| COMPONENTS: | ORIGINAL MEASUREMENTS: |
|---|---|
| (1) Cesium bromate; $CsBrO_3$; [13454-75-6] | McCrosky, C.R.; Buell, H.D. |
| (2) Water; $H_2O$; [7732-18-5] | *J. Am. Chem. Soc.* 1920, *42*, 1786-9. |
| **VARIABLES:** | **PREPARED BY:** |
| T/K = 303.2 | Hiroshi Miyamoto |

**EXPERIMENTAL VALUES:**

Solubility of cesium bromate in water at 30°C[a]

| g/100g $H_2O$ | mol $kg^{-1}$ |
|---|---|
| 4.484 | 0.1800 |
| 4.573 | 0.1837 |
| 4.525 | 0.1817 |
| 4.549 | 0.1827 |
| 4.483 | 0.1800 |
| 4.577 | 0.1837 |
| (Av)4.53 | 0.182 |

[a] Molalities calculated by the compiler.

AUXILIARY INFORMATION

**METHOD/APPARATUS/PROCEDURE:**

Mixtures of cesium bromate and water were shaken in a thermostat. About 5 hours were allowed for the salt to come into equilibrium with the solvent before the saturated solution was withdrawn for analysis. Aliquots of the saturated solution were weighed and then carefully evaporated to dryness until constant in weight.

**SOURCE AND PURITY OF MATERIALS:**

Cesium bromate was prepared by neutralization of CsOH with bromic acid followed by addition of excess bromic acid. The solution was evaporated somewhat and allowed to crystallize. The product was recrystallized from water and then dried.

**ESTIMATED ERROR:**

Soly: standard deviation(σ) 0.04 for g/100g $H_2O$ units.
Temp: precision ± 0.3 K.

**REFERENCES:**

| COMPONENTS: | ORIGINAL MEASUREMENTS: |
|---|---|
| (1) Cesium bromate; $CsBrO_3$; [13454-75-6] | Buell, H.D.; McCrosky, C.R. |
| (2) Water; $H_2O$; [7732-18-5] | *J. Am. Chem. Soc.* 1921, *43*, 2031-4. |
| **VARIABLES:** | **PREPARED BY:** |
| T/K = 298, 303 and 308 | Hiroshi Miyamoto and Mark Salomon |

**EXPERIMENTAL VALUES:**

Solubility of $CsBrO_3$

| t/°C | g/100g $H_2O$ | mol $kg^{-1}$ (compiler) |
|---|---|---|
| 25 | 3.627 | 0.1444 |
| | 3.664 | 0.1458 |
| | 3.710 | 0.1477 |
| | (Av) 3.68 ($\sigma$ = 0.04) | 0.146 |
| 30 | 4.484 | 0.1800 |
| | 4.573 | 0.1837 |
| | 4.525 | 0.1817 |
| | (Av) 4.53 ($\sigma$ = 0.04) | 0.182 |
| 35 | 5.357 | 0.2170 |
| | 5.410 | 0.2193 |
| | 5.215 | 0.2110 |
| | (Av) 5.32 ($\sigma$ = 0.10) | 0.216 |

AUXILIARY INFORMATION

**METHOD/APPARATUS/PROCEDURE:**

The method for determining the solubility is similar to that described in ref 1. Mixtures of cesium bromate and water were agitated in a thermostat. About 5 hours were required to attain equilibrium. Two methods of analysis were used. In the first method, aliquots of the saturated solutions were weighed, carefully evaporated to dryness, and dried at 115°C to constant weight. In the second method, the iodometric method was used to determine the bromate concentration. Both methods were of equal precision.

**SOURCE AND PURITY OF MATERIALS:**

Nothing specified, but the compiler assumes that the preparation of cesium bromate was similar to that described in ref 1.

**ESTIMATED ERROR:**

Soly: precision in analyses about ± 0.3 % (compilers). Standard deviations for solubility measurements given in table calculated by compilers.

Temp: nothing specified.

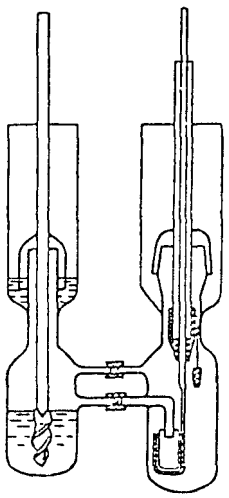
**REFERENCES:**

1. McCrosky, C.R.; Buell, H.D. *J. Am. Chem. Soc.* 1920, *42*, 1786.

| COMPONENTS: | ORIGINAL MEASUREMENTS: |
|---|---|
| (1) Cesium bromate; $CsBrO_3$; [13454-75-6]<br>(2) Water; $H_2O$; [7732-18-5] | Breusov, O.N.; Kashina, N.I.; Revzina, T.V.; Sobolevskaya, N.G.<br>*Zh. Neorg. Khim.* 1967, *12*, 2240-3; *Russ. J. Inorg. Chem. (Engl. Transl.)* 1967, *12*, 1179-81. |
| VARIABLES:<br>T/K = 273 to 373 | PREPARED BY:<br>Hiroshi Miyamoto |

EXPERIMENTAL VALUES:

| t/°C | Solubility of $CsBrO_3$ mass % | mol % | mol $kg^{-1}$ (compiler) |
|---|---|---|---|
| 0 | 1.17 | 0.0817 | 0.0454 |
| 10 | 1.90 | 0.134 | 0.0743 |
| 20 | 2.09 | 0.212 | 0.0818 |
| 25 | 3.75 | 0.268 | 0.149 |
| 30 | 4.46 | 0.321 | 0.179 |
| 40 | 6.28 | 0.461 | 0.257 |
| 50 | 8.56 | 0.642 | 0.359 |
| 60 | 11.32 | 0.874 | 0.489 |
| 70 | 14.48 | 1.156 | 0.649 |
| 80 | 17.99 | 1.493 | 0.841 |
| 90 | 22.01 | 1.912 | 1.082 |
| 100 | 25.96 | 2.365 | 1.344 |



High Temp. Apparatus

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Isothermal method. Equilibrium reached in 4-5 h. From 90-100°C, soly detd in apparatus shown in figure. At equilibrium, the apparatus was tilted to allow satd sln to filter through connecting tube into weighed test tubes. The test tube was closed with a stopper, withdrawn, and weighed. Condensation on the walls of the apparatus and loss of water by evaporation was thus prevented. At the lower temperatures, ordinary soly vessels were used, and pipets with glass filters were used for sampling (no other details given). Above 50°C, the pipets were preheated in the thermostat.
Bromate was determined iodometrically.

SOURCE AND PURITY OF MATERIALS:

Results of analysis of $CsBrO_3$;

Content of $CsBrO_3$ = 99.3 %
Impurities(mass %): K <0.002;
Rb 0.09; Na 0.0025; $SO_4$ 0.05; Fe 0.005.

ESTIMATED ERROR:

Soly: nothing specified.
Temp: precision ± 0.1 K.

REFERENCES: