.-B. *J. Prakt. Chem.* 1851, *53*, 409; *C.R. Trav. Chim.* 1851, *7*, 156; *Justus Liebigs Ann. Chem.* 1851, *79*, 255.

4. Margulis, E.V.; Rodin, I.V. *Zh. Neorg. Khim.* 1982, *27*, 374; *Russ. J. Inorg. Chem.* 1982, *27*, 211.

COMPONENTS:	ORIGINAL MEASUREMENTS:
1. Copper(I) sulfite; Cu_2SO_3; [35788-00-2]	Margulis, E.V.; Rodin, I.V.
2. Water; H_2O; [7732-18-5]	Zh. Neorg. Khim. 1982, 27, 374-7; Russ. J. Inorg. Chem. 1982, 27, 211-3.

VARIABLES:	PREPARED BY:
Six temperatures: 293 - 363 K	H.D. Lutz

EXPERIMENTAL VALUES:

The authors report the solubility of $Cu_2SO_3 \cdot 9/2H_2O$ [35788-00-2] in water at various temperatures, and the solubility product of this compound defined as $K_{s0}(Cu_2SO_3 \cdot 9/2H_2O) = [Cu^+]^2 \, [SO_3^{2-}]$.

Composition of the saturated solutions

t/°C	mg Cu/dm^3	$10^5 c(Cu)$ mol dm^{-3}	$K_{s0}(Cu_2SO_3)$ $mol^3\ dm^{-9}$	$10^5 c(Cu_2SO_3)^a$ mol dm^{-3}
20	2.2	3.47	4.18×10^{-14}	1.73
30	3.2	5.04	1.28×10^{-13}	2.52
40	9.0	14.2	2.86×10^{-12}	7.08
50	12.4	19.5	7.42×10^{-12}	9.76
70	18.5	29.1	2.46×10^{-11}	14.6
90	25.9	40.8	6.79×10^{-11}	20.4

a Calculated by the compiler from mg Cu/dm^3.

AUXILIARY INFORMATION

METHOD APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The solubility of copper(I)sulfite was studied by the isothermal method. The experiments were carried out in a water thermostat with mechanical stirring in closed flasks. The time required for saturation was 2.5 hr. The solutions were analysed for sulfite (method not given).	Copper(I)sulfite was precipitated from $CuSO_4$ solutions with Na_2SO_3 (molar ratio $Na_2SO_3/CuSO_4$ = 1:1) at 20°C. After stirring for 2 hr, the precipitate was filtered off, washed with water and acetone, and dried in air at room temperature.

ESTIMATED ERROR:

Temperature: ±0.5 K (authors).

REFERENCES: