

COMPONENTS: (1) Ytterbium chloride; YbCl_3 ; [10361-91-8] (2) Methanol; CH_4O ; [67-56-1]	ORIGINAL MEASUREMENTS: Merbach, A.; Pitteloud, M.N.; Jaccard, P. <i>Helv. Chim. Acta</i> <u>1972</u> , <i>55</i> , 44-52. Pitteloud, M.N. <i>These. Faculte des Sciences de l'Universite de Lausanne. 1971.</i>				
VARIABLES: $T/K = 298.2$	PREPARED BY: T. Mioduski and M. Salomon				
EXPERIMENTAL VALUES: <table style="width: 100%; border: none;"> <thead> <tr> <th style="text-align: center;">$t/^\circ\text{C}$</th> <th style="text-align: center;">mean solubility^a mol kg^{-1}</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">25</td> <td style="text-align: center;">4.90</td> </tr> </tbody> </table> <p>^aInitial salt is the adduct $\text{YbCl}_3 \cdot 4\text{CH}_3\text{OH}$. Equilibrated solid phase analyzed and found to be $\text{YbCl}_3 \cdot 3.8\text{CH}_3\text{OH}$.</p>		$t/^\circ\text{C}$	mean solubility ^a mol kg^{-1}	25	4.90
$t/^\circ\text{C}$	mean solubility ^a mol kg^{-1}				
25	4.90				
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE: Isothermal method as in (1,2). Mixtures were equilibrated for at least 4 days. Prolonged operations were performed in a dry box. Ytterbium determined by titration with $(\text{NH}_4)_3\text{H}(\text{EDTA})$ using a small amount of urotropine buffer and Xylenol Orange indicator. Chloride was determined by potentiometric titration with AgNO_3 solution. Composition of the adduct $\text{YbCl}_3 \cdot 4\text{CH}_3\text{OH}$ confirmed by ^1H NMR and X-ray diffraction. The reported solubilities are mean values of 2-4 determinations.	SOURCE AND PURITY OF MATERIALS: Yb_2O_3 of at least 99.9% purity dissolved in HCl to produce the hexahydrate. The adduct $\text{YbCl}_3 \cdot 4\text{CH}_3\text{OH}$ prepared by dissolving the hydrate in a small excess of o-methylformate followed by distillation and crystallization from methanol. Methanol was purified and dried by the Vogel method. ESTIMATED ERROR: Soly: precision $\pm 0.5\%$ as in (1) (compilers). Temp: precision probably at least ± 0.05 K as in (1) (compilers). REFERENCES: 1. Brunisholz, F.; Quinch, J.P.; Kalo, A.M. <i>Helv. Chim. Acta</i> <u>1964</u> , <i>47</i> , 14. 2. Flatt, R. <i>Chimia</i> <u>1952</u> , <i>6</i> , 62.				

COMPONENTS: (1) Ytterbium chloride; YbCl_3 ; [10361-91-8] (2) Ethanol; $\text{C}_2\text{H}_6\text{O}$; [64-17-5]	ORIGINAL MEASUREMENTS: Merbach, A.; Pitteloud, M.N.; Jaccard, P. <i>Helv. Chim. Acta</i> <u>1972</u> , <i>55</i> , 44-52. Pitteloud, M.N. <i>These. Faculte des Sciences de l'Universite de Lausanne.</i> <u>1971</u> .				
VARIABLES: T/K = 298.2	PREPARED BY: T. Mioduski and M. Salomon				
EXPERIMENTAL VALUES: <div style="text-align: center;"> <table border="0"> <thead> <tr> <th style="text-align: center;">$t/^\circ\text{C}$</th> <th style="text-align: center;">mean solubility^a mol kg^{-1}</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">25</td> <td style="text-align: center;">4.26</td> </tr> </tbody> </table> </div> <p>^aInitial salt is the adduct $\text{YbCl}_3 \cdot 3\text{C}_2\text{H}_5\text{OH}$. Equilibrated solid phase analyzed and found to be $\text{YbCl}_3 \cdot 3.6\text{C}_2\text{H}_5\text{OH}$.</p>		$t/^\circ\text{C}$	mean solubility ^a mol kg^{-1}	25	4.26
$t/^\circ\text{C}$	mean solubility ^a mol kg^{-1}				
25	4.26				
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE: Isothermal method as in (1,2). Mixtures were equilibrated for at least 4 days. Prolonged operations were performed in a dry box. Ytterbium determined by titration with $(\text{NH}_4)_3\text{H}(\text{EDTA})$ using a small amount of urotropine buffer and Xylenol Orange indicator. Chloride was determined by potentiometric titration with AgNO_3 solution. Composition of the adduct $\text{YbCl}_3 \cdot 3\text{C}_2\text{H}_5\text{O}$ confirmed by ^1H NMR and X-ray diffraction. The reported solubilities are mean values of 2-4 determinations.	SOURCE AND PURITY OF MATERIALS: Yb_2O_3 of at least 99.9% purity dissolved in HCl to produce the hexahydrate. The adduct $\text{YbCl}_3 \cdot 3\text{C}_2\text{H}_6\text{O}$ prepared by dissolving the hydrate in a small excess of o-ethylformate followed by distillation and crystallization from ethanol. Ethanol (Fluka) was used as received. Purity and absence of water was confirmed by NMR method. ESTIMATED ERROR: Soly: precision $\pm 0.5\%$ as in (1) (compilers). Temp: precision probably at least $\pm 0.05\text{K}$ as in (1) (compilers). REFERENCES: 1. Brunisholz, F.; Quinche, J.P.; Kalo, A.M. <i>Helv. Chim. Acta</i> <u>1964</u> , <i>47</i> , 14. 2. Flatt, R. <i>Chimia</i> <u>1952</u> , <i>6</i> , 62.				

COMPONENTS: (1) Ytterbium chloride; YbCl_3 ; [10361-91-8] (2) Ethanol; $\text{C}_2\text{H}_6\text{O}$; [64-17-5] (3) Water; H_2O ; [7732-18-5]		ORIGINAL MEASUREMENTS: Sakharova, Yu.G.; Ezhova, T.A. <i>Zh. Neorg. Khim.</i> 1976, 21, 551-4; <i>Russ. J. Inorg. Chem. (Engl. Transl.)</i> 1976, 21, 296-8.				
VARIABLES: Temperature		PREPARED BY: T. Mioduski and M. Salomon				
EXPERIMENTAL VALUES:						
solubility of $\text{YbCl}_3 \cdot 6\text{H}_2\text{O}$ in 96.8 % $\text{C}_2\text{H}_5\text{OH}^a$						
	sample 1	sample 2	sample 3	sample 4	mean solubilities	
t/°C	g/100 g ^b	g/100 g	g/100 g	g/100 g	g/100 g	mol kg ^{-1c}
20	47.38	47.30	47.45	47.35	47.37	2.323
30	47.70	47.65	47.74	47.76	47.71	2.355
40	49.54	49.65	49.59	49.63	49.60	2.540
50	51.95	52.10	51.90	51.85	51.95	2.790
60	58.20	58.35	58.29	58.40	58.31	3.610
^a It is not clearly stated whether the mixture is 96.8 mass % or 96.8 volume % ethanol.						
^b Solubilities reported as grams of hexahydrate in 100 g of solvent.						
^c Molalities calculated by the compilers.						
AUXILIARY INFORMATION						
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Equilibrium was reached after 3-4 h. Identical results obtained by approaching equilibrium from above and below. Two of the data points in the table obtained after 3 hours of equilibration, and the remaining two data points obtained after 4 h of equilibration. The metal content in each aliquot taken for analysis was determined by complexometric titration with Trilon B. Analyses of the solids withdrawn at 20°C, 40°C and 60°C showed the solid phase to be the hexahydrate: i.e. ethanol was not found in any of the solid phases.				SOURCE AND PURITY OF MATERIALS: $\text{YbCl}_3 \cdot 6\text{H}_2\text{O}$ prepd by dissolving c.p. grade oxide in dil (1:3) HCl followed by evapn and crystn. The crystals were dried in a desiccator over CaCl_2 , P_2O_5 and NaOH. The crystals analyzed for the metal by titrn with Trilon B, and for Cl by the Volhard method. The hexahydrate melted at 153.0 - 155.2°C. 96.8% ethanol prepd by prolonged boiling of c.p. grade 93.5% ethanol with anhydr CuSO_4 followed by distn. Ethanol concn detd refractometrically and pycnometrically.		
				ESTIMATED ERROR: Soly: results apparently precise to within $\pm 0.9\%$ (compilers). Temp: nothing specified.		
				REFERENCES:		

COMPONENTS: (1) Ytterbium chloride; YbCl_3 ; [10361-91-8] (2) 2-Propanol; $\text{C}_3\text{H}_8\text{O}$; [67-63-0]	ORIGINAL MEASUREMENTS: Merbach, A.; Pitteloud, M.N.; Jaccard, P. <i>Helv. Chim. Acta</i> <u>1972</u> , 55, 44-52. Pitteloud, M.N. <i>These. Faculte des Sciences de l'Universite de Lausanne.</i> <u>1971</u> .				
VARIABLES: $T/K = 298.2$	PREPARED BY: T. Mioduski and M. Salomon				
EXPERIMENTAL VALUES: <table style="width: 100%; border: none;"> <thead> <tr> <th style="text-align: center;">$t/^\circ\text{C}$</th> <th style="text-align: center;">mean solubility^a mol kg^{-1}</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">25</td> <td style="text-align: center;">3.6</td> </tr> </tbody> </table> <p>^aInitial salt is the adduct $\text{YbCl}_3 \cdot 3\text{C}_3\text{H}_7\text{OH}$. Equilibrated solid phase analyzed and found to be $\text{YbCl}_3 \cdot n\text{C}_3\text{H}_7\text{OH}$ where $n = 3.5$ to 3.6.</p>		$t/^\circ\text{C}$	mean solubility ^a mol kg^{-1}	25	3.6
$t/^\circ\text{C}$	mean solubility ^a mol kg^{-1}				
25	3.6				
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE: Isothermal method as in (1,2). Mixtures were equilibrated for at least 4 days. Prolonged operations were performed in a dry box. Ytterbium determined by titration with $(\text{NH}_4)_3\text{H}(\text{EDTA})$ using a small amount of urotropine buffer and Xylenol Orange indicator. Chloride was determined by potentiometric titration with AgNO_3 solution. Composition of the adduct $\text{YbCl}_3 \cdot 3\text{C}_3\text{H}_8\text{O}$ confirmed by ^1H NMR and X-ray diffraction. The reported solubilities are mean values of 2-4 determinations.	SOURCE AND PURITY OF MATERIALS: Yb_2O_3 of at least 99.9% purity dissolved in HCl to produce the hexahydrate. The adduct $\text{YbCl}_3 \cdot 3\text{C}_3\text{H}_8\text{O}$ prepared by dissolving the hydrate in a small excess of o-methylformate followed by distillation and trans-solvation of the methanol complex with 2-propanol. Iso-propanol (Fluka) was used as received. Purity and absence of water was confirmed by NMR. ESTIMATED ERROR: Soly: precision $\pm 0.5\%$ as in (1) (compilers). Temp: precision probably at least $\pm 0.05\text{K}$ as in (1) (compilers). REFERENCES: 1. Brunisholz, F.; Quinche, J.P.; Kalo, A.M. <i>Helv. Chim. Acta</i> <u>1964</u> , 47, 14. 2. Flatt, R. <i>Chimia</i> <u>1952</u> , 6, 62.				

COMPONENTS: (1) Ytterbium chloride; YbCl_3 ; [10361-91-8] (2) Alkoxy-ethanols	ORIGINAL MEASUREMENTS: Kirmse, E.M. <i>Tr. II Vses. Konf. po Teor. Rastvorov</i> <u>1971</u> , 200-6.																		
VARIABLES: T/K = 298	PREPARED BY: T. Mioduski and M. Salomon																		
EXPERIMENTAL VALUES: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">solvent</th> <th colspan="3">YbCl_3 solubility^a</th> <th rowspan="2">nature of the solid phase</th> </tr> <tr> <th>mass %</th> <th>mol kg^{-1}</th> <th></th> </tr> </thead> <tbody> <tr> <td>2-methoxyethanol; $\text{C}_3\text{H}_8\text{O}$; [109-86-4]</td> <td>8.6</td> <td>0.337</td> <td></td> <td>$\text{YbCl}_3 \cdot n\text{C}_3\text{H}_8\text{O}_2$ (n = 2-3)</td> </tr> <tr> <td>2-ethoxyethanol; $\text{C}_4\text{H}_{10}\text{O}_2$; [110-80-5]</td> <td>9.1</td> <td>0.358</td> <td></td> <td>$\text{YbCl}_3 \cdot 2\text{C}_4\text{H}_{10}\text{O}_2$</td> </tr> </tbody> </table> <p>^aMolalities calculated by the compilers.</p>		solvent	YbCl_3 solubility ^a			nature of the solid phase	mass %	mol kg^{-1}		2-methoxyethanol; $\text{C}_3\text{H}_8\text{O}$; [109-86-4]	8.6	0.337		$\text{YbCl}_3 \cdot n\text{C}_3\text{H}_8\text{O}_2$ (n = 2-3)	2-ethoxyethanol; $\text{C}_4\text{H}_{10}\text{O}_2$; [110-80-5]	9.1	0.358		$\text{YbCl}_3 \cdot 2\text{C}_4\text{H}_{10}\text{O}_2$
solvent	YbCl_3 solubility ^a			nature of the solid phase															
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2-methoxyethanol; $\text{C}_3\text{H}_8\text{O}$; [109-86-4]	8.6	0.337		$\text{YbCl}_3 \cdot n\text{C}_3\text{H}_8\text{O}_2$ (n = 2-3)															
2-ethoxyethanol; $\text{C}_4\text{H}_{10}\text{O}_2$; [110-80-5]	9.1	0.358		$\text{YbCl}_3 \cdot 2\text{C}_4\text{H}_{10}\text{O}_2$															
AUXILIARY INFORMATION																			
METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume.	SOURCE AND PURITY OF MATERIALS: Nothing specified, but based on previous work by the authors, the anhydrous salt was probably prepared by the method of Taylor and Carter (1). ESTIMATED ERROR: Nothing specified. REFERENCES: 1. Taylor, M.D.; Carter, C.P. <i>J. Inorg. Nucl. Chem.</i> <u>1962</u> , 24, 387.																		

COMPONENTS: (1) Ytterbium chloride; YbCl_3 ; [10361-91-8] (2) Diethyl ether; $\text{C}_4\text{H}_{10}\text{O}$; [60-29-7]	ORIGINAL MEASUREMENTS: Dzhuraev, Kh. Sh.; Mirsaidov, U.; Kurbanbekov, A.; Rakhimova, A. <i>Dokl. Akad. Nauk Tadzh. SSR</i> <u>1976</u> , <i>19</i> , 32-4.
VARIABLES: T/K = 293	PREPARED BY: T. Mioduski
EXPERIMENTAL VALUES: <p>The solubility of YbCl_3 in diethyl ether at 20°C was reported to be</p> <p style="text-align: center;">0.085 mass %</p> <p>The corresponding molality calculated by the compiler is</p> <p style="text-align: center;">$3.04 \times 10^{-3} \text{ mol kg}^{-1}$</p>	
AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. Equilibrium was attained within 24 h and was verified by constancy in the YbCl_3 concentration. The saturated solution and the equilibrated solid phase were analyzed. Yb determined by complexometric titration in presence of urotropine buffer and methyl-thymol indicator. Chloride determined by titration with AgNO_3 . The solid phase corresponded to $\text{YbCl}_3 \cdot \text{C}_4\text{H}_{10}\text{O}$ (the etherate was dried under vacuum at 40°C prior to analysis).	SOURCE AND PURITY OF MATERIALS: Anhydrous YbCl_3 prepared by the ethanol solvate method (no details given). Ethyl ether was dried with Na and distilled from LiAlH_4 before use.
ESTIMATED ERROR: Nothing specified.	
REFERENCES:	

COMPONENTS: (1) Ytterbium chloride; YbCl_3 ; [10361-91-8] (2) 1,2-Diethoxyethane; $\text{C}_6\text{H}_{14}\text{O}_2$; [629-14-1]	ORIGINAL MEASUREMENTS: Kirmse, E.M.; Zwietasch, K.J. Z. Chem. <u>1967</u> , 7, 281.
VARIABLES: T/K = 298	PREPARED BY: T. Mioduski
EXPERIMENTAL VALUES: The solubility of YbCl_3 in 1,2-diethoxyethane at 25°C was reported to be <div style="text-align: center;">1.15 mass %</div> The corresponding molality calculated by the compiler is <div style="text-align: center;">$0.0416 \text{ mol kg}^{-1}$</div> The composition of the solid phase was given in terms of the Yb:Cl:ether ratio as <div style="text-align: center;">1:3.03:0.94</div>	
AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE: Isothermal method used. The anhydrous mixtures were equilibrated at 25°C for several days with frequent shaking. The solid phase was dried in a vacuum desiccator over P_2O_5 . Yb was determined by complexometric titration using Xylenol Orange indicator. Chloride was determined by the Volhard titration method.	SOURCE AND PURITY OF MATERIALS: Sources and purities of materials were not given. The anhydrous chloride was obtained by the method of Taylor and Carter (1). The solvent was prepared by the Williamson synthesis: i.e. by reaction of $\text{C}_2\text{H}_5\text{I}$ with the monoethyleter of ethylene glycol. ESTIMATED ERROR: No estimate possible. REFERENCES: 1. Taylor, M.D.; Carter, C.P. <i>J. Inorg. Nucl. Chem.</i> <u>1962</u> , 24, 387.

COMPONENTS: (1) Ytterbium chloride; YbCl_3 ; [10361-91-8] (2) 1-Methoxyhexane; $\text{C}_7\text{H}_{16}\text{O}$; [4747-07-3]	ORIGINAL MEASUREMENTS: Baganz, E. <i>Staatsexamenarbeit</i> . Koethen Paedag. Institut. 1970. Original data cited by Kirmse, E.M.; Dressler, H. <i>Z. Chem.</i> 1975, 15, 239-40.
VARIABLES: Room temperature; $T/K = 293 - 298$	PREPARED BY: T. Mioduski
EXPERIMENTAL VALUES: <p>The solubility of YbCl_3 in 1-methoxyhexane at 20-25°C was reported as</p> <p style="text-align: center;">18.3 mass %.</p> <p>The corresponding molality calculated by the compiler is</p> <p style="text-align: center;">0.802 mol kg^{-1}.</p> <p>The nature of the solid phase was not specified.</p>	
AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were isothermally agitated until equilibrium was attained. The anhydrous reagents were handled in a dry box containing P_4O_{10} . Ytterbium was determined by complexometric titration using Xylenol Orange indicator. The reported solubility is a mean value based on four determinations.	SOURCE AND PURITY OF MATERIALS: Nothing specified. ESTIMATED ERROR: Nothing specified. REFERENCES:

COMPONENTS: (1) Ytterbium chloride; YbCl_3 ; [10361-91-8] (2) Ethers	ORIGINAL MEASUREMENTS: Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J.; Oelsner, L.; Niedergeases, U. <i>Z. Chem.</i> <u>1968</u> , <i>8</i> , 472-3. Kirmse, E.M. <i>Tr. II Vses. Konf. po Teor. Rastvorov.</i> <u>1971</u> , 200-6.																																
VARIABLES: Room temperature: T/K around 298	PREPARED BY: T. Mioduski and M. Salomon																																
EXPERIMENTAL VALUES: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">solvent</th> <th rowspan="2"></th> <th rowspan="2"></th> <th colspan="2">solubility^{a,b}</th> </tr> <tr> <th>mass %</th> <th>mol kg⁻¹</th> </tr> </thead> <tbody> <tr> <td>1-ethoxy-2-methoxyethane;</td> <td>$\text{C}_5\text{H}_{12}\text{O}_2$;</td> <td>[5137-45-1]</td> <td>1.45</td> <td>0.053</td> </tr> <tr> <td>di-n-propyl ether;</td> <td>$\text{C}_6\text{H}_{14}\text{O}$;</td> <td>[111-43-3]</td> <td>13.7</td> <td>0.568</td> </tr> <tr> <td>1-ethoxybutane;</td> <td>$\text{C}_6\text{H}_{14}\text{O}$;</td> <td>[628-81-9]</td> <td>12.0</td> <td>0.488</td> </tr> <tr> <td>1-methoxypentane;</td> <td>$\text{C}_6\text{H}_{14}\text{O}$;</td> <td>[628-80-8]</td> <td>43.5</td> <td>2.756</td> </tr> <tr> <td>1,4-dioxane;</td> <td>$\text{C}_4\text{H}_8\text{O}_2$;</td> <td>[123-91-1]</td> <td>0.8</td> <td>0.029</td> </tr> </tbody> </table> <p>^aMolalities calculated by the compilers.</p> <p>^bNature of the solid phases not specified.</p>		solvent			solubility ^{a,b}		mass %	mol kg ⁻¹	1-ethoxy-2-methoxyethane;	$\text{C}_5\text{H}_{12}\text{O}_2$;	[5137-45-1]	1.45	0.053	di-n-propyl ether;	$\text{C}_6\text{H}_{14}\text{O}$;	[111-43-3]	13.7	0.568	1-ethoxybutane;	$\text{C}_6\text{H}_{14}\text{O}$;	[628-81-9]	12.0	0.488	1-methoxypentane;	$\text{C}_6\text{H}_{14}\text{O}$;	[628-80-8]	43.5	2.756	1,4-dioxane;	$\text{C}_4\text{H}_8\text{O}_2$;	[123-91-1]	0.8	0.029
solvent						solubility ^{a,b}																											
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1-ethoxy-2-methoxyethane;	$\text{C}_5\text{H}_{12}\text{O}_2$;	[5137-45-1]	1.45	0.053																													
di-n-propyl ether;	$\text{C}_6\text{H}_{14}\text{O}$;	[111-43-3]	13.7	0.568																													
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AUXILIARY INFORMATION																																	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were isothermally agitated at 25°C or at room temperature. Authors state that the difference found for the solubility was within experimental error limits. Yb was determined by complexometric titration. No other details given.	SOURCE AND PURITY OF MATERIALS: The anhydrous salt was prepared by the method of Taylor and Carter (1). No other information given. ESTIMATED ERROR: Nothing specified. REFERENCES: 1. Taylor, M.D.; Carter, C.P. <i>J. Inorg. Nucl. Chem.</i> <u>1962</u> , <i>24</i> , 387.																																

COMPONENTS: (1) Ytterbium chloride; YbCl_3 ; [10361-91-8] (2) Tetrahydrofuran; $\text{C}_4\text{H}_8\text{O}$; [109-99-9]	ORIGINAL MEASUREMENTS: Rossmann, K.; Auer-Welsbach, C. <i>Monatsh. Chem.</i> <u>1965</u> , 96, 602-5.
VARIABLES: Room Temperature: T/K about 293	PREPARED BY: T. Mioduski
EXPERIMENTAL VALUES: <p>The solubility of YbCl_3 in tetrahydrofuran at 20°C (room temperature) was reported to be</p> <p style="text-align: center;">1.98 g per 100 ml of solution (0.0709 mol dm^{-3}, compiler).</p>	
AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution was equilibrated in an extractor with agitation for 60-80 hours at room temperature. Ytterbium was determined by the oxalate method, and by titration with EDTA using Xylenol Orange indicator. The solvent was determined by difference. Anhydrous materials were handled in a dry box through which was passed a stream of nitrogen free of carbon dioxide. The solid phase is $\text{YbCl}_3 \cdot 2.92\text{C}_4\text{H}_8\text{O}$.	SOURCE AND PURITY OF MATERIALS: Sources and purities of initial materials not specified. YbCl_3 was prepared by conversion of the oxide by high temperature conversion with an excess of NH_4Cl followed by heating the product in a stream of dry nitrogen, and then in vacuum to remove unreacted NH_4Cl . Tetrahydrofuran was distilled from LiAlH_4 . ESTIMATED ERROR: Nothing specified. REFERENCES:

COMPONENTS: (1) Ytterbium chloride; YbCl_3 ; [10361-91-8] (2) Amines	ORIGINAL MEASUREMENTS: Kirmse, E.M. <i>Tr. II Vses. Konf. po Teor. Rastvorov</i> <u>1971</u> , 200-6.																																							
VARIABLES: T/K = 298	PREPARED BY: T. Mioduski and M. Salomon																																							
EXPERIMENTAL VALUES: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">solvent</th> <th colspan="3">YbCl_3 solubility^a</th> </tr> <tr> <th></th> <th>mass %</th> <th>mol kg^{-1}</th> </tr> </thead> <tbody> <tr> <td>ethanamine; $\text{C}_2\text{H}_7\text{N}$;</td> <td>[75-04-7]</td> <td>37.8</td> <td>2.175</td> </tr> <tr> <td>diethylamine; $(\text{C}_2\text{H}_5)_2\text{NH}$;</td> <td>[109-89-7]</td> <td>2.0</td> <td>0.073</td> </tr> <tr> <td>1-propanamine; $\text{C}_3\text{H}_9\text{N}$;</td> <td>[107-10-8]</td> <td>35.5</td> <td>1.970</td> </tr> <tr> <td>2-propanamine; iso-$\text{C}_3\text{H}_9\text{N}$;</td> <td>[75-31-0]</td> <td>8.1</td> <td>0.315</td> </tr> <tr> <td>2-propen-1-amine;^b $\text{C}_3\text{H}_7\text{N}$;</td> <td>[107-11-9]</td> <td>34.2</td> <td>1.860</td> </tr> <tr> <td>1-butanamine; n-$\text{C}_4\text{H}_{11}\text{N}$;</td> <td>[109-73-9]</td> <td>38.7</td> <td>2.260</td> </tr> <tr> <td>2-butanamine; iso-$\text{C}_4\text{H}_{11}\text{N}$;</td> <td>[13952-84-6]</td> <td>20.2</td> <td>0.906</td> </tr> <tr> <td>di-2-butylamine; (sec-C_4H_9)₂NH;</td> <td>[626-23-3]</td> <td>3.9</td> <td>0.145</td> </tr> </tbody> </table> <p>^aMolalities calculated by the compilers.</p> <p>^bThe original paper simply specifies the solvent as $\text{C}_3\text{H}_5\text{NH}_2$, and upon request, the author kindly identified the solvent as allylamine.</p>		solvent	YbCl_3 solubility ^a				mass %	mol kg^{-1}	ethanamine; $\text{C}_2\text{H}_7\text{N}$;	[75-04-7]	37.8	2.175	diethylamine; $(\text{C}_2\text{H}_5)_2\text{NH}$;	[109-89-7]	2.0	0.073	1-propanamine; $\text{C}_3\text{H}_9\text{N}$;	[107-10-8]	35.5	1.970	2-propanamine; iso- $\text{C}_3\text{H}_9\text{N}$;	[75-31-0]	8.1	0.315	2-propen-1-amine; ^b $\text{C}_3\text{H}_7\text{N}$;	[107-11-9]	34.2	1.860	1-butanamine; n- $\text{C}_4\text{H}_{11}\text{N}$;	[109-73-9]	38.7	2.260	2-butanamine; iso- $\text{C}_4\text{H}_{11}\text{N}$;	[13952-84-6]	20.2	0.906	di-2-butylamine; (sec- C_4H_9) ₂ NH;	[626-23-3]	3.9	0.145
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METHOD/APPARATUS/PROCEDURE: Experimental details not given, but were probably similar to previous works of the author which are compiled throughout this volume. Nature of solid phases not specified.	SOURCE AND PURITY OF MATERIALS: Nothing specified, but based on previous work by the author the anhydrous salt was probably prepared by the method of Taylor and Carter (1). ESTIMATED ERROR: Nothing specified. REFERENCES: 1. Taylor, M.D.; Carter, C.P. <i>J. Inorg. Nucl. Chem.</i> <u>1962</u> , <i>24</i> , 387.																																							

COMPONENTS: (1) Ytterbium chloride; YbCl_3 ; [10361-91-8] (2) Hexamethylphosphorotriamide; $\text{C}_6\text{H}_{18}\text{N}_3\text{OP}$; [680-31-9]	ORIGINAL MEASUREMENTS: Mikheev, N.B.; Kamenskaya, A.N.; Konovalova, N.A.; Zhilina, T.A. <i>Zh. Neorg. Khim.</i> 1977, 22, 1961-6; <i>Russ. J. Inorg. Chem. (Engl. Transl.)</i> 1977, 22, 955-8.
VARIABLES: Room temperature: $T/K = 298 \pm 3$	PREPARED BY: T. Mioduski and M. Salomon
EXPERIMENTAL VALUES: Starting with the solvate $\text{YbCl}_3 \cdot 3\text{C}((\text{CH}_3)_2\text{N})_3\text{PO}$, the solubility at $25 \pm 3^\circ\text{C}^a$ was given as $0.085 \text{ mol dm}^{-3}$ <p>^aTable 3 in the English translation of the source paper states the temperature to be $23 \pm 3^\circ\text{C}$. This is probably a typographical error as the text clearly states that all measurements were carried out at $25 \pm 3^\circ\text{C}$.</p>	
AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE: Isothermal method. Salt and solvent were placed in a test-tube in a dry box, and the tube agitated at room temperature until equilibrium was reached. Aliquots were withdrawn periodically and analyzed for the metal content. Rare earth concentration was determined by complexometric titration, and by the radiometric method using the isotope Tm-170 ($t_{1/2} = 169 \text{ d}$). Authors state that results for both methods agreed. Although not clearly stated, it appears that equilibrium was reached in several weeks to several months.	SOURCE AND PURITY OF MATERIALS: Anhydrous YbCl_3 prepared by modification of Taylor & Carter's method (1) by subliming NH_4Cl from a mixture of YbCl_3 with 6 moles of NH_4Cl in a stream of inert gas at $200\text{--}400^\circ\text{C}$. The product contained less than 3% of YbOCl . The solvent was purified as in (2).
Solid phase samples washed three times with benzene or ether and dried on a steam bath in an argon atmosphere. The solid phase was analyzed and found to be $\text{YbCl}_3 \cdot 3\text{C}_6\text{H}_{18}\text{N}_3\text{OP}$. The solvate was analyzed for metal content by complexometric titration, for chloride by the Volhard method, and the solvent was obtained by difference. IR spectra confirmed the absence of water. Structural studies of the solvate were also carried out by X-ray analysis.	ESTIMATED ERROR: Soly: precision $\pm 0.01 \text{ mol dm}^{-3}$ at a 95% level of confidence (authors). Temp: precision $\pm 3 \text{ K}$.
	REFERENCES: 1. Taylor, M.D.; Carter, C.P. <i>J. Inorg. Nucl. Chem.</i> 1962, 24, 387. 2. Fomicheva, M.G.; Kessler, Yu.M.; Zabusova, S.E.; Alpatova, N.M. <i>Elektrokhimiya</i> 1975, 11, 163.

COMPONENTS: (1) Ytterbium chloride; YbCl_3 ; [10361-91-8] (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 Concentration of SnCl_4	PREPARED BY: T. Mioduski																		
EXPERIMENTAL VALUES: <table data-bbox="155 499 1146 713" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">SnCl_4:POCl_3 ratio (by volume)</th> <th style="text-align: center;">SnCl_4 concentration mol dm^{-3}</th> <th style="text-align: center;">Yb_2O_3 solubility^{a,b} moles Yb dm^{-3}</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1:100</td> <td style="text-align: center;">0.085</td> <td style="text-align: center;">0.4</td> </tr> <tr> <td style="text-align: center;">1:50</td> <td style="text-align: center;">0.17</td> <td style="text-align: center;">0.5 (0.1)</td> </tr> <tr> <td style="text-align: center;">1:25</td> <td style="text-align: center;">0.33</td> <td style="text-align: center;">0.6</td> </tr> <tr> <td style="text-align: center;">1:15</td> <td style="text-align: center;">0.59</td> <td style="text-align: center;">0.5</td> </tr> <tr> <td style="text-align: center;">1:10</td> <td style="text-align: center;">0.78</td> <td style="text-align: center;">0.6</td> </tr> </tbody> </table> <p>^aSolutions preheated to 220°C. Value in parenthesis corresponds to preheating at 120°C.</p> <p>^bThis is also the solubility of YbCl_3 in the SnCl_4-POCl_3 mixture because the oxide is quantitatively converted to the chloride according to</p> $\text{Yb}_2\text{O}_3 + 6\text{POCl}_3 = 2\text{YbCl}_3 + 3\text{P}_2\text{O}_3\text{Cl}_4$ <p>Thus the equilibrated solutions should actually be considered to be a four component system containing SnCl_4, YbCl_3, $\text{P}_2\text{O}_3\text{Cl}_4$ and POCl_3 (the compiler assumes $\text{P}_2\text{O}_3\text{Cl}_4$ is soluble).</p> <p>Authors state that the solubility of YbCl_3 is enhanced by complex formation according to</p> $2\text{YbCl}_3 + 3\text{SnCl}_4 = \text{Yb}_2(\text{SnCl}_6)_3$		SnCl_4 : POCl_3 ratio (by volume)	SnCl_4 concentration mol dm^{-3}	Yb_2O_3 solubility ^{a,b} moles Yb dm^{-3}	1:100	0.085	0.4	1:50	0.17	0.5 (0.1)	1:25	0.33	0.6	1:15	0.59	0.5	1:10	0.78	0.6
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METHOD/APPARATUS/PROCEDURE: Isothermal method used. $\text{POCl}_3 + \text{SnCl}_4$ solutions were prepared by volume in a dry box. The SnCl_4 content was verified by chemical analysis for Sn. This solution and Yb_2O_3 were placed in sealed ampoules, heated to 20-250°C to increase the rate of solution, and then rotated in an air thermostat at 20°C for 2-200 hours. Without preheating, equilibrium was established after 200 hours. Preheating to 120°C lowered the equilibration time at 20°C to 2 hours. Yb was determined by colorimetric analysis, and in some cases by the oxalate method. The reported solubilities are mean values based on 3-5 parallel determinations.	SOURCE AND PURITY OF MATERIALS: Yb_2O_3 of "the first sort" was ignited at 950°C for 2 hours. "Pure" grade SnCl_4 and POCl_3 were dehydrated with P_2O_5 and distilled under vacuum. ESTIMATED ERROR: Soly: authors state the "coefficient of variance" to be less than 7%. Temp: precision presumably ± 0.2 K (compiler). REFERENCES:																		