COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Lithium iodate; $LiIO_3$; [13765-03-2]	Mylius, F.; Funk, R.
(2) Water; H_2O; [7732-18-5]	*Ber. Dtsch. Chem. Ges.* 1897, *80*, 1716-25.
VARIABLES:	**PREPARED BY:**
T/K = 291	Hiroshi Miyamoto

EXPERIMENTAL VALUES:

The solubility of $(LiIO_3)_2$ in water at 18°C was given as:

44.6 mass %	(authors)
80.3 g/100 g H_2O	(authors)
4.42 mol kg^{-1}	(compiler)

The density of the saturated solution was given as 1.568 gm^{-3}.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The salt and water were placed in a bottle and the bottle agitated in a constant temperature bath for a long time (time not specified).

After the saturated solution settled, an aliquot for analyses was removed with a pipet. $LiIO_3$ was determined by evaporation to dryness.

The density of the saturated solution was also determined.

SOURCE AND PURITY OF MATERIALS:

The salt used was purchased as a "pure chemical" and trace impurities were absent.

ESTIMATED ERROR:

Soly: precision ± 1 %.
Temp: nothing specified.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Lithium iodate; $LiIO_3$; [13765-03-2]	Ricci, J.E.; Amron, I.
(2) Water; H_2O; [7732-18-5]	*J. Am. Chem. Soc.* 1951, *73*, 3613-8.
VARIABLES:	**PREPARED BY:**
Temperature: 9.93 to 95.1°C	Hiroshi Miyamoto

EXPERIMENTAL VALUES:

Solubility of $LiIO_3$

t/°C	mass %	mol % (compiler)	mol kg^{-1} (compiler)	Approach from
9.93	47.19(m)	8.133	4.914	U
20.24	45.96(m)	7.742	4.658	S
24.95	45.33(m)	7.591	4.560	U&S
29.94	44.89(m)	7.467	4.479	U
34.95	44.45(m)	7.345	4.400	U
40.00	44.12(m)	7.255	4.342	U
45.00	43.84(m)	7.178	4.293	U&S
50.06	43.51(m)	7.090	4.236	S
55.1	43.35(?)	7.047	4.208	U
60.2	43.10	6.980	4.165	U
65.3	43.00	6.954	4.149	U
75.5	42.82	6.907	4.118	U
85.5	42.76	6.891	4.108	S
95.1	42.85	6.914	4.123	U

m = metastable

U: undersaturation; S: supersaturation

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Isothermal method. Many measurements were made in an attempt to determine the stable solubility curve of the forms of $LiIO_3$ from 10 to 95°C. The solubility curve was determined with some points approached from undersaturation, some from supersaturation, and a few from both directions. The values obtained represent measurements agreeing on repeated analysis with continued stirring at each temperature.
For each point, the solid phase was examined microscopically.

ESTIMATED ERROR:

Soly: precision about 0.1 % (compiler).

Temp: precision about ± 0.05 K (compiler).

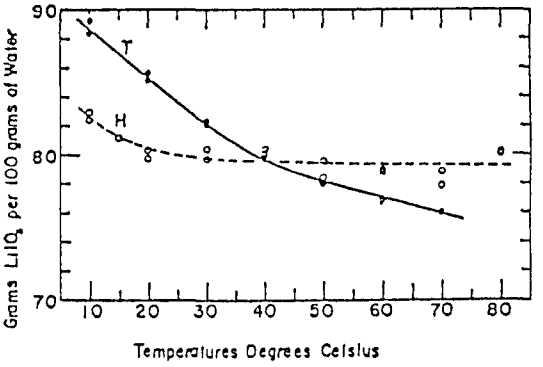
SOURCE AND PURITY OF MATERIALS:

Some of the lithium iodate was made by purification of two samples of commercial c.p. material which assayed ∿97% $LiIO_3$. One sample contained insoluble $Ba(IO_3)_2$ and gave an acid reaction. Part of it was simply recrystallized twice, and part was neutralized with Kahlbaum LiOH before the second crystallization. The other sample contained insoluble Li_2CO_3 and gave an alkaline reaction; this was neutralized with iodic acid and LiOH before two recrystallizations. The rest of the salt used was made from Kahlbaum Li_2CO_3 and c.p. iodic acid using LiOH for final neutralization. The final product was obtained by slow evaporation with stirring on a hot-plate. After decantation, the crystals were filtered by suction and washed with water. Ground and dried at 110-180°C, the product was found to be 99.9 to 100.1% pure by determination of lithium as Li_2SO_4, and iodate by titration with $Na_2S_3O_3$ solution.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Lithium iodate; $LiIO_3$; [13765-03-2] (2) Water; H_2O; [7732-18-5]	Umezawa, T.; Tatuoka, S. *Jpn. J. Appl. Phys.* 1972, *11*, 408.
VARIABLES: Two crystal forms: hexagonal and tetragonal Temperature: T/K = 278-253	**PREPARED BY:** Hiroshi Miyamoto and Mark Salomon

EXPERIMENTAL VALUES:

The solubilities of solutions in equilibrium with hexagonal and tetragonal solid phases were reported in graphical form. The polytherms are reproduced in the figure below.



AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Saturated solutions starting with hexagonal or tetragonal crystals prepared at room temperature. Solutions were then stirred for 4-5 hours at the desired temperature. About 10 ml of the saturated solution were placed in a weighing bottle using a pipet with a filter at its tip. The solvent was evaporated in an oven, and the lithium iodate solubility determined gravimetrically. The pH of the saturated solutions varied between 8.3 and 8.7. The hexagonal → tetragonal transition temperature is around 40°C. As reported in an earlier publication (1), the solubility of hexagonal $LiIO_3$ is nearly constant over the temperature range studied. Note that reference (1) has not been rejected, and therefore this paper has not been compiled.	Nothing specified.
	ESTIMATED ERROR: Nothing specified.
	REFERENCES: 1. Umezawa, T.; Ninomiya, Y.; Tatuoka, S. *J. Appl. Crystallogr.* 1970, 3, 417.