COMPONENTS:	ORIGINAL MEASUREMENTS:
1. Mercury(I) selenite; Hg_2SeO_3; [15855-76-2] 2a. Sulfuric acid; H_2SO_4; [7664-93-9] 2b. Nitric acid; HNO_3; [7697-37-2] 3. Water; H_2O; [7732-18-5]	Chukhlantsev, V.G.; Tomashevsky, G.P. *Zh. Anal. Khim.* 1957, *12*, 296-301; **J. Anal. Chem. USSR* 1957, *12*, 303-9.
VARIABLES:	PREPARED BY:
Sulfuric and nitric acid concentrations One temperature: 293 K	Mary R. Masson

EXPERIMENTAL VALUES:

All concentrations are expressed in units of mol dm^{-3}.

Soln.	Initial pH	Final pH	$[Hg^+]$	pHg	log $\alpha_{L(H)}$	$p[SeO_3^{2-}]$	pK_{s0}
H_2SO_4	2.69	2.72	5.8×10^{-5}	4.24	5.49	10.05	18.53
	2.06	2.20	1.3×10^{-4}	3.89	6.20	10.39	18.17
HNO_3	2.95	3.05	2.6×10^{-5}	4.58	5.03	9.92	19.08
	2.40	2.59	7.2×10^{-5}	4.14	5.66	10.10	18.38
	2.08	2.22	1.1×10^{-4}	3.96	6.18	10.44	18.36

The average value is $K_{s0} = 3.8 \times 10^{-19}$ mol^3dm^{-9}.

($pK_{s0} = 18.42$)

Notes.

$[Se_{tot}] = [Hg^+]$ and $[SeO_3^{2-}] = [Se_{tot}]/\alpha_{L(H)}$

where $\alpha_{L(H)} = (1 + [H^+]/K_2 + [H^+]^2/K_1K_2)$

and the acid dissociation constants have the values $K_1 = 4 \times 10^{-3}$ and $K_2 = 1.0 \times 10^{-8}$ (ref. 1).

(continued on next page)

AUXILIARY INFORMATION

METHOD APPARATUS/PROCEDURE:

Solutions of nitric and sulfuric acids were saturated with mercury(I) selenite by shaking in a thermostat at 20±0.05°C for 8 hr. The remaining solid phase was removed by centrifugation, then the pH was measured ("Moskip" pH meter, to 0.01 pH unit) and the mercury(I) concentration was determined by titration with 0.01*N* ammonium thiocyanate.

SOURCE AND PURITY OF MATERIALS:

C.P.-grade reagents wereused. Mercury(I) selenite was prepared by mixing 0.1*N* solutions of mercury(I) nitrate and sodium selenite in the cold. The precipitate was washed with water and dried at 20°C. Mercury was determined by titration with ammonium thiocyanate, and selenium was determined gravimetrically as the element after precipitation with hydrazine.

ESTIMATED ERROR:

$\pm 2.2 \times 10^{-19}$. (The spread in the results is 0.91 of a log unit.)
Temperature: ±0.05 K

REFERENCES:

1. Rumpf, P. *Compt. Rendu* 1933, *197*, 686.

COMPONENTS:	ORIGINAL MEASUREMENTS:
1. Mercury(I) selenite; Hg_2SeO_3; [15855-76-2] 2a. Sulfuric acid; H_2SO_4; [7664-93-9] 2b. Nitric acid; HNO_3; [7697-37-2] 3. Water; H_2O; [7732-18-5]	Chukhlantsev, V.G.; Tomashevsky, G.P. *Zh. Anal. Khim.* 1957, *12*, 296-301; **J. Anal. Chem. USSR* 1957, *12*, 303-9.

COMMENTS AND/OR ADDITIONAL DATA:

The authors were in error in treating the mercury(I)) ion as Hg^+, instead of as Hg_2^{2+}, and in expressing K_{s0} as $[Hg^+]^2.[SeO_3^{2-}]$ instead of as $[Hg_2^{2+}].[SeO_3^{2-}]$. The compiler hs recalculated the results in the correct form.

Soln.	Initial pH	Final pH	$[Hg_2^{2+}]$	pHg_2^{2+}	log $\alpha_{L(H)}$	$p[SeO_3^{2-}]$	pK_{s0}
H_2SO_4	2.69	2.72	2.9×10^{-5}	4.54	5.49	10.05	14.59
	2.06	2.20	6.5×10^{-5}	4.19	6.20	10.39	14.58
HNO_3	2.95	3.05	1.3×10^{-5}	4.89	5.03	9.92	14.81
	2.40	2.59	3.6×10^{-5}	4.44	5.66	10.10	14.54
	2.08	2.22	5.5×10^{-5}	4.26	6.18	10.44	14.70

The average value is $K_{s0} = 2.3 \times 10^{-15}$ mol^2 dm^{-6}.

$pK_{s0} = 14.64$.

COMPONENTS:	ORIGINAL MEASUREMENTS:
1. Mercury(I) selenite; Hg_2SeO_3; [15855--76-2] 2. Water; H_2O; [7732-18-5]	Redman, M.J.; Harvey, W.W. *J. Less-Common Met.* 1967, *12*, 395-404.
VARIABLES:	PREPARED BY:
One temperature, probably 293 or 298 K	Mary R. Masson

EXPERIMENTAL VALUES:

A solution in contact with a precipitate of Hg_2SeO_3 was found to contain 4.97×10^{-5} mol dm^{-3} mercury(I) and 7×10^{-3} mol dm^{-3} total selenite at pH 3.4, and 4.57×10^{-4} mol dm^{-3} mercury(I) and 1.3×10^{-5} mol dm^{-3} total selenite at pH 2.2. Values for the solubility product can be calculated as follows (compiler).

pH	log $\alpha_{L(H)}$	$[Se_{tot}]$	$[SeO_3^{2-}]$	[Hg(I)]	$[Hg^{2+}]$	K_{s0} mol^2 dm^{-6}	pK_{s0}
3.4	4.64	7×10^{-3}	1.6×10^{-7}	4.97×10^{-5}	2.48×10^{-5}	4.0×10^{-12}	11.40
2.2	6.21	$<1.3 \times 10^{-3}$	2.98×10^{-10}	4.57×10^{-4}	2.27×10^{-4}	$<1.8 \times 10^{-15}$	>14.74

If it is assumed that the wrong pH values have been assigned to the two solutions, the values 12.97 and >13.17 can be calculated for pK_{s0} and 1.07×10^{-13} and $<6.76 \times 10^{-14}$ mol^2 dm^{-6} for K_{s0}.

The temperature of the determination is not stated.

*Calculated with $K_1 = 4 \times 10^{-4}$ and $K_2 = 1 \times 10^{-8}$ (ref. 1).

AUXILIARY INFORMATION

METHOD APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The results were obtained from the analysis of the filtrates obtained in two experiments. In one, the precipitation was done with excess of selenite, and in the other equivalent amounts were used. Mercury(I) was determined with dithizone after oxidation to mercury(II) with conc. nitric acid; and selenite was determined with 3,3'-diaminobenzidine.	Not stated.
	ESTIMATED ERROR:
	REFERENCES: 1. Rumpf, P. *Compt. Rendu* 1933, *197*, 686.