COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium iodate; $NaIO_3$; [7681-55-2]	Foote, H.W.; Vance, J.E.
(2) Water; H_2O; [7732-18-5]	*Am. J. Sci.* 1928, *16*, 68-72.
VARIABLES:	**PREPARED BY:**
T/K = 272.8 to 363.5	Hiroshi Miyamoto

EXPERIMENTAL VALUES:

t/°C	Solubility as approached from: supersaturation mass %	undersaturation mass %	average mass %	mol kg^{-1} (compiler)	Nature of the solid phase[a]
- 0.35	-	-	2.38	0.123	Ice + A
0.0	2.39	2.46	2.42	0.125	A
+10.0	4.39	4.40	4.39	0.232	"
15.0	5.87	5.88	5.88	0.316	"
19.85	-	-	7.83	0.429	A+B
20.0	7.87	7.82	7.84	0.430	B
25.0	8.65	8.66	8.66	0.479	"
30.0	9.63	9.63	9.63	0.538	"
35.0	10.58	10.55	10.57	0.597	"
40.0	11.70	11.71	11.71	0.670	"
49.9	14.13	13.99	14.06	0.827	"
57.8	15.97	15.86	15.91	0.9560	"
69.6	19.05	19.00	19.03	1.188	"
73.4	-	-	20.00	1.263	B+C
79.0	21.91	21.74	21.82	1.41	B(m)
67.0	18.98	19.10	19.04	1.188	C(m)
70.6	19.55	19.57	19.56	1.229	"
75.8	20.48	20.49	20.49	1.302	C
80.6	21.22	21.26	21.24	1.363	"
87.6	22.12	22.32	22.22	1.444	"
90.3	23.02	23.02	23.03	1.512	"

[a] A = $NaIO_3.5H_2O$; B = $NaIO_3.H_2O$; C = $NaIO_3$; (m) = metastable

The authors reported the smoothing equation as follows:

log (soly/mass %) = 3.6344 - 802.8/(T/K) (T/K = 293-322.9)

log (soly/mass %) = 7.7793 - 2019/(T/K) (T/K = 273-288)

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Binary mixts agitated in a thermostat for 4-6 hours. Equil was approached from both the supersatd and undersatd solutions, and analysis was determined in duplicate. Iodate was detd by adding excess KI, acidifying with H_2SO_4, and titrating with standard sodium thiosulfate sln.

Solid phases analyzed as follows: Below 19.85 °C where the pentahydrate is stable, the solid was separated from sln in a cold room and quickly dried, and presumably analyzed for iodate. Over the temp range where the monohydrate is stable, numerous analyses were made of the solid phase, presumably by a method similar to that described above. For the region where the anhydr salt is stable, the solid was separated, washed quickly with alcohol, and dried between filter paper.

SOURCE AND PURITY OF MATERIALS:

Sodium iodate was a very pure commercial product having a composition closely approximating the monohydrate. The salt was recrystallized before use.

ESTIMATED ERROR:

Nothing specified.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium iodate; $NaIO_3$; [7681-55-2]	Hill, A.E.; Donovan, J.E.
(2) Water; H_2O; [7732-18-5]	*J. Am. Chem. Soc.* 1931, 53, 934-41.
VARIABLES:	**PREPARED BY:**
Temperature: 278.15 to 323.15	Hiroshi Miyamoto

EXPERIMENTAL VALUES: Solubility in the binary system

t/°C	mass %	Solubility mol % (compiler)	mol kg^{-1} (compiler)	Density g cm^{-3}	Nature of the solid phase[a]:
5	3.30	0.310	0.172	1.028	A
15	5.85	0.562	0.314	1.051	"
20	7.81	0.765	0.428	-	A+B
22	8.11	0.797	0.446	1.071	B
25	8.67	0.857	0.480	1.077	"
35	10.58	1.066	0.5979	1.093	"
40	11.70	1.192	0.6696	-	"
50	13.95	1.454	0.8192	-	"

[a] A = $NaIO_3.5H_2O$; B = $NaIO_3.H_2O$

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:
Recrystallized and dehydrated excess sodium iodate was placed in 40 ml glass-stoppered Pyrex test-tubes with water and rotated in a water thermostat for about two weeks. Equilibrium was reached from super-saturation. After the tubes were allowed to settle, samples were withdrawn into a calibrated pipet fitted with a small cotton filter. One sample was weighed and evaporated in a platinum dish to constant weight at 110°C. From this the water content of the saturated solution was determined. To determine the $NaIO_3$ content, a second weighed sample was treated with KI and sulfuric acid and titrated with sodium thiosulfate. The densities of the solutions were also determined.

SOURCE AND PURITY OF MATERIALS:
"Good grade" sodium iodate was purified by recrystallization. No other information given.

ESTIMATED ERROR:
Soly: the error for the analysis of iodate by iodometry was within 0.2 %.
Temp: precision ± 0.05 K.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium iodate; $NaIO_3$; [7681-55-2]	Cornec, M.E.; Spack, A.
(2) Water; H_2O; [7732-18-5]	*Bull. Soc. Chim. Fr.* 1931, *49*, 582-94.
VARIABLES:	**PREPARED BY:**
T/K = 273 to 373	Hiroshi Miyamoto

EXPERIMENTAL VALUES:

	Solubility of Sodium Iodate			Density	Nature of the
t/°C	mass %	g_1/100 g H_2O	mol kg^{-1} (compiler)	g cm^{-3}	solid phase[a]
0	2.45	2.51	0.127	1.024	A
10	4.44	4.65	0.235	1.041	"
15	5.93	6.31	0.318	1.054	"
19.9[i]	7.7	8.35	0.422	1.070	A+B
20	7.77	8.43	0.426	1.071	B
30	9.63	10.65	0.538	1.085	"
40	11.64	13.17	0.6657	1.102	"
50	13.90	16.15	0.8158	1.119	"
60	16.65	20.0	1.010	1.142	"
70	19.24	23.8	1.204	1.164	"
80[m]	22.18	28.5	1.440	1.190	"
73.4[i]	20.2	25.3	1.28	1.172	B+C
80	21.25	27.0	1.364	1.180	C
90	22.87	29.65	1.498	1.192	"
100	24.70	32.8	1.658	1.204	"

[a] A = $NaIO_3.5H_2O$; B = $NaIO_3.H_2O$; C = $NaIO_3$

[i] Interpolated data

[m] Metastable

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The details of procedure were not given. The iodate content was determined by titration with thiosulfate solution.

SOURCE AND PURITY OF MATERIALS:

Sodium iodate used was purchased as a "pure chemical". The salt was recrystallized four times. The product obtained was the monohydrate.

ESTIMATED ERROR:

Nothing specified.

REFERENCES: