COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium bromate; $NaBrO_3$; [7789-38-0]	Ricci, J.E.
(2) Water; H_2O; [7732-18-5]	*J. Am. Chem. Soc.* 1934, *56*, 299-303.
VARIABLES:	**PREPARED BY:**
T/K = 278 to 323	Hiroshi Miyamoto

EXPERIMENTAL VALUES:

Solubility of $NaBrO_3$

t/°C	mass %	mol % (compiler)	mol kg^{-1} (compiler)	Density g cm^{-3}	Nature of the solid phase
5	21.42	3.152	1.807	1.194	$NaBrO_3$
10	23.24	3.489	2.006	1.211	"
15	24.94	3.816	2.202	1.232	"
20	26.69	4.166	2.413	1.248	"
25	28.29	4.498	2.614	1.257	"
30	29.85	4.835	2.820	1.284	"
35	31.35	5.170	3.026	1.288	"
40	32.80	5.507	3.235	1.310	"
45	34.22	5.848	3.448	-	"
50	35.55	6.179	3.656	-	"

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Mixtures of $NaBrO_3$ and water were placed in a bottle, and rotated in a large water thermostat for two days which was found to be sufficient for attainment of equilibrium. Samples of the saturated solution were withdrawn by means of a calibrated pipet provided with a folded filter paper at the tip. The bromate content was determined by titration with standard sodium thiosulfate solution.

SOURCE AND PURITY OF MATERIALS:

C.p. grade $NaBrO_3$ was recrystallized, dried to the anhydrous state, and then kept constantly in a 100°C oven.

ESTIMATED ERROR:

Soly: accuracy within 0.2 %.
Temp: precision ± 0.01 K.
Densities: precision about 0.1 %.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium bromate; $NaBrO_3$; [7789-38-0] (2) Water-d_2; D_2O; [7789-20-0] (3) Water; H_2O; [7732-18-5]	Noonan, E.C. *J. Am. Chem. Soc.* 1948, *70*, 2915-8.
VARIABLES: T/K = 278.15	**PREPARED BY:** W.A. Van Hook

EXPERIMENTAL VALUES:

t/°C	water-d_2	Soly $NaBrO_3$ moles/100 moles solvent
5	0	3.253[a]
	91.59	2.899
	100.0	2.867[b]

[a] Solubility in H_2O taken from ref (1).

[b] Extrapolated by the author assuming a linear dependence between solubility and mass % D_2O.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Appropriate excess of purified salts were placed in ampoules, and heavy water was distilled in under vacuum and the ampules sealed. Equilibrium was approached from the high temperature side only by rotating the ampules for 12 to 48 hours in a water-bath. After settling one hour, 2-5 ml samples of solution were removed with pipets fitted with glass wool filters. The pipets were kept at the same temperature as the solutions. Samples of the solution were transferred to tared 30 ml platinum crucibles contained in suitable weighing bottles, and evaporated to dryness.
All solubility determinations were performed in duplicate.

SOURCE AND PURITY OF MATERIALS:

Commercial reagent grade salt was recrystallized at least twice. Heavy water was treated by distillation from alkaline permanganate and then from crystals of potassium dichromate or chromic anhydride. The product was found to have a conductivity of 2×10^{-6} S cm^{-1} or better.

ESTIMATED ERROR:
Soly: precision 0.5 % or better (author).
Temp: precision ± 0.01 K (author).

REFERENCES:

1. Ricci, A. *J. Am. Chem. Soc.* 1934, *56*, 230.