COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Iodic acid; HIO_3; [7782-68-5]	Groschuff, E.
(2) Nitric acid; HNO_3; [7697-37-2]	Z. *Anorg. Allg. Chem.* 1905, *47*, 331-52.
(3) Water; H_2O; [7732-18-5]	
VARIABLES:	**PREPARED BY:**
Concentration of HNO_3 at 273 - 333 K	Michelle C. Uchiyama

EXPERIMENTAL VALUES:

Temperature (t/°C)	0°	20°	40°	60°
Water	74.1	75.8	77.7	80.0
27.73 per cent HNO_3	18	21	27	38
40.88 per cent HNO_3	9	10	14	18

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Isothermal method. No other information given, but probably similar to method used for binary solutions (see compilation on page 474).

SOURCE AND PURITY OF MATERIALS:

Nothing specified

ESTIMATED ERROR:

Nothing specified.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Iodine oxide; I_2O_5; [2029-98-0]	Guichard, M.
(2) Nitric acid; HNO_3; [7697-37-2]	*Hebd. Seances Acad. Sci.* 1909, *148*, 923-5.[1]
(3) Water; H_2O; [7732-18-5]	
VARIABLES:	**PREPARED BY:**
Concentration of HNO_3 at 293 K	M. Salomon and K. Salomon

EXPERIMENTAL VALUES:

The solubility of I_2O_5 in pure water at 20°C was given as 187.4 g in 100 g water. This is equivalent to 65.205 mass % (compilers).

Solubilities at 20°C in nitric acid solutions are given below.

density of HNO_3 solution g/cm^3	solubility of I_2O_5 g_1 in 100 g acid sln	mass % [a]
1.27	9.1	8.34
1.33	5.5	5.21
1.4	0.67	0.666

[a] Calculated by the compilers.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Nothing specified, but the compilers assume that saturated solutions were evaporated and the residue dried and weighed.

COMMENTS AND/OR ADDITIONAL DATA:

The major objective of this work was to prep highly purified I_2O_5. Previous preps said to involve pptn of HIO_3 from solutions of $BA(IO_3)_2$ + H_2SO_4 followed by recryst of HIO_3. Author claims this method cannot eliminate impurities: $Ba(IO_3)_2$ when this salt is used in excess or $BaSO_4$ and H_2SO_4 when sulfuric acid is used in excess. Author determined that a solution of 96 g I_2O_5 in 100 g H_2O will dissolve 0.15 g $BaSO_4$ at 15°C.

Author also states that $Ba(IO_3)_2$, $BaSO_4$ and H_2SO_4 impurities can be significantly reduced by recrystallizing the impure HIO_3 from concentrated nitric acide solution. Starting with an initial impurity level of 0.3 mass %, and recrystallizing five times from concentrated nitric acid, the impurity level was reduced to 0.008 mass %.

SOURCE AND PURITY OF MATERIALS:

I_2O_5 prepd by oxidn of I_2 with N_2O_5. Dry or preferably moist I_2 treated with N_2O_5 prepd from pre-cooled mixt of fuming HNO_3 + P_2O_5 followed by slow heating to 90°C. The product was dissolved in water, and the water was then evaporated and the solid dried at 220°C.

The yield of I_2O_5 is 20 g per each 100 g of fuming HNO_3.

"High purity" I_2 used: source and purity of water not specified.

ESTIMATED ERROR:

Nothing specified.

REFERENCES:

1. Guichard, M. *Memoires Presentes a la Societe Chimique* 1909, 722-7.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Iodic acid; HIO_3; [7782-68-5] (2) Nitric acid; HNO_3; [7697-37-2] (3) Water; H_2O; [7732-18-5]	Moles, E.; Perez, V. A. *Am. Soc. Esp. Fis. Quim.* 1932, *30*, 200-207.
VARIABLES: Concentration of HNO_3 at 298 K	**PREPARED BY:** R. Herrera, M. Salomon, H. Miyamoto

EXPERIMENTAL VALUES:

Table 1. Experimental results for the ternary system at 25°C.

HNO_3	Solubility of HIO_3[a] after 24 h	after 48 h	after 48 h	density
mass %	mass %	mass %	mol kg^{-1}	g cm^{-3}
65.30	1.406	1.41	0.241	1.400
58.66	3.14	3.24	0.483	1.366
50.71	5.74	5.73	0.749	1.324
43.32	10.01	10.08	1.230	1.273
35.28	14.91	15.20	1.745	1.223
28.00	21.94	21.74	2.459	1.173
20.23	35.08	35.09	4.465	1.123

Table 2. Interpolated results based upon data from Table 1

H_2O	HNO_3	solubility of HIO_3[a]	
mass %	mass %	mass %	mol kg^{-1}
34.60	64.00	1.40	0.230
40.02	56.78	3.20	0.455
46.46	47.80	5.74	0.702
51.05	38.90	10.05	1.119
55.00	30.00	15.00	1.550
56.24	21.96	21.80	2.204
51.70	13.30	35.00	3.848

[a]Molalities calculated by the compilers.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Mixtures of varying composition were placed in an electric thermostat at 25°C and constantly agitated. Samples of the saturated solution were taken over 24 h intervals. The samples of saturated sln were rapidly filtered in a porous plaque-funnel inside the thermostat, and the HIO_3 content determined gravimetrically after evaporation of HNO_3 and water. In their original Table 1, the authors included solubility data of Groschuff (1) and Guichard (2). These data were omitted from the above Table 1, but have been compiled elsewhere in this volume	Nothing specified.
COMMENTS AND/OR ADDITIONAL DATA The authors state that the data in Table 2 were calculated from the experimental results in Table 1. No other details were given, and the compilers assume that the data in Table 2 referred to as "interpolated" are averages or close to average values.	**ESTIMATED ERROR:** Soly: nothing specified, but errors in accuracy may be as high as 3 %. Temp: nothing specified.
	REFERENCES: 1. Groschuff, E. *Z. Anorg. Chem.* 1905, *47*, 343. 2. Guichard, M. *Bull. Chem. Soc. Fr.* 1909, *5*, 722.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Iodic acid: HIO_3; [7782-68-5] (2) Hydrofluoric acid; HF; [7664-39-3] (3) Water; H_2O; [7732-18-5]	Niolaev, N. S.; Buslav, Yu. A. *Zh. Neorg. Khim.* 1956, *1*, 1672-5; *Russ. J. Inorg. Chem.* (*Engl. Transl.*) 1956 *1*, 230-5.
VARIABLES: T/K = 273 Concentration of HF	**PREPARED BY:** Hiroshi Miyamoto

EXPERIMENTAL VALUES:

Hydrofuoric Acid mass %	Hydrofuoric Acid mol % (compiler)	Iodine oxide mass %	Iodine oxide mol % (compiler)	Nature of the solid phase[a]
0.00	0.00	72.00	12.19	A
2.43	5.69	64.81	9.098	A
4.91	9.66	56.83	6.704	A
5.14	9.84	55.45	6.363	A
8.15	14.2	50.38	5.277	A
11.34	18.16	45.07	4.325	A
15.28	23.32	41.74	3.819	A
17.76	27.45	42.25	3.914	A
18.28	31.90	49.23	5.148	A
18.67	35.18	53.22	6.010	A
19.16	39.49	57.51	7.106	A
21.37	43.98	57.21	7.057	B
22.18	45.19	56.65	6.917	B
25.53	51.10	55.46	6.653	B
27.96	56.98	56.06	6.848	B
28.57	58.67	56.35	6.936	B
30.02	62.12	56.55	7.014	B
30.36	63.33	56.88	7.111	B
30.61	70.32	61.05	8.405	B
27.78	75.07	67.56	10.94	B
21.40	70.74	74.66	14.79	C
23.00	84.15	77.27	16.94	C

[a] A = HIO_3 B = $2HIO_3.3HF$; C = I_2O_5.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The soly vessels were of "florplast-4" and fitted with stirrers through a lid. Stirrers also made of florplast-4, and were lubricated with a polyfluoride oil. The vessels were equilibrated in an ice bath. Aliquots of satd sln and residue withdrawn with a Pt sampler, and weighed at low temp (about 0°C). Total acid dtd by alkali titrn using phenolphthalein idicator, and iodic acid detd by iodometric titrn. HF concn detd by difference. Composition of the solid phase detd by Schreinemakers method.

ESTIMATED ERROR:

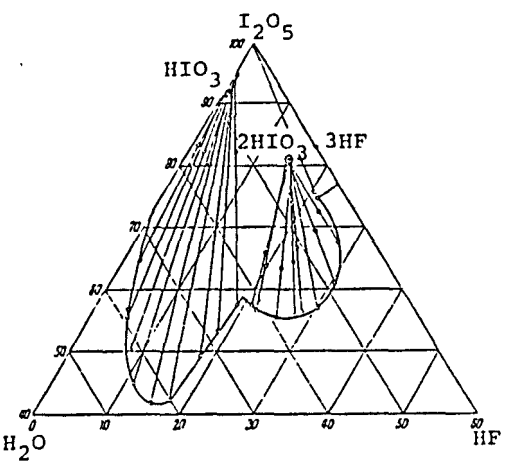
Soly: the relative error in the determination of HF and I_2O_5 did not exceed 1%.
Temp: nothing specified.

SOURCE AND PURITY OF MATERIALS:

HIO_3 and I_2O_5 were recrystallized. HF was purified by distillation.

COMMENTS AND/OR ADDITIONAL DATA:

The phase diagram is given below (mass % units).



COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Iodine oxide; I_2O_5; [12029-98-0] (2) Sulfuric acid; H_2SO_4; [7664-93-9] (3) Water; H_2O; [7732-18-5]	Lamb, A. B.; Phillips, A. W. *J. Am. Chem. Soc.* 1923, *45*, 108-12.
VARIABLES: One temperature: 279.92 K Concentration of sulfuric acid	**PREPARED BY:** Hiroshi Miyamoto

EXPERIMENTAL VALUES:

(1) With 50-78 mass % solutions of sulfuric acid, constant values of the solubilities were rapidly established as indicated by Table 1.

Table 1

Time Days	Concentration of H_2SO_4 mass % 50.0	60.0	75.0	78.0
	solubility of I_2O_5/g cm^{-3}			
1	48.86	34.84	19.46	----
2	----	----	19.46	----
3	----	----	19.54	----
5	54.82	34.68	19.44	----
9	54.82	34.58	----	18.73
12	54.74	34.50	----	----
19	----	----	----	18.63
22	----	34.77	----	18.63
26	----	----	----	18.63
Av[a]	54.79	34.68	19.48	18.66

[a]The average values are listed in "Initial" of Table 3 (see next page).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Mixtures of excess iodine pentoxide (5-8g) with 100-150 ml of the various solutions of sulfuric acid contained in 200 ml bottles having carefully ground stoppered and tightly fitting protective caps, were rotated in a water thermostat.

The samples for analysis were withdrawn with a special filter-pipet. The filter consisted of a plug of asbestos wool packed in a bulb 1 cm in diameter on an extension tube which was attached to the tip of the pipet by a ground glass joint. The pipet was operated by an efficient water pump.

The filtered 10-20ml samples were diluted to 250-500 ml. Aliquot portions were then treated with an excess of potassium iodide and titrated with 0.1 N sodium thiosulfate solution.

SOURCE AND PURITY OF MATERIALS:

Very pure iodine pentoxide was prepared by the chloric acid method (ref. 1). The water content of the product was 0.55 % corresponding to 10.7 % conversion into iodic acid (HIO_3).

The solutions of sulfuric acid were prepared by weight from a large stock sample of pure sulfuric acid. The concentration of this stock acid was ascertained by comparison of a diluted, weighed sample with a solution of 1 N hydrochloric acid.

ESTIMATED ERROR:

Soly: nothing specified.

Temp: precision 0.005 K

REFERENCES:

1. Lamb, A. B.; Bray, W. C.; Geldard, W. J. *J. Am. Chem. Soc.* 1920, *42*, 1636.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Iodine oxide; I_2O_5; [12029-98-0]	Lamb, A. B.; Phillips, A. W.
(2) Sulfuric acid; H_2SO_4; [7664-93-9]	*J. Am. Chem. Soc.* 1923, *45*, 108-12.
(3) Water; H_2O; [7732-18-5]	

EXPERIMENTAL VALUES: (*continued*)

(2) With acid of higher concentrations (82-96 mass %) definite "initial" values of the solubilities are rapidly established, as shown by the results collected in Table 2.

Table 2.

Time Hours	H_2SO_4 / mass %	82.0	86.0	90.3	95.96	95.96
		Solubility of iodine oxide (g dm^{-3})				
1		19.51[a]	20.98	22.63[a]	----	----
2		19.60	21.03	22.80	22.94	23.15
4		19.78	21.08	22.66	23.22	23.56
6		19.87	21.07	22.62	23.07	23.40
24		19.70	21.07	22.60	----	----
Av		19.74	21.4	22.67	23.08	23.37
		19.9[b]	21.0[b]	22.7[b]		23.2[b]

[a]These determinations were made independently of the others on fresh samples of sulfuric acid.

[b]The values are listed in "Initial" of Table 3

(3) After the mixtures of iodine pentoxide and water were rotated for 40 days, the final solubilities were obtained. The values are listed in Table 3.

The authors reported that the initial values represent solubilities of iodic acid (HIO_3) and the final values represent solubilities of iodine pentoxide and of anhydro iodic acid (HI_3O_8).

Table 3

Concn of H_2SO_4 mass %	Initial g dm^{-3}	Initial mol dm^{-3} (compiler)	Final g dm^{-3}	Final mol dm^{-3} (compiler)
50.0	54.79	0.1641	54.79	0.1641
60.0	34.68	0.1039	34.68	0.1039
75.0	19.48	0.05836	19.48	0.05836
78.0	18.66	0.05590	18.66	0.05590
79.6	19.0	0.0569	18.5	0.0554
82.0	19.9	0.0596	18.8	0.0568
84.6	20.5	0.0614	19.3	0.0578
86.0	21.0	0.0629	17.1	0.0512
87.4	21.5	0.0644	15.8	0.0473
89.0	22.1	0.0662	15.1	0.0452
90.3	22.7	0.0680	14.5	0.0434
92.0	23.4	0.0701	13.5	0.0404
96.0	(23.2)	0.0695	11.0	0.0330
98.0	(22.0)	0.0659	9.5	0.0285
99.9	----	----	3.48	0.0104
102.0[a]	----	----	1.28	0.00384
104.0	----	----	1.90	0.00569
106.0	----	----	2.67	0.00800

a: This percentage represents weights of 100 % H_2SO_4 equivalent to 100 g of the acid in question. The 106.0 % of acid, therefore, contained 29.0 % of free SO_2.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Iodic acid; HIO_3; [7782-68-5] (2) Cadmium iodate; $Cd(IO_3)_2$; [7790-81-0] (3) Water; H_2O; [7732-18-5]	Lepeshkov, I. N.; Vinogradov, E. E.; Karataeva, I. M. *Zh. Neorg. Khim.* 1979, *24*, 2540-4; *Russ. J. Inorg. Chem. (Engl. Transl.)* 1979, *24*, 1412-4.
VARIABLES: T/K = 323 Composition	**PREPARED BY:** Hiroshi Miyamoto

EXPERIMENTAL VALUES:

Composition of saturated solutions

Iodic Acid		Cadmium Iodate		Nature of the solid phase[a]
mass %	mol % (compiler)	mass %	mol % (compiler)	
77.69[b]	26.29	-	-	A
77.83	26.46	0.022	0.0028	A + B
73.81	22.41	0.023	0.0027	B
64.83	15.88	0.012	0.0011	B
56.37	11.69	0.027	0.0021	B
44.33	7.544	0.032	0.0021	B
20.61	2.590	0.019	0.00091	B
22.02	2.813	0.082	0.0040	C
8.00	0.883	0.071	0.0030	C
--	--	0.069[b]	0.0027	C

[a] A = HIO_3; B = $2HIO_3.Cd(IO_3)_2$; C = $Cd(IO_3)_2$.

[b] For binary systems, the compiler computes the following:

Soly of HIO_3 = 19.80 mol kg^{-1}

Soly of $Cd(IO_3)_2$ = 1.5 x 10^{-3} mol kg^{-1}

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The compiler assumes that the system was studied by the isothermal method. Equilibrium was established in about a month. Specimens of liquid and solid phases were analyzed for iodic acid, and cadmium and iodate ions. The cadmium ion concentration was detd by titrn with EDTA.
Solid phases were investigated by chemical, thermal, thermogravimetric, X-ray diffraction analyses, and infrared spectroscopy.

SOURCE AND PURITY OF MATERIALS:

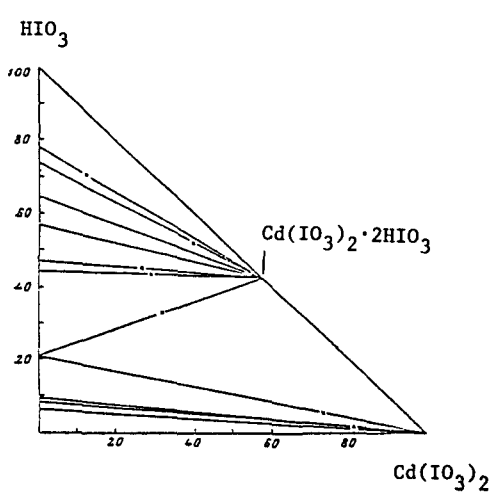
Chemically pure grade iodic acid was used. Cadmium iodate was made from cadmium chloride and iodic acid.

ESTIMATED ERROR:

Nothing specified.

COMMENTS AND/OR ADDITIONAL DATA:

The phase diagram is given below (based on mass % units).



COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Iodic acid: HIO_3; [7782-68-5] (2) Zinc iodate; $Zn(IO_3)_2$; [7790-37-6] (3) Water; H_2O; [7732-18-5]	Lepeshkov, I. N.; Vinogradov, E. E.; Karataeva, I. M. *Zh. Neorg. Khim.* 1979, *24*, 2540-4; *Russ. J. Inorg. Chem.* (Engl. Transl.) 1979, *24*, 1412-4.
VARIABLES: T/K = 323 Composition	**PREPARED BY:** Hiroshi Miyamoto

EXPERIMENTAL VALUES:

Composition of saturated solutions				
HIO_3		$Zn(IO_3)_2$		Nature of the solid phase
mass %	mol % (compiler)	mass %	mol % (compiler)	
77.69[b]	26.29	--	--	A
76.33	25.10	0.36	0.050	A + B
75.57	24.93	1.17	0.164	B
53.00	10.44	0.44	0.037	B
43.64	7.373	0.22	0.016	B
36.64	5.613	0.27	0.018	B
21.95	2.810	0.30	0.016	B
6.57	0.720	0.68	0.032	B
---	---	0.68[b]	0.030	B

[a] A = HIO_3; B = $Zn(IO_3)_2.2H_2O$

[b] For binary systems the compiler computes the following

Soly of HIO_3 = 19.80 mol kg^{-1}

Soly of $Zn(IO_3)_2$ = 0.016 mol kg^{-1}

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The compiler assumes that the system was studied by the isothermal method. Equilibrium was established in about a month. Specimens of liquid and solid phases were analyzed for iodic acid, zinc and iodate ions. Zinc ion concn detd by titrn with EDTA.
Solid phases were investigated by chemical, thermal, thermogravimetric, X-ray diffraction analyses, and infrared spectroscopy.

SOURCE AND PURITY OF MATERIALS:

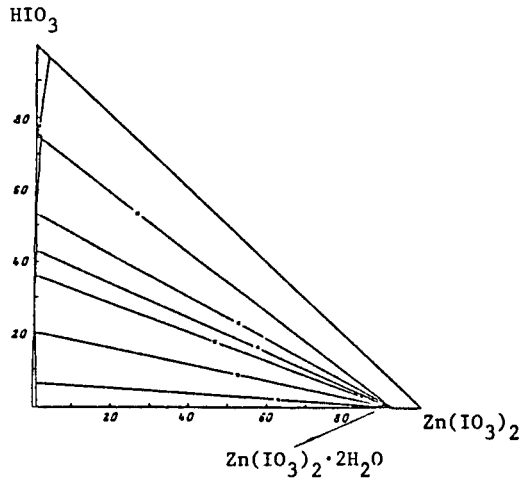
Chemically pure grade iodic acid was used. Zinc iodate was prepd from zinc nitrate and iodic acid.

ESTIMATED ERROR:

Nothing specified.

COMMENTS AND/OR ADDITIONAL DATA:

The phase diagram is given below (based on mass % units).



COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Iodic acid; HIO_3; [7782-68-5] (2) Aluminum iodate; $Al(IO_3)_3$; [15123-75-8] (3) Water; H_2O; [7732-18-5]	Shklovskaya, R. M.; Arkhipov, S. M. Kidyarov, B. I.; Kuzina, V. A. Tsibulevskaya, K. A. *Zh. Neorg. Khim.* 1977, *22*, 1372-5; *Russ. J. Inorg. Chem.* (*Engl. Transl.*) 1977, *22*, 747-8.
VARIABLES: T/K = 298 Composition	PREPARED BY: Hiroshi Miyamoto

EXPERIMENTAL VALUES: Composition of saturated solutions

$Al(IO_3)_3$ mass %	$Al(IO_3)_3$ mol % (compiler)	HIO_3 mass %	HIO_3 mol % (compiler)	Nature of the solid phase[a]
5.70[b]	0.197	--	--	A
4.95	0.178	4.79	0.540	A
5.30	0.196	7.37	0.855	A
5.40	0.207	10.52	1.263	A + B
4.14	0.158	11.59	1.387	B
3.35	0.135	17.83	2.261	B
3.65	0.161	24.79	3.421	B
4.25	0.205	31.31	4.730	B
5.51	0.300	38.64	6.597	B
5.71	0.338	43.86	8.151	B
6.33	0.422	50.02	10.46	B
6.30	0.476	56.43	13.36	B
4.31	0.357	62.81	16.30	B
4.09	0.370	66.76	18.93	B
3.98	0.402	71.06	22.48	B + C
1.62	0.161	73.10	22.81	C
--	--	75.10[b]	23.60	C

[a] A = $Al(IO_3)_3.6H_2O$; B = $Al(IO_3)_3.2HIO_3.6H_2O$; C = HIO_3

[b] For binary systems the compiler computes the following:

soly of $Al(IO_3)_3$ = 0.110 mol kg^{-1}; soly of HIO_3 = 17.15 mol kg^{-1}

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Isothermal method used. Equilibrium reached in 20-30 days. Total iodate ion concn in the liquid phase detd by iodometric titrn, and aluminum detd by the complexometric method. Iodic acid found by difference.

Compositions of the solid phases were detd by the method of residues and checked by X-ray diffraction.

SOURCE AND PURITY OF MATERIALS:

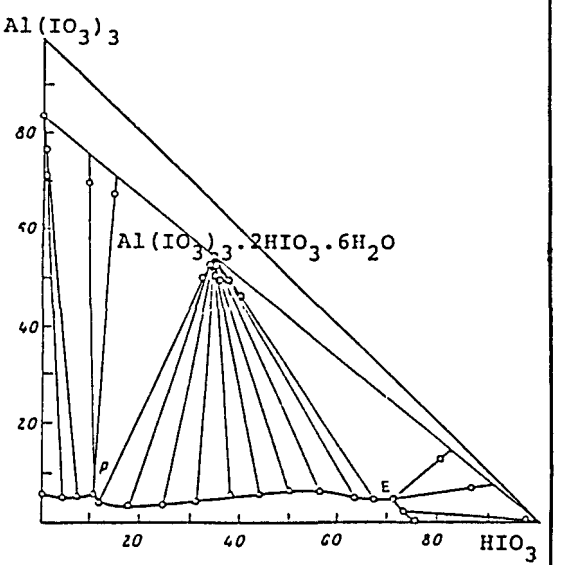
Aluminum iodate prepd from iodic acid and freshly pptd aluminum hydroxide. Chemically pure grade iodic acid was recrystallized from aqueous solution before use.

ESTIMATED ERROR:

Nothing specified.

COMMENTS AND/OR ADDITIONAL DATA

The phase diagram below is in mass % units.



COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Iodic acid; HIO_3; [7782-68-5] (2) Scandium iodate; $Sc(IO_3)_3$; [42096-67-3] (3) Water; H_2O; [7732-18-5]	Vinogradov, E. E.; Lepeshkov, I. N.; Tarasova, G. N. *Zh. Neorg. Khim.* 1977, *22*, 2858-61; *Russ. J. Inorg. Chem.* (*Engl. Transl.*) 1977, *22*, 1552-4
VARIABLES: T/K = 298 Composition	**PREPARED BY:** Hiroshi Miyamoto

EXPERIMENTAL VALUES: Composition of saturated solutions

Scandium Iodate mass %	Scandium Iodate mol % (compiler)	Iodic Acid mass %	Iodic Acid mol % (compiler)	Nature of the solid phase[a]
-	-	75.40[b]	23.99	A
0.001	8×10^{-5}	69.44	18.99	A + C
0.001	8×10^{-5}	69.42	18.86	A + C
0.001[c]	8×10^{-5}	69.47	18.90	A + C
0.03	2×10^{-3}	65.60	16.35	C
0.02	1×10^{-3}	52.23	10.07	C
0.05	3×10^{-3}	45.26	7.813	C
0.02	9×10^{-4}	39.86	6.358	C
0.06	3×10^{-3}	32.19	4.640	C
0.05	2×10^{-3}	27.13	3.675	C
0.06	2×10^{-3}	22.86	2.948	C
0.08	3×10^{-3}	17.20	2.085	C
0.08	3×10^{-3}	10.12	1.141	C
0.09	3×10^{-3}	5.79	0.626	C
0.10	3.3×10^{-3}	3.25	0.343	C
0.15	4.8×10^{-3}	0.53	0.054	C
0.19	6.0×10^{-3}	0.16	0.016	C + B
0.19	6.0×10^{-3}	0.16	0.016	C + B
0.21	6.7×10^{-3}	-	-	B

[a] A = HIO_3; B = $Sc(IO_3)_3.18H_2O$; C = $Sc(IO_3)_3.4HIO_3.18H_2O$.

continued.....

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The isothermal method was used. Equilibrium of the system $Sc(IO_3)_3$-HIO_3-H_2O was reached in 7-10 days. Both the liquid and solid phases were analyzed: scandium was determined complexmetrically, and the iodate determined iodometrically. The iodic acid concentration was determined by titration with 0.01 mol dm^{-3} KOH solution using methyl red as an indicator. The composition and nature of the solid phases was determined by Schreinemakers' method of residues, X-ray diffraction, thermography, and thermogravimetry.	Chemically pure grade iodic acid was used. Scandium iodate was made by dissolving scandium oxide in hot concentrated nitric acid, and the $Sc(NO_3)_3.6H_2O$ obtained recrystallized several times. Scandium iodate was prepd by mixing the scandium nitrate and lithium iodate. The purity of the product was checked by chemical and X-ray diffraction analyses. The formula was found to be $Sc(IO_3)_3.18H_2O$.
	ESTIMATED ERROR: Nothing specified.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS
(1) Iodic acid; HIO_3; [7782-68-5] (2) Scandium iodate; $Sc(IO_3)_3$; [42096-67-3] (3) Water; H_2O; [7732-18-5]	Vinogradov, E. E.; Lepeshkov, I. N.; Tarasova, G. N. *Zh. Neorg. Khim.* 1977, *22*, 2858-61; *Russ. J. Inorg. Chem. (Engl. Transl.)* 1977 *22*, 1552-4.

EXPERIMENTAL VALUES: (Continued)

[b]For binary systems the compiler computes the following:

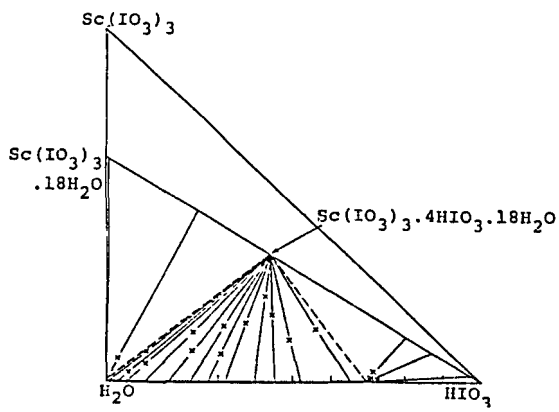
soly of HIO_3 = 17.47 mol kg^{-1}

soly of $Sc(IO_3)_3$ = 3.7 x 10^{-3} mol kg^{-1}

[c]The value is not given in the original paper, but the compiler presumes that the value is 0.001 mass % $Sc(IO_3)_3$.

COMMENTS AND/OR ADDITIONAL DATA:

The phase diagram is given below (based on mass % (?)).



COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Iodic Acid; HIO_3; [7782-68-5] (2) Lanthanium iodate; $La(IO_3)_3$; [13870-19-4] (3) Water; H_2O; @7732-18-5]	Lyalina, R. B.; Soboleva, L. V. *Zh. Neorg. Khim.* 1975, *20*, 2568-9; *Russ. J. Inorg. Chem. (Engl. Transl.)* 1975, *20*, 1424-5.
VARIABLES: T/K = 298 Composition	**PREPARED BY:** Hiroshi Miyamoto

EXPERIMENTAL VALUES:

Composition of saturated solutions			Nature of the solid phase[a]
Iodic Acid mass %	Lanthanium iodate mass %	mol % (compiler)	
3.31	Very low solubility		A
9.66	"		A
11.36	"		A
18.84	"		A
25.50	"		A
31.93	"		A
32.51	"		A
35.91	"		A
39.55	Very low solubility		B
45.04	"		B
49.52	"		B
55.21	"		B
61.49	"		B
62.66	Very low solubility		B + C
69.27	"		B + C
72.00	"		B + C
77.54	"		B + C

[a] A = $La(IO_3)_3.2.5H_2O$; B = $La(IO_3)_3$; C = HIO_3

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The compiler assumes that the isothermal method was used. The attainment of equilibrium was deduced from the constancy of the iodate ion concentration in the liquid phase. The time required for equilibrium was 40 hours.
Iodic acid in the liquid phase was determined by iodometric titration.
Lanthanium concentration in solution could not be determined owing to the very low solubility

SOURCE AND PURITY OF MATERIALS:

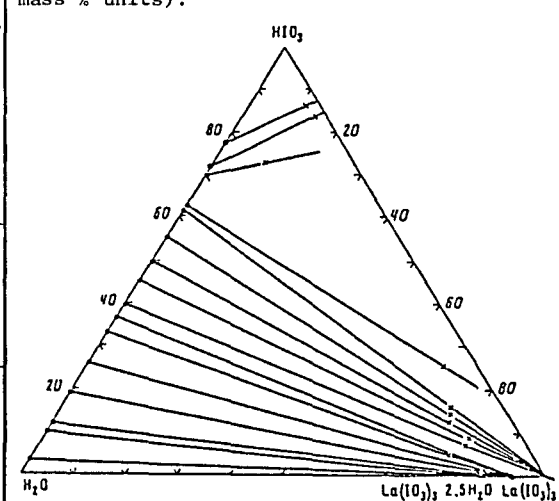
Chemically pure grade iodic acid was used. Lanthanium iodate was synthesized from lanthanium nitrate and potassium iodate.

ESTIMATED ERROR:

Nothing specified.

COMMENTS AND/OR ADDITIONAL DATA:

The phase diagram is given below (based on mass % units).



COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Iodic acid; HIO_3; [7782-68-5] (2) Neodymium iodate; $Nd(IO_3)_3$; [14732-16-2] (2) Water; H_2O; [7732-18-5]	Tarasova, G. N.; Vinogradov, E. E. Kudinov, I. P. *Zh. Neorg. Khim.* 1982, 27, 505-12; *Russ. J. Inorg. Chem. (Engl. Transl.)* 1982, 27, 287-92.
VARIABLES: T/K = 298 Composition	PREPARED BY: Hiroshi Miyamoto

EXPERIMENTAL VALUES:

Composition of saturated solutions				
Neodymium Iodate		Iodic Acid		Nature of the solid phase[a]
mass %	mol % (compiler	mass %	mol % (compiler)	
<0.15[b]	4×10^{-3}	-	-	A
<0.01	3×10^{-4}	0.29	0.030	A
<0.01	3×10^{-4}	1.33	0.138	A
<0.01	3×10^{-4}	1.76	0.183	A
<0.01	3×10^{-4}	3.75	0.397	A
<0.01	3×10^{-4}	4.22	0.449	A
<0.01	3×10^{-4}	5.89	0.637	A + B
<0.01	3×10^{-4}	5.89	0.637	A + B
<0.01	3×10^{-4}	9.30	1.039	B
<0.01	3×10^{-4}	10.93	1.241	B
<0.01	3×10^{-4}	11.39	1.299	B
<0.01	3×10^{-4}	14.87	1.758	B
<0.01	3×10^{-4}	16.34	1.961	B
<0.01	3×10^{-4}	16.15	1.935	B + C
<0.01	3×10^{-4}	16.13	1.932	B + C
<0.01	3×10^{-4}	16.17	1.937	C
<0.01	3×10^{-4}	25.34	3.360	C
<0.01	4×10^{-4}	27.01	3.652	C
<0.01	4×10^{-4}	35.48	5.332	C
<0.01	4×10^{-4}	41.65	6.813	C
<0.01	5×10^{-4}	47.28	8.413	C
<0.01	5×10^{-4}	50.82	9.572	C
<0.01	5×10^{-4}	55.61	11.37	C
<0.01	6×10^{-4}	61.17	13.89	C

contd..

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The experiments were carried out in a water thermostat with an electric heater. Equilibrium was established in 18 to 21 days.

The liquid phases were analyzed for Nd^{3+} and IO_3^- ions. The iodate concentration was determined by titration with sodium thiosulfate in the presence of sulfuric acid and potassium iodide. The neodymium content was determined by complexometric titration with hexamethylenetetramine and methyl thymol blue indicator. The composition of the solid phase was determined by Schreinemakers' method of "residues", and identified by X-ray diffraction.

SOURCE AND PURITY OF MATERIALS:

Chemically pure grade iodic acid was used. Neodymium iodate was made from neodymium oxide and iodic acid.

ESTIMATED ERROR:

Soly: nothing specified.

Temp: ± 0.1 K (authors).

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS
(1) Iodic acid; HIO_3; [7782-68-5] (2) Neodymium iodate; $Nd(IO_3)_3$; [14732-16-2] (3) Water; H_2O; [7732-18-5]	Tatasova, G. N.; Vinogradov, E. E.; Kudinov, I. B. *Zh. Neorg. Khim.* 1982, 27, 505-12; *Russ. J. Inorg. Chem.* (*Engl. Transl.*) 1982, 27, 287-92.

EXPERIMENTAL VALUES (Continued)

Composition of saturated solutions

Neodymium Iodate		Iodic Acid		Nature of the solid phase[a]
mass %	mol % (compiler)	mass %	mol % (compiler)	
0.01	7×10^{-4}	66.24	16.74	C
0.01	8×10^{-4}	73.30	21.95	C
0.01	8×10^{-4}	74.15	22.71	C + D
0.01	8×10^{-4}	74.15	22.71	C + D
-	-	75.40[b]	23.89	D

[a] A = $Nd(IO_3)_3$; B = $Nd(IO_3)_3.HIO_3.2H_2O$; C = $Nd(IO_3)_3.3HIO_3.2H_2O$; D = HIO_3

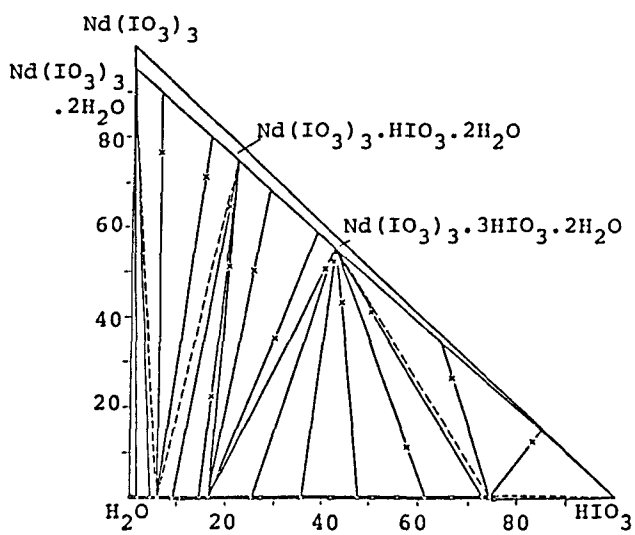
[b] For binary systems, the compiler computes the following:

Soly of HIO_3 = 17.42 mol kg^{-1}

Soly of $Nd(IO_3)_3$ = 2.2×10^{-3} mol kg^{-1}

COMMENTS AND/OR ADDITIONAL DATA:

The phase diagram is given below (based on mass % units).



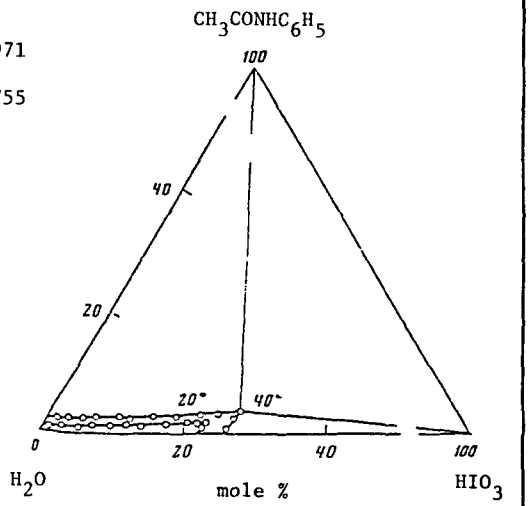
COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Iodic acid; HIO_3 [7782-68-5] (2) N-Phenylacetamide (acetanilide); C_8H_9NO; [103-84-4] (3) Water; H_2O; [7732-18-5]	Erkasov, R. Sh.; Beremzhanov, B. A.; Nurakhmhmetov, N. N. *Zh. Neorg. Khim.* 1981, *26*, 1441-4; *Russ. J. Inorg. Chem. (Engl. Transl.)* 1981, *26*, 776-8.
VARIABLES:	PREPARED BY:
T/K = 293 and 313	M. Salomon and H. Miyamoto

EXPERIMENTAL VALUES:

Numerical data given only for the two eutonic points at 20°C and 40°C. The phase diagram is given below (mole % units). below:

	C_8H_9NO		HIO_3	
t/°C	mass %	mol %[a]	mass %	mol %[a]
20	0.88	0.149	22.84	2.971
40	1.96	0.353	27.12	3.755

[a]Calculated by compilers.



AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The solubility was studied by the isothermal method. Equilibrium in the system was reached after continuous stirring for 10-12 hours. Acetanilide was found from amount of nitrogen determined by the Kjeldahl method, or by titration with 0.05N potassium bromate solution (ref 1). Iodic acid was determined by titration with 0.1N sodium thiosulfate solution.
The compositions of the solid phases were found by Schreinemakers' method of residues.

SOURCE AND PURITY OF MATERIALS:

"Analytical reagent" grade acetanilide and "chemically pure" grade iodic acid were used.

ESTIMATED ERROR:

Nothing specified.

REFERENCES:

1. Suslennikova, V. M.; Kiseleva, E. K. *Rukovodstvo po Prigotovleniya Titrovannykh Rastvorov (Handbook on the Preparation of Titrating Solutions)* Izd. Khimya, Leningrad 1973.