

| COMPONENTS: (1) Cerium iodide; CeI_3 ; [7790-87-6] (2) Ethanol; C_2H_5OH ; [64-17-5] (3) Water; H_2O ; [7732-18-5] | ORIGINAL MEASUREMENTS: Yastrebova, L.F.; Grigor, T.I.; Kuznetsova, G.P.; Stepin, B.D. Zh. Neorg. Khim. 1981, 26, 2238-9; Russ, J. Inorg. Chem. (Engl. Transl.), 1981, 26, 1203-4. | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|-------------------|----------------------|---------------------|--|--|--|---------------------|-----------|--|--|---------|--------|--------|----------------------|-------------|--------------|-------|-------|-------|---------------------|--------|-------|-------|-------|---|
| VARIABLES: Composition at 273 K | PREPARED BY: T. Mioduski and M. Salomon | | | | | | | | | | | | | | | | | | | | | | | | | |
| EXPERIMENTAL VALUES: <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="text-align: center;">solubility at 0°C</th> </tr> <tr> <th style="width: 15%;"></th> <th style="width: 15%;">$CeI_3 \cdot 9H_2O$</th> <th colspan="2" style="width: 30%;">CeI_3^a</th> <th style="width: 25%;"></th> </tr> <tr> <th style="text-align: left;">solvent</th> <th style="text-align: center;">mass %</th> <th style="text-align: center;">mass %</th> <th style="text-align: center;">mol kg⁻¹</th> <th style="text-align: left;">solid phase</th> </tr> </thead> <tbody> <tr> <td>$C_2H_5OH^b$</td> <td style="text-align: center;">78.57</td> <td style="text-align: center;">59.92</td> <td style="text-align: center;">2.879</td> <td>$CeI_3 \cdot 9H_2O$</td> </tr> <tr> <td>H_2O</td> <td style="text-align: center;">89.51</td> <td style="text-align: center;">68.26</td> <td style="text-align: center;">4.129</td> <td style="text-align: center;">"</td> </tr> </tbody> </table> <p>^aResults for the anhydrous salt calculated by the compilers.</p> <p>^bAuthors' original results reported in terms of the solubility of nonhydrate in the pure alcohol. Accounting for the waters of hydration, the compilers calculate that at equilibrium, the solvent contains 53.46 mass % alcohol and 46.34 mass % water.</p> | | solubility at 0°C | | | | | | $CeI_3 \cdot 9H_2O$ | CeI_3^a | | | solvent | mass % | mass % | mol kg ⁻¹ | solid phase | $C_2H_5OH^b$ | 78.57 | 59.92 | 2.879 | $CeI_3 \cdot 9H_2O$ | H_2O | 89.51 | 68.26 | 4.129 | " |
| solubility at 0°C | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | $CeI_3 \cdot 9H_2O$ | CeI_3^a | | | | | | | | | | | | | | | | | | | | | | | | |
| solvent | mass % | mass % | mol kg ⁻¹ | solid phase | | | | | | | | | | | | | | | | | | | | | | |
| $C_2H_5OH^b$ | 78.57 | 59.92 | 2.879 | $CeI_3 \cdot 9H_2O$ | | | | | | | | | | | | | | | | | | | | | | |
| H_2O | 89.51 | 68.26 | 4.129 | " | | | | | | | | | | | | | | | | | | | | | | |
| AUXILIARY INFORMATION | | | | | | | | | | | | | | | | | | | | | | | | | | |
| METHOD/APPARATUS/PROCEDURE: Isothermal method used. No information was given on how equilibrium was ascertained. Aliquots of saturated solution were withdrawn and analyzed for the metal complexometrically, for iodide by a potentiometric volumetric argentometric method, and for water by the Karl Fischer method. The alcohol and water contents in the mixtures ^c were found by quantitative gas chromatography. Solid phase compositions were determined by Schreinemakers' method of residues. | SOURCE AND PURITY OF MATERIALS: The nonhydrate, $CeI_3 \cdot 9H_2O$, was synthesized according to (1,2). The alcohol was dried and purified by "recommended" methods. The source and purity of water was not specified. | | | | | | | | | | | | | | | | | | | | | | | | | |
| ^c These statements indicate that the authors studied the ternary system over a wide range of compositions. However no phase diagram was given, and the only numerical results reported are those given in the data table above. The phase diagram is stated to be similar to that for the $NdI_3 - H_2O - C_4H_9OH$ system (see the compilation for this system). | ESTIMATED ERROR: Nothing specified. | | | | | | | | | | | | | | | | | | | | | | | | | |
| | REFERENCES: 1. Yakimova, Z.P.; Kuznetsova, G.P.; Yastrebova, L.F.; Stepin, B.D. Zh. Neorg. Khim. 1977, 22, 251. 2. Belousova, A.P.; Kuznetsova, G.P.; Rukk, N.S.; Stepin, B.D. Zh. Neorg. Khim. 1979, 24, 1410. | | | | | | | | | | | | | | | | | | | | | | | | | |

| COMPONENTS: (1) Cerium iodide; CeI_3 ; [7790-87-6] (2) 1-Butanol; $C_4H_{10}O$; [71-36-3] (3) Water; H_2O ; [7732-18-5] | ORIGINAL MEASUREMENTS: Yastrebova, L. F.; Grigor, T. I.; Kuznetsova, G. P.; Stepin, B. D. <i>Zh. Neorg. Khim.</i> 1981, 26, 2238-9; <i>Russ. J. Inorg. Chem. (Engl. Transl.)</i> , 1981, 26, 1203-4. | | | | | | | | | | | | | | | | | | |
|--|--|----------------------|----------------------|---------------------|-------------|-------------|--------|--------|----------------------|------------------------------------|-------|-------|-------|---------------------|------------------|-------|-------|-------|---|
| VARIABLES: Composition at 273 K | PREPARED BY: T. Mioduski and M. Salomon | | | | | | | | | | | | | | | | | | |
| EXPERIMENTAL VALUES: <div style="text-align: center;">solubility at 0°C</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">solvent^b</th> <th>$CeI_3 \cdot 9H_2O$</th> <th colspan="2">CeI_3^a</th> <th rowspan="2">solid phase</th> </tr> <tr> <th>mass %</th> <th>mass %</th> <th>mol kg⁻¹</th> </tr> </thead> <tbody> <tr> <td>n-C₄H₉OH</td> <td>55.90</td> <td>42.63</td> <td>1.427</td> <td>$CeI_3 \cdot 9H_2O$</td> </tr> <tr> <td>H₂O</td> <td>89.51</td> <td>68.26</td> <td>4.129</td> <td>"</td> </tr> </tbody> </table> <p>^aResults for the anhydrous salt calculated by the compilers.</p> <p>^bAuthors' original results reported in terms of the solubility of the nonhydrate in the pure alcohol. Accounting for the waters of hydration, the compilers calculate that at equilibrium the solvent contains 76.87 mass % alcohol and 23.13 mass % water.</p> | | solvent ^b | $CeI_3 \cdot 9H_2O$ | CeI_3^a | | solid phase | mass % | mass % | mol kg ⁻¹ | n-C ₄ H ₉ OH | 55.90 | 42.63 | 1.427 | $CeI_3 \cdot 9H_2O$ | H ₂ O | 89.51 | 68.26 | 4.129 | " |
| solvent ^b | $CeI_3 \cdot 9H_2O$ | | CeI_3^a | | solid phase | | | | | | | | | | | | | | |
| | mass % | mass % | mol kg ⁻¹ | | | | | | | | | | | | | | | | |
| n-C ₄ H ₉ OH | 55.90 | 42.63 | 1.427 | $CeI_3 \cdot 9H_2O$ | | | | | | | | | | | | | | | |
| H ₂ O | 89.51 | 68.26 | 4.129 | " | | | | | | | | | | | | | | | |
| AUXILIARY INFORMATION | | | | | | | | | | | | | | | | | | | |
| METHOD/APPARATUS/PROCEDURE: Isothermal method used. No information was given on how equilibrium was ascertained. Aliquots of saturated solution were withdrawn and analyzed for the metal complexometrically, for iodide by a potentiometric volumetric argentometric method, and for water by the Karl Fischer method. The alcohol and water contents in the mixtures ^c were found by quantitative gas chromatography. Solid phase compositions were determined by Schreinemakers' method of residues. | SOURCE AND PURITY OF MATERIALS: The nonhydrate, $CeI_3 \cdot 9H_2O$, was synthesized according to (1,2). The alcohol was dried and purified by recommended methods. The source and purity of water was not specified. | | | | | | | | | | | | | | | | | | |
| ^c These statements indicate that the authors studied the ternary system over a wide range of compositions. However no phase diagram was given, and the only numerical results reported are those given in the data table above. The Phase diagram is stated to be similar to that for the $NdI_3 - H_2O - C_4H_9OH$ system (see the compilation for this system). | ESTIMATED ERROR: Nothing specified. | | | | | | | | | | | | | | | | | | |
| | REFERENCES: 1. Yakimova, Z.P.; Kuznetsova, G.P.; Yastrebova, L.F.; Stepin, B.D. <i>Zh. Neorg. Khim.</i> 1977, 22, 251. 2. Belousova, A.P.; Kuznetsova, G.P.; Rukk, N.S.; Stepin, B.D. <i>Zh. Neorg. Khim.</i> 1979, 24, 1410. | | | | | | | | | | | | | | | | | | |

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| COMPONENTS: (1) Cerium iodide; CeI_3 ; [7790-87-6] (2) Tetrahydrofuran; C_4H_8O ; [109-99-9] | ORIGINAL MEASUREMENTS: Kachkimbaeva, S.A.; Chalova, E.P.; Bleshinskii, S.V. <i>Khim. Kompleks. Soedin. Redk. Sopot- stvuyushchikh Elem.</i> <u>1970</u> , 122-6. |
| VARIABLES: T/K = 293 | PREPARED BY: T. Mioduski |
| EXPERIMENTAL VALUES: The solubility of CeI_3 in tetrahydrofuran at 20°C was reported to be 0.14 g dm^{-3} ($2.69 \times 10^{-4} \text{ mol dm}^{-3}$, compiler). | |
| AUXILIARY INFORMATION | |
| METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were equilibrated isothermally by agitation. The phases were separated by decantation, and in some cases by centrifuging. Ce determined by the oxalate method. Iodide determined by titration with an $AgNO_3$ solution (the Volhard method). | SOURCE AND PURITY OF MATERIALS: CeI_3 prepared by heating "cp" grade I_2 with excess metallic Ce (Ce-E-1) in a sealed ampoule, and the CeI_3 collected by sublimation to the cold part of the ampoule. Analyses for Ce and I revealed the presence of CeI_2 . The I/Ce ratio was 2.82. "C.p." grade tetrahydrofuran (GDR), b.p. = 65.6°C was treated with NaOH and Na, and then distilled from metallic sodium. |
| ESTIMATED ERROR: Nothing specified. | |
| REFERENCES: | |