

COMPONENTS: (1) Cerium (IV) chloride; CeCl ₄ ; [14986-52-8] (2) Tetrachlorostannate; SnCl ₄ ; [7646-78-8] (3) Phosphorus oxychloride; POCl ₃ ; [10025-87-3]	ORIGINAL MEASUREMENTS: Lyubimov, E.I.; Batyaev, I.M. <i>Zh. Prikl. Khim.</i> <u>1972</u> , <i>45</i> , 1176-8.						
VARIABLES: T/K = 293	PREPARED BY: T. Mioduski						
EXPERIMENTAL VALUES: <table data-bbox="322 473 1270 608" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">SnCl₄:POCl₃ ratio (by volume)</th> <th style="text-align: center;">SnCl₄ concentration mol dm⁻³</th> <th style="text-align: center;">CeO₂ solubility^a moles Ce dm⁻³</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1:50</td> <td style="text-align: center;">0.17</td> <td style="text-align: center;">0.007</td> </tr> </tbody> </table> <p data-bbox="322 647 1209 917"> ^aSince the solubility is reported for CeO₂ in terms of moles of Ce dm⁻³, this also corresponds to the solubility of CeCl₄ in units of mol dm⁻³ assuming that no reduction of CeO₂ and CeCl₄ takes place. Presumably all CeO₂ present in the initial mixture reacts with POCl₃ to form the chloride CeCl₄ (e.g. see the compilation for the LaCl₃-SnCl₄-POCl₃ system by the same authors). </p>		SnCl ₄ :POCl ₃ ratio (by volume)	SnCl ₄ concentration mol dm ⁻³	CeO ₂ solubility ^a moles Ce dm ⁻³	1:50	0.17	0.007
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AUXILIARY INFORMATION							
METHOD/APPARATUS/PROCEDURE: Isothermal method used. POCl ₃ + SnCl ₄ solutions were prepared by volume in a dry box. The SnCl ₄ content was verified by chemical analysis for Sn. This solution and CeO ₂ were placed in sealed ampoules, heated to 120°C for 2 hours to increase the rate of solution, and then rotated in an air thermostat at 20°C for 2 hours. Without preheating, equilibrium was established after 200 hours. Preheating to 120°C lowered the equilibration time at 20°C to 2 hours. Ce was determined by the oxalate method. The reported solubilities are mean values based on 3-5 parallel determinations.	SOURCE AND PURITY OF MATERIALS: CeO ₂ of "the first sort" was ignited at 950°C for 2 hours. "Pure" grade SnCl ₄ and POCl ₃ were dehydrated with P ₂ O ₅ and distilled under vacuum. ESTIMATED ERROR: Soly: authors state the "coefficient of variance" to be less than 7%. Temp: precision presumably ± 0.2K (compiler). REFERENCES:						