COMPONENTS:	ORIGINAL MEASUREMENTS:
1. Silver tellurite; Ag_2TeO_3; [15122-56-2] 2. Water; H_2O; [7732-18-5]	Ganelina, E.Sh.; Pozhidaeva, T.N. *Zh. Prikład. Khim.* 1965, *38*, 2210-6; **J. Appl. Chem. USSR (Eng. Transl.)* 1965, *38*, 2168-73.
VARIABLES:	PREPARED BY:
One temperature: 298 K pH varied.	Mary R. Masson

EXPERIMENTAL VALUES:

The summary table given by the authors reports the following values:

Ag_2TeO_3	$K_{s0} = 3.7 \times 10^{-3}$ mol^3 dm^{-9}
$Ag_2TeO_3.H_2TeO_3$	$K_{s0} = 1.12 \times 10^{-8}$
$Ag_2TeO_3.5AgOH$	$K_{s0} = 2.3 \times 10^{-6}$

Compiler's comments

This paper is very confusing, and it is very difficult to see what the authors did in their calculations. They do not seem to realise anything about the solubility and acid-base behaviour of tellurous acid, since they report values for solubility products measured at around pH 3, where tellurite exists mainly in the form of H_2TeO_3 (or TeO_2), which has very low solubility in water. Attempts at recalculation were unsuccessful.

The compiler does not think that these authors have given conclusive evidence for the existence of $Ag_2TeO_3.H_2TeO_3$ or $Ag_2TeO_3.5AgOH$.

AUXILIARY INFORMATION

METHOD APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Samples were equilibrated with water or water plus any of KNO_3, H_2TeO_3, $AgNO_3$, Na_2TeO_3, for 3 - 4 months. Equilibrium pH values were measured with an LP-5 potentiometer fitted with a glass electrode.	Silver tellurite was prepared either by adding sodium tellurite to silver nitrate, or by adding silver nitrate to sodium tellurite.
	ESTIMATED ERROR: Nothing stated.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
1. Silver tellurite; Ag_2TeO_3; [15122-56-2] 2. Sodium tellurite; Na_2TeO_3; [10102-20-0] 3. Sodium perchlorate; $NaClO_4$; [7601-89-0] 4. Water; H_2O; [7732-18-5]	Mehra, M.C.; Kahn, S.M. *Can. J. Chem.* 1972, *50*, 1788-91.
VARIABLES: One temperature: 298 K Tellurite concentrations and pH varied. Ionic strength constant at 1 mol dm^{-3}.	PREPARED BY: Mary R. Masson

EXPERIMENTAL VALUES:

The authors calculated the following value for the solubility product of silver tellurite (concentrations expressed in mol dm^{-3}):

$$pK_{s0} = 17.85 \qquad (K_{s0} = 1.41 \times 10^{-18} \text{ mol}^3 \text{ dm}^{-9})$$

Unfortunately, the authors assumed values of 2.52 and 7.7 for pK_1 and pK_2 of tellurous acid, and these values have been shown to be seriously in error (1,2). More sensible values for ionic strength 1 mol dm^{-3} are 5.89 and 8.91 (2). Insufficient data are given to allow proper recalculation. If a mean pH of determination is taken to be 9.6, since the range 9.4 - 9.8 was used for the data in Fig. 1, the value of the solubility product can be corrected to:

$$pK_{s0} = 17.93 \qquad (K_{s0} = 1.17 \times 10^{-18} \text{ mol}^3 \text{ dm}^{-9})$$

The authors also give values for formation constants of postulated complexes $Ag(TeO_3)_2^{3-}$ and $[Ag_2TeO_3]_{aq}$, but the compiler believes that this work is totally invalidated by the assumption of the incorrect values for the acid dissociation constants for tellurous acid.

AUXILIARY INFORMATION

METHOD APPARATUS/PROCEDURE:

The system was equilibrated for 5 days. Experimental details and the method of analysis are given in (3). The radiometric solubility represents the total solubility, and the potentiometric solubility represents the ionic solubility of Ag_2TeO_3.

SOURCE AND PURITY OF MATERIALS:

All reagents were of analytical grade. Doubly distilled demineralized water was used throughout. Silver tellurite was produced *in situ* by mixing radioactive silver nitrate and sodium tellurite at the desired acidity and tellurite concentration. The radiotracer Ag-110 was obtained from AECL Chalk River, Ontario.

ESTIMATED ERROR:

Range in $pK_{s0} = \pm 0.11$ (authors)

REFERENCES:

1. Nazarenko, V.A.; Shitareva, G.G.; Poluektova, E.N. *Russ. J. Inorg. Chem.* 1973, *18*, 609.
2. Masson, M.R. *J. Inorg. Nucl. Chem.* 1976, *38*, 545-548.
3. Mehra, M.C.; Gubeli, A.O. *Can. J. Chem.* 1970, *48*, 3491.

COMPONENTS:	ORIGINAL MEASUREMENTS:
1. Silver tellurite; Ag_2TeO_3; [15122-56-2] 2. Water; H_2O; [7732-18-5]	Chao, E.E.; Cheng, K.L. *Anal. Chem.* 1976, *48*, 267-271.
VARIABLES:	PREPARED BY:
One temperature: 293 K	Mary R. Masson

EXPERIMENTAL VALUES:

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

The ionic strength was constant at 0.1 mol dm^{-3} (medium not stated).

$$pK_{s0} = 18.06 \pm 0.07 \qquad K_{s0} = 8.71 \times 10^{-19} \text{ mol}^3 \text{ dm}^{-9}$$

Compiler's note

The values used for the acid dissociation constants of tellurous acid are not stated, but if the determination was done at pH 11.0, as it was for silver arsenite (1), the values used would have only a very small influence on the value obtained for the solubility product. Therefore, this value is probably a reasonably reliable estimate of the concentration solubility product.

The value would refer to a freshly precipitated solid, and might therefore differ somewhat from values obtained from equilibration of solutions with aged solids.

AUXILIARY INFORMATION

METHOD APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The solubility product was determined from data obtained by potentiometric titration of a tellurite solution with a silver nitrate solution. Silver ion activities were measured by means of an Orion silver sulfide electrode (94-16) and an Orion double junction reference electrode (90-02). Emf readings were taken with a Corning model 10 pH meter with expanded scale. Method of calculation is given in ref. (1). This involved determining, from the *E* value, pAg at the point of incipient precipitation of silver tellurite.	Reagent-grade chemicals were used.
	ESTIMATED ERROR: Range in $pK_{s0} = \pm 0.07$
	REFERENCES: 1. Chao, E.E. *Ph.D. Dissertation* University of Missouri, Kasas City, Mo. 1975.