COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium iodide; KI; [7681-11-0] (2) Potassium iodate; KIO_3; [7758-05-6] (3) Potassium hydroxide; KOH; [1310-58-3] (4) Water; H_2O; [7732-18-5]	Malyshev, A.A.; Kuz'menko, A.L.; Novikov, G.I.; Traul'ko, I.V. *Zh. Neorg. Khim.* 1981, *26*, 832-4; *Russ. J. Inorg. Chem. (Engl. Transl.)* 1981, *26*, 448-9.
VARIABLES: T/K = 293, 333 and 353 Composition	PREPARED BY: Hiroshi Miyamoto

EXPERIMENTAL VALUES:

Common solubility of potassium iodate and iodide in alkaline(KOH) solution (pH 13.8)

t/°C	KI/mass %	KIO_3/mass %	Nature of the solid phase
20	54.06	1.93	KIO_3 + KI
	39.70	1.97	KIO_3
	34.36	2.03	"
	28.73	2.17	"
	26.44	2.22	"
	14.81	2.46	"
	0	3.45	"
60	58.39	2.50	KIO_3 + KI
	54.14	2.54	KIO_3
	47.04	2.88	"
	41.99	3.05	"
	35.98	3.53	"
	30.61	3.91	"
	9.73	6.54	"
	6.02	7.32	"
	3.70	7.95	"
	2.42	8.16	"
	0	8.60	"

continued.....

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The investigation was carried out by isothermal saturation in a thermostat. Potassium iodide and iodate were dissolved in alkaline medium of pH 13.8. After equilibrium was reached, the liquid phase was analyzed for iodate iodometrically, and for iodide argentometrically. The composition of the solid phase was identified by the immersion method described in ref 1.

SOURCE AND PURITY OF MATERIALS:

"Chemically pure" grade potassium iodate and iodide were recrystallized from twice-distilled water. Chemically pure grade potassium hydroxide used was freed from carbonate.

ESTIMATED ERROR:

Nothing specified.

REFERENCES:

1. Melankholin, N.M. *Izmerenie Pokazatelei Prelomleniya pod Mikroskopom Immersionnym Methodom (Measurement of Refractive Indices under a Microscope by the Immersion Method)* Iz. Acad. Nauk SSSR. Moscow-Lenningrad. 1949.

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EXPERIMENTAL VALUES: (Continued)

t/°C	KI/mass %	KIO_3/mass %	Nature of the solid phase
80	61.51	2.80	KIO_3 + KI
	38.61	4.36	KIO_3
	13.80	7.10	"
	9.10	9.60	"
	0	12.27	"

To obtain the fitting equation for solubility of potassium iodate in alkaline medium at pH 13.8 the following equation was used:

$$c_2 = a_o + a_1 c_1 + a_2 c_1^2$$

where the concentration (c) based on mass % was used.

The calculated coefficients are given below:

t/°C	a_0	a_1	a_2
20	0.0340	-0.0642	0.0636
60	0.0857	-0.2047	0.1739
80	0.1219	-0.2984	0.2381

The mean relative error of the experimental and calculated results does not exceed 1.89 % at 20°C, 1.51 % at 60°C and 1.56 % at 80°C.