

COMPONENTS: (1) Yttrium chloride; YCl_3 ; [10361-92-9] (2) Alcohols; ROH (3) Benzene; C_6H_6 ; [71-43-2]	ORIGINAL MEASUREMENTS: Golub, A.M.; Yankovich, V.N. <i>Ukr. Khim. Zh.</i> 1977, 43, 1139-42; <i>Ukr. J. Chem. (Engl. Transl.)</i> 1977, 43, 16-20.																						
VARIABLES: Concentration of ROH T/K = 295	PREPARED BY: M. Salomon and T. Mioduski																						
EXPERIMENTAL VALUES: Numerical data were not given, but results were presented graphically and in the form of the equation $K = [YCl_3 \cdot nROH] / [ROH]^n \quad [1]$ In this equation $[YCl_3 \cdot nROH]$ is the solubility in units of mol dm^{-3} , $[ROH]$ is the total alcohol concentration in units of mol dm^{-3} , and n is the solvate number in solution (see ref. 1). According to this equation, n is calculated from the slope of a plot of the logarithm of the solubility, $\log [YCl_3 \cdot nROH]$, against $\log [ROH]$. Thus the solubility of YCl_3 can be calculated as a function of ROH concentration using the reported values of n and K (see table below). The alcohol concentrations were varied from 1-5 mol dm^{-3} . <table border="1" data-bbox="168 749 1256 975"> <thead> <tr> <th>alcohol</th> <th>n</th> <th>$-\log K$</th> <th>nature of the solid phase</th> </tr> </thead> <tbody> <tr> <td rowspan="2">methanol; CH_4O; [67-56-1]</td> <td>1</td> <td>2.00</td> <td>$YCl_3 \cdot 3CH_3OH$</td> </tr> <tr> <td>3</td> <td>2.90</td> <td>"</td> </tr> <tr> <td>ethanol; C_2H_6O; [64-17-5]</td> <td>3</td> <td>3.38</td> <td>$YCl_3 \cdot 2C_2H_5OH$</td> </tr> <tr> <td rowspan="2">1-propanol; C_3H_8O; [71-23-8]</td> <td>1</td> <td>2.00</td> <td>$YCl_3 \cdot 3C_3H_7OH$</td> </tr> <tr> <td>3</td> <td>2.78</td> <td>"</td> </tr> </tbody> </table> For those systems where two values of n and K are reported, the overall solubility of YCl_3 is obtained by using the values for n - K in eq. [1] which give the greater solubility.		alcohol	n	$-\log K$	nature of the solid phase	methanol; CH_4O ; [67-56-1]	1	2.00	$YCl_3 \cdot 3CH_3OH$	3	2.90	"	ethanol; C_2H_6O ; [64-17-5]	3	3.38	$YCl_3 \cdot 2C_2H_5OH$	1-propanol; C_3H_8O ; [71-23-8]	1	2.00	$YCl_3 \cdot 3C_3H_7OH$	3	2.78	"
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METHOD/APPARATUS/PROCEDURE: Isothermal method used as described in (1). Solvent mixtures of known alcohol concentration were saturated with anhydrous YCl_3 at $22 \pm 1^\circ C$. Equilibrium was confirmed from constancy of the rare earth metal concentration upon repeated analyses. Liquid phases were analysed for rare earth metal concentration (method not specified). At least 3 separate experiments were carried out for each system studied. In addition, the solid phases were analysed for several arbitrary points of each series of experiments (method not specified).	SOURCE AND PURITY OF MATERIALS: Source and purity of YCl_3 not specified. Anhydrous YCl_3 prepared by method described in (2). C.p. grade organic solvents were purified by "known" methods (3).																						
	ESTIMATED ERROR: Soly: nothing specified. Temp: precision ± 1 K.																						
	REFERENCES: 1. Golub, A.M.; Golovorushkin, V. I. <i>Zh. Neorg. Khim.</i> 1968, 13, 3194. 2. Spedding, F.H.; Doan, A.H. <i>J. Am. Chem. Soc.</i> 1952, 74, 2783. 3. Kolotyркин, Ya.M. (ed). <i>Electrochemistry of Metals in Nonaqueous Solutions</i> . Khimiya Press. Moscow. 1974. p 440.																						

COMPONENTS: (1) Yttrium chloride; YCl_3 ; [19361-92-9] (2) Methanol; CH_4O ; [67-56-1]	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</i> . Faculte des Sciences de l'Universite des Lausanne. <u>1971</u> .
VARIABLES: $T/K = 298.2$	PREPARED BY: T. Mioduski and M. Salomon
EXPERIMENTAL VALUES: <p>Starting with $YCl_3 \cdot 4CH_3OH$, the solubility was reported to be 4.38 mol kg^{-1}.</p> <p>The equilibrated solid phase was analysed and found to contain 4.1 moles of methanol per mole of YCl_3.</p>	
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. Yttrium determined by titration with $(NH_4)_3H(EDTA)$ 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 $YCl_3 \cdot 4CH_3OH$ confirmed by 1H NMR and x-ray diffraction. The reported solubilities are mean values of 2-4 determinations.	SOURCE AND PURITY OF MATERIALS: Y_2O_3 of at least 99.9% purity dissolved in HCl to produce the hexahydrate. The adduct $YCl_3 \cdot 4CH_3OH$ prepared by dissolving the hydrate in a small excess of o-methylformate followed by distillation and crystallization from methanol. The anhydrous salt was prepared by dehydration as described in (3). Methanol was purified and dried according to the Vogel method.
COMMENTS AND/OR ADDITIONAL DATA: Reference (3) was incorrectly cited in the source paper as <i>J. Inorg. Nucl. Chem.</i> <u>1958</u> , 7, 224 (this is the reference to a paper by J. H. Freeman and M. L. Smith which describes the preparation of anhydrous salts by treatment with thionyl chloride). Reference (3) was corrected by the compilers.	ESTIMATED ERROR: Soly: precision $\pm 0.5\%$ as in (1) (compilers) Temp: precision probably at least $\pm 0.05K$ 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. Platt, R. <i>Chimia</i> <u>1952</u> , 6, 62. 3. Taylor, M. D.; Carter, C. P. <i>J. Inorg. Nucl. Chem.</i> <u>1962</u> , 24, 387 (see COMMENTS at left).

<p>COMPONENTS:</p> <p>(1) Yttrium chloride; YCl_3; [10361-92-9]</p> <p>(2) Ethanol; C_2H_6O; [64-17-5]</p>	<p>EVALUATOR:</p> <p>Mark Salomon USA ET & DL Ft. Monmouth, NJ, U.S.A.</p>
<p>CRITICAL EVALUATION:</p> <p>The solubility of YCl_3 in ethanol has been reported only at 298.2 K by Kirmse (1) and by Merbach et al. (2).</p> <p>Merbach et al. reported two values at 298.15 K as 2.92 mol kg^{-1} and 2.91 mol kg^{-1}. In the former determination, the solid phase analysed as $YCl_3 \cdot 4.1C_2H_5OH$. At 298.2 K Kirmse reported a solubility of 2.82 mol kg^{-1} and a solid phase of $YCl_3 \cdot C_2H_5OH$.</p> <p>The difference between these two results (3 %) appears to be greater than the experimental precision. In addition it is doubtful that metastability could explain this difference since it is expected that the monosolvate (if it exists) would be metastable at 298 K and thus have a much greater solubility than the stable tetrasolvate. Thus we select the result of Merbach et al. for the <i>tentative</i> solubility at 298.15 K in the stable tetrasolvate system: i.e. 2.92 mol kg^{-1}.</p> <p style="text-align: center;"><u>REFERENCES</u></p> <ol style="list-style-type: none"> 1. Kirmse, E.M. <i>Tr. II Vses. Konf. po Teor. Rastvorov</i> <u>1971</u>, 200. 2. Merbach, A.; Pitteloud, M.N.; Jaccard, P. <i>Helv. Chim. Acta</i> <u>1972</u>, 55, 44: see also Pitteloud, M.N. <i>These. Faculte des Sciences de l'Universite Lausanne.</i> <u>1971</u>. 	

<p>COMPONENTS:</p> <p>(1) Yttrium chloride; YCl_3; [19361-92-9]</p> <p>(2) Ethanol; C_2H_6O; [64-17-5]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Merbach, A.; Pitteloud, M. N.; Jaccard, P. <i>Helv. Chim. Acta</i> <u>1972</u>, <i>55</i>, 44-52.</p> <p>Pitteloud, M. N. <i>These</i>. Faculte des Sciences de l'Universite de Lausanne. <u>1971</u>.</p>
<p>VARIABLES:</p> <p>T/K = 298.2</p>	<p>PREPARED BY:</p> <p>T. Mioduski and M. Salomon</p>
<p>EXPERIMENTAL VALUES:</p> <p>Two results were reported for 25°C</p> <ol style="list-style-type: none"> Starting with the solid $YCl_3 \cdot 4CH_3CH_2OH$, the solubility was reported to be 2.92 mol kg⁻¹. The equilibrated solid phase was analysed and found to contain 4.1 moles of ethanol per mole of YCl_3. Starting with anhydrous YCl_3, the solubility was reported to be 2.91 mol kg⁻¹. The equilibrated solid phase was not analysed. 	
<p>AUXILIARY INFORMATION</p>	
<p>METHOD/APPARATUS/PROCEDURE:</p> <p>Isothermal method as in (1,2). Mixtures were equilibrated for at least 4 days. Prolonged operations were performed in a dry box. Yttrium determined by titration with $(NH_4)_3H(EDTA)$ 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 $YCl_3 \cdot 4C_2H_6O$ confirmed by ¹H NMR and x-ray diffraction.</p> <p>The reported solubilities are mean values of 2-4 determinations.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>Y_2O_3 of at least 99.9% purity dissolved in HCl to produce the hexahydrate. The adduct $YCl_3 \cdot 4C_2H_6O$ prepared by dissolving the hydrate in a small excess of o-ethylformate followed by distillation and crystallization from ethanol. The anhydrous salt was prepared by dehydration as described in (3). Ethanol (Fluka) was used as received. Purity and the absence of water was confirmed by NMR.</p>
<p>COMMENTS AND/OR ADDITIONAL DATA:</p> <p>Reference (3) was incorrectly cited in the source paper as: <i>J. Inorg. Nucl. Chem.</i> <u>1958</u>, <i>7</i>, 224 (this is the reference to a paper by J. H. Freeman and M. L. Smith which describes the preparation of anhydrous salts by treatment with thionyl chloride). Reference (3) was corrected by the compilers.</p>	<p>ESTIMATED ERROR:</p> <p>Soly: precision ± 0.5% as in (1) (compilers).</p> <p>Temp: precision probably at least ± 0.05 K as in (1) (compilers).</p> <p>REFERENCES:</p> <ol style="list-style-type: none"> Brunisholz, F.; Quinch, J. P.; Kalo, A. M. <i>Helv. Chim. Acta</i> <u>1964</u>, <i>47</i>, 14. Platt, R. <i>Chimia</i> <u>1952</u>, <i>6</i>, 62. Taylor, M. D.; Carter, C. P. <i>J. Inorg. Nucl. Chem.</i> <u>1962</u>, <i>24</i>, 387 (see COMMENTS at left).

COMPONENTS: (1) Yttrium chloride; YCl_3 ; [10361-92-9] (2) Ethanol; C_2H_6O ; [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 $YCl_3 \cdot 6H_2O$ in 96.8 % $C_2H_5OH^a$ <table border="1" data-bbox="148 552 1195 870"> <thead> <tr> <th rowspan="2">t/°C</th> <th>sample 1</th> <th>sample 2</th> <th>sample 3</th> <th>sample 4</th> <th colspan="2">mean solubilities</th> </tr> <tr> <th>g/100 g^b</th> <th>g/100 g</th> <th>g/100 g</th> <th>g/100 g</th> <th>g/100 g</th> <th>mol kg^{-1c}</th> </tr> </thead> <tbody> <tr> <td>20</td> <td>35.29</td> <td>35.40</td> <td>35.28</td> <td>35.39</td> <td>35.34</td> <td>1.165</td> </tr> <tr> <td>30</td> <td>34.64</td> <td>34.85</td> <td>34.74</td> <td>34.69</td> <td>34.73</td> <td>1.145</td> </tr> <tr> <td>40</td> <td>34.47</td> <td>34.65</td> <td>34.50</td> <td>34.46</td> <td>34.52</td> <td>1.138</td> </tr> <tr> <td>50</td> <td>34.90</td> <td>34.95</td> <td>34.70</td> <td>34.78</td> <td>34.83</td> <td>1.148</td> </tr> <tr> <td>60</td> <td>35.45</td> <td>35.54</td> <td>35.49</td> <td>35.70</td> <td>35.54</td> <td>1.172</td> </tr> </tbody> </table> <p>^aIt is not clearly stated whether the mixture is 96.8 mass % or 96.8 volume % ethanol.</p> <p>^bSolubilities reported as grams of hexahydrate in 100 g of solvent.</p> <p>^cMolalities calculated by the compilers.</p>		t/°C	sample 1	sample 2	sample 3	sample 4	mean solubilities		g/100 g ^b	g/100 g	g/100 g	g/100 g	g/100 g	mol kg ^{-1c}	20	35.29	35.40	35.28	35.39	35.34	1.165	30	34.64	34.85	34.74	34.69	34.73	1.145	40	34.47	34.65	34.50	34.46	34.52	1.138	50	34.90	34.95	34.70	34.78	34.83	1.148	60	35.45	35.54	35.49	35.70	35.54	1.172
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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: $YCl_3 \cdot 6H_2O$ prep'd 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 analysed for the metal by titrn with Trilon B, and for Cl by the Volhard method. The hexahydrate melted at 151.0 - 151.8°C. 96.8% ethanol prep'd by prolonged boiling of c.p. grade 93.5% ethanol with anhydr $CuSO_4$ followed by distn. Ethanol concn det'd refractometrically and pycnometrically. ESTIMATED ERROR: Soly: results apparently precise to within ± 0.9 % (compilers). Temp: nothing specified. REFERENCES:																																																

<p>COMPONENTS:</p> <p>(1) Yttrium chloride; YCl_3; [10361-92-9]</p> <p>(2) 2-Propanol; C_3H_8O; [67-63-0]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Merbach, A.; Pitteloud, M. N.; Jaccard, P. <i>Helv. Chim. Acta</i> <u>1972</u>, 55, 44-52.</p> <p>Pitteloud, M. N. <i>These</i>. Faculte des Sciences de l'Universite des Lausanne. <u>1971</u>.</p>
<p>VARIABLES:</p> <p>T/K = 298.2</p>	<p>PREPARED BY:</p> <p>T. Mioduski and M. Salomon</p>
<p>EXPERIMENTAL VALUES:</p> <p>Two results were reported for 25°C</p> <ol style="list-style-type: none"> Starting with $YCl_3 \cdot 3C_3H_8O$, the solubility was reported to be 0.91 mol kg⁻¹. The equilibrated solid phase was analysed and found to contain 3.3 moles iso-propanol per mole of salt. Starting with anhydrous YCl_3, the solubility was reported to be 0.93 mol kg⁻¹. The equilibrated solid phase was not analysed. 	
<p>AUXILIARY INFORMATION</p>	
<p>METHOD/APPARATUS/PROCEDURE:</p> <p>Isothermal method as in (1,2). Mixtures were equilibrated for at least 4 days. Prolonged operations were performed in a dry box. Yttrium determined by titration with $(NH_4)_3H(EDTA)$ 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 $YCl_3 \cdot 3C_3H_8O$ confirmed by ¹H NMR and x-ray diffraction.</p> <p>The reported solubilities are mean values of 2-4 determinations.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>Y_2O_3 of at least 99.9% purity dissolved in HCl to produce the hexahydrate. The adduct $YCl_3 \cdot 3C_3H_8O$ prepared by dissolving the hydrate in a small excess of o-methylformate followed by distillation and trans- s lvation of the CH_3OH complex with 2-propanol. The anhydrous salt was prepd by dehydration as described in (3).</p> <p>Iso-propanol (Fluka) used as received. Purity and absence of water confirmed by NMR.</p>
<p>COMMENTS AND/OR ADDITIONAL DATA:</p> <p>Reference (3) was incorrectly cited in the source paper as: <i>J. Inorg. Nucl. Chem.</i> <u>1958</u>, 7, 224 (this is the reference to a paper by J. H. Freeman and M. L. Smith which describes the preparation of anhydrous salts by treatment with thionyl chloride). Reference (3) was corrected by the compilers.</p>	<p>ESTIMATED ERROR:</p> <p>Soly: precision ± 0.5% as in (1) (compilers).</p> <p>Temp: precision probably at least ± 0.05 K as in (1) (compilers).</p> <p>REFERENCES:</p> <ol style="list-style-type: none"> Brunisholz, F.; Quinche, J. P.; Kalo, A. M. <i>Helv. Chim. Acta</i> <u>1964</u>, 47, 14. Platt, R. <i>Chimia</i> <u>1952</u>, 6, 62. Taylor, M. D.; Carter, C. P. <i>J. Inorg. Nucl. Chem.</i> <u>1962</u>, 24, 387 (see COMMENTS at left).

<p>COMPONENTS:</p> <p>(1) Yttrium chloride; YCl_3; [10361-92-9]</p> <p>(2) 2-Ethoxyethanol; $C_4H_{10}O_2$; [110-80-5]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Kirmse, E. M.</p> <p><i>Tr. II Vses. Konf. po Teor. Rastvorov</i> 1971, 200-6.</p>
<p>VARIABLES:</p> <p>One temperature: T/K = 298</p>	<p>PREPARED BY:</p> <p>T. Mioduski</p>
<p>EXPERIMENTAL VALUES:</p> <p>The solubility of YCl_3 in 2-ethoxy-ethanol at 25°C was reported to be</p> <p style="text-align: center;">6.9 mass %</p> <p>The corresponding molality calculated by the compiler is</p> <p style="text-align: center;">0.38 mol kg⁻¹</p>	
<p>AUXILIARY INFORMATION</p>	
<p>METHOD/APPARATUS/PROCEDURE:</p> <p>Nothing specified except that the solid phase was found to be $YCl_3 \cdot 2C_4H_{10}O_2$. On the basis of previous papers by the author, it appears that reaction mixtures were equilibrated for several days and that Y was determined by complexometric titration using xylenol orange indicator.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>Nothing specified. Presumably, the anhydrous chloride was prepared by the method of Taylor and Carter (1).</p> <p>ESTIMATED ERROR:</p> <p>Nothing specified.</p> <p>REFERENCES:</p> <p>1. Taylor, M. D.; Carter, C. P. <i>J. Inorg. Nucl. Chem.</i> 1962, 24, 387.</p>

<p>COMPONENTS:</p> <p>(1) Yttrium chloride; YCl_3; [10361-92-9]</p> <p>(2) 1-Methoxybutane; $\text{C}_5\text{H}_{12}\text{O}$; [628-28-4]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Schmalenberg, U. <i>Staatsexamenarbeit</i>. Koethen. Paedag. Institut. 1969: Kirmse, E. M.; Dressler, H. <i>Z. Chem.</i> 1975, 15, 239-40.</p>
<p>VARIABLES:</p> <p>One temperature: $T/K = 293-298$</p>	<p>PREPARED BY:</p> <p>T. Mioduski</p>
<p>EXPERIMENTAL VALUES:</p> <p>The solubility of YCl_3 in 1-methoxybutane at $20-25^\circ\text{C}$ was reported to be</p> <p style="text-align: center;">29.7 mass %</p> <p>The corresponding molality calculated by the compiler is</p> <p style="text-align: center;">2.16 mol kg^{-1}</p>	
<p>AUXILIARY INFORMATION</p>	
<p>METHOD/APPARATUS/PROCEDURE:</p> <p>The solute-solvent mixtures were equilibrated isothermally at room temperature until equilibrium was attained. The anhydrous reagents were handled in a dry box containing P_4O_{10}. Y was determined by complexometric titration using xylenol orange indicator. The reported solubility is a mean value of four determinations. The hydrate $\text{YCl}_3 \cdot 6\text{H}_2\text{O}$ was found to be insoluble in $\text{C}_5\text{H}_{12}\text{O}$.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>Nothing specified.</p> <hr/> <p>ESTIMATED ERROR:</p> <p>Nothing specified.</p> <hr/> <p>REFERENCES:</p>

COMPONENTS: (1) Yttrium chloride; YCl_3 ; [10361-92-9] (2) 1-Ethoxybutane; $\text{C}_6\text{H}_{14}\text{O}$; [628-81-9]	ORIGINAL MEASUREMENTS: Kirmse, E. M.; Zwietasch, K. J.; Tirschmann, J. <i>Wiss. Heft, Paed. Inst. Koethen</i> <u>1968</u> , <u>1</u> , 128-30: Kirmse, E. M.; Zwietasch, K. J.; Tirschmann, J.; Oelsner, L.; Niedergesaess, U. <i>Z. Chem.</i> <u>1968</u> , <u>8</u> , 472-3: Kirmse, E.M. <i>Tr. II Vses. Konf. po Teor. Razvorov</i> <u>1971</u> , 200-6.
VARIABLES: One temperature: T/K = 298	PREPARED BY: T. Mioduski
EXPERIMENTAL VALUES: <p>The solubility of YCl_3 in 1-ethoxybutane at 25°C was reported to be</p> <p style="text-align: center;">0.03 mass %</p> <p>The corresponding molality calculated by the compiler is</p> <p style="text-align: center;">$2.6 \times 10^{-3} \text{ mol kg}^{-1}$</p> <p>Note that the solubility for YCl_3 reported in <i>Z. Chem.</i> is 0.05 mass % ($0.0015 \text{ mol kg}^{-1}$).</p>	
AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE: YCl_3 was isothermally agitated at 25°C with $\text{C}_6\text{H}_{14}\text{O}$ until equilibrium was attained. Y was determined by complexometric titration using xylenol orange indicator. The solid phase is $\text{YCl}_3 \cdot 0.37\text{C}_6\text{H}_{14}\text{O}$. No other details available.	SOURCE AND PURITY OF MATERIALS: The anhydrous chloride 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> , <u>24</u> , 387.	

<p>COMPONENTS:</p> <p>(1) Yttrium chloride; YCl_3; [10361-97-9]</p> <p>(2) 1-Methoxypentane; $C_5H_{10}O$; [628-80-8]</p>	<p>EVALUATOR:</p> <p>Mark Salomon USA ET & DL Ft. Monmouth, NJ, U.S.A.</p>
<p>CRITICAL EVALUATION:</p> <p>The solubility of yttrium chloride in 1-methoxypentane has been reported in four publications by Kirmse et al. In all publications the solubility was determined at 298.2 K, and the nature of the solid phase was not identified.</p> <p>The studies in (1-3) report the solubility of $0.158 \text{ mol kg}^{-1}$, and it is not known if these are independent measurements. The result from (4) is $0.083 \text{ mol kg}^{-1}$, and it is therefore apparent that one of these values is in error.</p> <p style="text-align: center;"><u>REFERENCES</u></p> <ol style="list-style-type: none">1. Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J. <i>Wiss. Hefte, Paed. Inst. Koethen</i> <u>1968</u>, <i>1</i>, 128.2. Kirmse, E.M.; Zwietasch, K.J., Tirschmann, J.; Oelsner, L.; Niedergesaess, U. <i>Z. Chem.</i> <u>1968</u>, <i>8</i>, 472.3. Kirmse, E.M. <i>Tr. II Vses. Konf. po Theor. Rastvorov</i> <u>1971</u>, 200.4. Kirmse, E.M.; Dressler, H. <i>Z. Chem.</i> <u>1975</u>, <i>15</i>, 239.	

COMPONENTS: (1) Yttrium chloride; YCl_3 ; [10361-92-9] (2) 1-Methoxypentane; $\text{C}_5\text{H}_{12}\text{O}$; [628-80-8]	ORIGINAL MEASUREMENTS: 1. Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J. <i>J. Wiss. Hefta Paed. Inst. Koethen</i> <u>1968</u> , <i>1</i> , 128-30: 2. Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J.; Oelsner, L.; Niedergesaess, U. <i>Z. Chem.</i> <u>1968</u> , <i>8</i> , 472-3: 3. Kirmse, E.M. <i>Tk. II Vses. Konf. po Teor. Rastvorov</i> <u>1971</u> , 200-6.
VARIABLES: T/K = 298	PREPARED BY: T. Mioduski
EXPERIMENTAL VALUES: The solubility of YCl_3 in 1-methoxypentane at 25° was reported to be <p style="text-align: center;">3.0 mass %</p> The corresponding molality calculated by the compiler is $0.158 \text{ mol kg}^{-1}$	
AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE: YCl_3 was isothermally agitated at 25°C until saturation (no details given on how equilibrium was ascertained). Yttrium was determined by complexometric titration using Xylenol Orange indicator. The solid phase was analysed and found to be $\text{YCl}_3 \cdot 0.39\text{C}_5\text{H}_{12}\text{O}$. No other details given.	SOURCE AND PURITY OF MATERIALS: Anhydrous YCl_3 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) Yttrium chloride; YCl_3 ; [10361-92-9] (2) Alkyl ethers	ORIGINAL MEASUREMENTS: Kirmse, E.M.; Dressler, H. Z. Chem. <u>1975</u> , 15, 239-40.																																			
VARIABLES: Room temperature: T/K = 293-298	PREPARED BY: M. Salomon and T. Mioduski																																			
EXPERIMENTAL VALUES: <table border="1" data-bbox="241 463 1182 772"> <thead> <tr> <th colspan="3">solvent</th> <th colspan="2">YCl_3 solubility^a</th> </tr> <tr> <th></th> <th></th> <th></th> <th>mass %</th> <th>mol kg^{-1}</th> </tr> </thead> <tbody> <tr> <td>1-methoxypentane;</td> <td>$\text{C}_6\text{H}_{14}\text{O}$;</td> <td>[628-80-8]</td> <td>1.6</td> <td>0.083</td> </tr> <tr> <td>1-methoxyheptane;</td> <td>$\text{C}_8\text{H}_{18}\text{O}$;</td> <td>[629-32-3]</td> <td>2.7</td> <td>0.14^b</td> </tr> <tr> <td>1-methoxyoctane;</td> <td>$\text{C}_9\text{H}_{20}\text{O}$;</td> <td>[929-56-6]</td> <td>2.5</td> <td>0.13</td> </tr> <tr> <td>1-methoxynonane;</td> <td>$\text{C}_{10}\text{H}_{22}\text{O}$;</td> <td>[7289-51-2]</td> <td>2.5</td> <td>0.13</td> </tr> <tr> <td>1-methoxydecane;</td> <td>$\text{C}_{11}\text{H}_{24}\text{O}$;</td> <td>[7289-52-3]</td> <td>2.8</td> <td>0.15</td> </tr> </tbody> </table> <p data-bbox="158 792 645 821">^aMolalities calculated by the compilers.</p> <p data-bbox="158 840 1196 898">^bSolid phase is $\text{YCl}_3 \cdot \text{C}_8\text{H}_{18}\text{O}$ as determined by complexometric titration after drying in a vacuum desiccator over P_2O_5.</p>		solvent			YCl_3 solubility ^a					mass %	mol kg^{-1}	1-methoxypentane;	$\text{C}_6\text{H}_{14}\text{O}$;	[628-80-8]	1.6	0.083	1-methoxyheptane;	$\text{C}_8\text{H}_{18}\text{O}$;	[629-32-3]	2.7	0.14 ^b	1-methoxyoctane;	$\text{C}_9\text{H}_{20}\text{O}$;	[929-56-6]	2.5	0.13	1-methoxynonane;	$\text{C}_{10}\text{H}_{22}\text{O}$;	[7289-51-2]	2.5	0.13	1-methoxydecane;	$\text{C}_{11}\text{H}_{24}\text{O}$;	[7289-52-3]	2.8	0.15
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AUXILIARY INFORMATION																																				
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were agitated at room temperature until the solutions were saturated. The anhydrous reagents were handled in a dry box containing P_2O_5 . Yttrium was determined by complexometric titration using Xylenol Orange indicator. The reported solubilities are mean values based on four determinations for each system.	SOURCE AND PURITY OF MATERIALS: No information given. ESTIMATED ERROR: No information given. REFERENCES:																																			

COMPONENTS: (1) Yttrium chloride; YCl_3 ; [10361-92-9] (2) Tetrahydrofuran; C_4H_8O ; [109-99-9]	ORIGINAL MEASUREMENTS: Rossmannith, 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 YCl_3 in tetrahydrofuran at room temperature (about 20°C) was reported as 0.930 g/100 ml solution</p> <p>The solid phase is $YCl_3 \cdot 3.59C_4H_8O$.</p>	
AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE: Isothermal method employed. The solution was equilibrated in an extractor for 60-80 hours at room temperature. Yttrium was determined by the oxalate method and by titration with EDTA using Xylenol Orange indicator. For the solid phase analysis, the solvent was determined by difference. Anhydrous substances were handled in a dry box through which was passed a current of dry and CO_2 -free nitrogen.	SOURCE AND PURITY OF MATERIALS: Sources and purities not specified. YCl_3 prepared by reaction of the oxide at high temperatures with an excess of NH_4Cl followed by heating the product in a current of dry nitrogen, and then in vacuum to remove unreacted NH_4Cl . Tetrahydrofuran was distilled from $LiAlH_4$. ESTIMATED ERROR: Nothing specified. REFERENCES:

<p>COMPONENTS:</p> <p>(1) Yttrium chloride; YCl_3; [10361-92-9]</p> <p>(2) 1,4-Dioxane (p-dioxane); $\text{C}_4\text{H}_8\text{O}_2$; [123-91-1]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Kirmse, E. M.; Zwietasch, K. J.; Tirschmann, J.; Oelsner, L.; Niedergesaess, U. <i>Z. Chem.</i> <u>1968</u>, <u>8</u>, 472-3.</p> <p>Kirmse, E. M. <i>Tr. II Vses. Konf. po Teor. Rastvorov</i> <u>1971</u>, 200-6.</p>
<p>VARIABLES:</p> <p>One temperature: T/K = 298</p>	<p>PREPARED BY:</p> <p>T. Mioduski</p>
<p>EXPERIMENTAL VALUES:</p> <p>The solubility of YCl_3 in 1,4-dioxane at 25°C was reported to be</p> <p style="text-align: center;">0.1 mass %</p> <p>The corresponding molality calculated by the compiler is</p> <p style="text-align: center;">$5.1 \times 10^{-3} \text{ mol kg}^{-1}$</p>	
<p>AUXILIARY INFORMATION</p>	
<p>METHOD/APPARATUS/PROCEDURE:</p> <p>The solute-solvent mixtures were equilibrated isothermally by agitation at 25°C or/and at room temperature. (The difference found in the solubilities was within the limits of experimental error. Y was determined by complexometric titration. No other information given.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>The anhydrous chloride was obtained by the method of Taylor and Carter (1). No other information given.</p> <p>ESTIMATED ERROR:</p> <p>Nothing specified.</p> <p>REFERENCES:</p> <p>1. Taylor, M.D.; Carter, C. P. <i>J. Inorg. Nucl. Chem.</i> <u>1962</u>, <u>24</u>, 387.</p>

COMPONENTS: (1) Yttrium chloride; YCl_3 ; [10361-92-9] (2) Alcohols; ROH (3) 1,4-Dioxane; $\text{C}_4\text{H}_8\text{O}_2$; [123-91-1]	ORIGINAL MEASUREMENTS: Golub, A.M.; Yankovich, V.N. <i>Ukr. Khim. Zh.</i> 1977, 43, 1139-42; <i>Ukr. J. Chem. (Engl. Transl.)</i> 1977, 43, 16-20.																						
VARIABLES: Concentration of ROH $T/K = 295$	PREPARED BY: M. Salomon and T. Mioduski																						
EXPERIMENTAL VALUES: Numerical data were not given, but results were presented graphically and in the form of the equation $K = [\text{YCl}_3 \cdot n\text{ROH}] / [\text{ROH}]^n \quad [1]$ <p>In this equation $[\text{YCl}_3 \cdot n\text{ROH}]$ is the solubility in units of mol dm^{-3}, $[\text{ROH}]$ is the total alcohol concentration in units of mol dm^{-3}, and n is the solvate number in solution (see ref. 1). According to this equation, n is calculated from the slope of a plot of the logarithm of the solubility, $\log [\text{YCl}_3 \cdot n\text{ROH}]$, against $\log [\text{ROH}]$. Thus the solubility of YCl_3 can be calculated as a function of ROH concentration using the reported values of n and K (see table below). The alcohol concentrations were varied from 1-5 mol dm^{-3}.</p> <table border="1" data-bbox="108 745 1216 984"> <thead> <tr> <th>alcohol</th> <th>n</th> <th>$-\log K$</th> <th>nature of the solid phase</th> </tr> </thead> <tbody> <tr> <td rowspan="2">methanol; CH_3OH; [67-56-1]</td> <td>1</td> <td>1.40</td> <td rowspan="2">$\text{YCl}_3 \cdot 3\text{CH}_3\text{OH}$</td> </tr> <tr> <td>2</td> <td>1.80</td> </tr> <tr> <td rowspan="2">ethanol; $\text{C}_2\text{H}_5\text{OH}$; [64-17-5]</td> <td>2</td> <td>2.67</td> <td rowspan="2">$\text{YCl}_3 \cdot 2\text{C}_2\text{H}_5\text{OH}$</td> </tr> <tr> <td>3</td> <td>3.17</td> </tr> <tr> <td rowspan="2">1-propanol; $\text{C}_3\text{H}_7\text{OH}$; [71-23-8]</td> <td>1</td> <td>1.65</td> <td rowspan="2">$\text{YCl}_3 \cdot 3\text{C}_3\text{H}_7\text{OH}$</td> </tr> <tr> <td>2</td> <td>2.00</td> </tr> </tbody> </table> <p>For the systems, two values of n and K are reported, and the overall solubility of YCl_3 is obtained by using the values for n-K in eq. [1] which give the greater solubility.</p>		alcohol	n	$-\log K$	nature of the solid phase	methanol; CH_3OH ; [67-56-1]	1	1.40	$\text{YCl}_3 \cdot 3\text{CH}_3\text{OH}$	2	1.80	ethanol; $\text{C}_2\text{H}_5\text{OH}$; [64-17-5]	2	2.67	$\text{YCl}_3 \cdot 2\text{C}_2\text{H}_5\text{OH}$	3	3.17	1-propanol; $\text{C}_3\text{H}_7\text{OH}$; [71-23-8]	1	1.65	$\text{YCl}_3 \cdot 3\text{C}_3\text{H}_7\text{OH}$	2	2.00
alcohol	n	$-\log K$	nature of the solid phase																				
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	2	2.00																					
AUXILIARY INFORMATION																							
METHOD/APPARATUS/PROCEDURE: Isothermal method used as described in (1). Solvent mixtures of known alcohol concentration were saturated with anhydrous YCl_3 at $22 \pm 1^\circ\text{C}$. Equilibrium was confirmed from constancy of the rare earth metal concentration upon repeated analyses. Liquid phases were analysed for rare earth metal concentration (method not specified). At least 3 separate experiments were carried out for each system studied. In addition, the solid phases were analysed for several arbitrary points of each series of experiments (method not specified).	SOURCE AND PURITY OF MATERIALS: Source and purity of YCl_3 not specified. Anhydrous YCl_3 prepared by method described in (2). C.p. grade organic solvents were purified by "known" methods (3). ESTIMATED ERROR: Soly: nothing specified. Temp: precision ± 1 K REFERENCES: 1. Golub, A.M.; Golovorushkin, V. I. <i>Zh. Neorg. Khim.</i> 1968, 13, 3194. 2. Spedding, F.H.; Doan, A. H. <i>J. Am. Chem. Soc.</i> 1952, 74, 2783. 3. Kolotyrkin, Ya.M. (ed). <i>Electrochemistry of Metals in Nonaqueous Solutions</i> . Khimiya Press. Moscow. 1974. p 440.																						

<p>COMPONENTS:</p> <p>(1) Yttrium chloride; YCl_3; [10361-92-9]</p> <p>(2) Diethylamine; $\text{C}_4\text{H}_{11}\text{N}$; $\text{C}_4\text{H}_{11}\text{N}$; [109-89-7]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Kirmse, E. M.</p> <p><i>Tr. II Vses. Konf. po Teor. Rastvorov</i> <u>1971</u>, 200-6.</p>
<p>VARIABLES:</p> <p>One temperature: $T/K = 298$</p>	<p>PREPARED BY:</p> <p>T. Mioduski</p>
<p>EXPERIMENTAL VALUES:</p> <p>The solubility of YCl_3 in diethylamine, $(\text{C}_2\text{H}_5)_2\text{NH}$, at 25°C was reported to be</p> <p style="text-align: center;">1.2 mass %</p> <p>The corresponding value recalculated by the compiler is</p> <p style="text-align: center;">$0.062 \text{ mol kg}^{-1}$</p>	
<p>AUXILIARY INFORMATION</p>	
<p>METHOD/APPARATUS/PROCEDURE:</p> <p>Nothing specified. On the basis of previous papers by the author, it seems that reaction mixtures were thermostated for several days, and that Y was determined by complexometric titration in the presence of xylenol orange indicator. For the solid phase, the ratio Y:Cl:amine was found to be 1:2.9:2.6.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>Nothing specified. Presumably, the anhydrous chloride was prepared by the method of Taylor and Carter (1).</p> <p>ESTIMATED ERROR:</p> <p>Nothing specified.</p> <p>REFERENCES:</p> <p>1. Taylor, M. D.; Carter, C. P. <i>J. Inorg. Nucl. Chem.</i> <u>1962</u>, 24, 387.</p>

COMPONENTS: (1) Yttrium chloride; YCl_3 ; [10361-92-9] (2) 1-Propanamine (propylamine); $\text{C}_3\text{H}_9\text{N}$; [107-10-8]	ORIGINAL MEASUREMENTS: Kirmse, E. M. <i>Tr. II Vses. Kong. po Teor. Rastvorov</i> <u>1971</u> , 200-6.
VARIABLES: One temperature: $T/K = 298$	PREPARED BY: T. Mioduski
EXPERIMENTAL VALUES: The solubility of YCl_3 in $\text{CH}_3\text{CH}_2\text{CH}_2\text{NH}_2$ at 25°C was reported to be <div style="text-align: center;">15.0 mass %</div> The corresponding molality calculated by the compiler is <div style="text-align: center;">$0.904 \text{ mol kg}^{-1}$</div>	
AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE: Nothing specified. On the basis of previous papers by the author, it seems that reaction mixtures were thermostated for several days, and that Y was determined by complexometric titration in the presence of xylenol orange indicator.	SOURCE AND PURITY OF MATERIALS: Nothing specified. Presumably, the anhydrous chloride was 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) Yttrium chloride; YCl_3 ; [10361-92-9] (2) 2-Propen-1-amine (allylamine); $\text{C}_3\text{H}_7\text{N}$; [107-11-9]	ORIGINAL MEASUREMENTS: Kirmse, E. M. <i>Тр. II Vses. Konf. po Teor. Rastvorov</i> <u>1971</u> , 200-6.
VARIABLES: One temperature: $T/K = 298$	PREPARED BY: T. Mioduski
EXPERIMENTAL VALUES: The solubility of YCl_3 in $\text{H}_2\text{C}=\text{CHCH}_2\text{NH}_2$ at 25°C was reported to be <div style="text-align: center;">35.6 mass %</div> The corresponding molality calculated by the compiler is <div style="text-align: center;">2.83 mol kg^{-1}</div> ^a In the original paper, only the formula $\text{C}_3\text{H}_5\text{NH}_2$ is given, but on the compiler's request the author kindly specified the solvent name.	
AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE: Nothing specified. On the basis of previous works by the author, it appears that solute-solvent mixtures were equilibrated isothermally for several days and that Y was determined by complexometric titration using xylenol orange indicator.	SOURCE AND PURITY OF MATERIALS: Nothing specified. Presumably anhydrous YCl_3 was 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.

<p>COMPONENTS:</p> <p>(1) Yttrium chloride; YCl_3; [10361-92-9]</p> <p>(2) 1-Butanamine (n-butylamine); $\text{C}_4\text{H}_{11}\text{N}$; [109-73-9]</p>	<p>ORIGINAL MEASUREMENTS:</p> <p>Kirmse, E. M.</p> <p><i>Tr. II Vses. Konf. po Teor. Rastvorov</i> <u>1971</u>, 200-6.</p>
<p>VARIABLES:</p> <p>One temperature: $T/K = 298$</p>	<p>PREPARED BY:</p> <p>T. Mioduski</p>
<p>EXPERIMENTAL VALUES:</p> <p>The solubility of YCl_3 in $\text{CH}_3(\text{CH}_2)_3\text{NH}_2$ at 25°C was reported to be</p> <p style="text-align: center;">21.1 mass %</p> <p>The corresponding molality calculated by the compiler is</p> <p style="text-align: center;">1.37 mol kg^{-1}</p>	
<p>AUXILIARY INFORMATION</p>	
<p>METHOD/APPARATUS/PROCEDURE:</p> <p>Nothing specified. On the basis of previous papers by the author, it seems that reaction mixtures were thermostated for several days, and that Y was determined by complexometric titration in the presence of xylenol orange indicator.</p>	<p>SOURCE AND PURITY OF MATERIALS:</p> <p>Nothing specified. Presumably, the anhydrous chloride was prepared by the method of Taylor and Carter (1).</p> <p>ESTIMATED ERROR:</p> <p>Nothing specified.</p> <p>REFERENCES:</p> <p>1. Taylor, M. D.; Carter, C. P. <i>J. Inorg. Nucl. Chem.</i> <u>1962</u>, 24, 387.</p>

COMPONENTS: (1) Yttrium chloride; YCl_3 ; [10361-92-9] (2) Di-isobutylamine; $C_8H_{19}N$; [110-96-3]	ORIGINAL MEASUREMENTS: Kirmse, E. M. <i>Tř. II. Vses. Konf. po Teor. Rastvorov</i> <u>1971</u> , 200-6.
VARIABLES: One temperature: $T/K = 298$	PREPARED BY: T. Mioduski
EXPERIMENTAL VALUES: The solubility of YCl_3 in $(CH_3)_2CHCH_2_2NH$ at $25^\circ C$ was reported to be <div style="text-align: center;">0.6 mass %.</div> The corresponding molality calculated by the compiler is <div style="text-align: center;">0.03 mol kg^{-1}</div>	
AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE: Nothing specified. On the basis of previous papers by the author, it seems that reaction mixtures were thermostated for several days, and that Y was determined by complexometric titration in the presence of xylenol orange indicator.	SOURCE AND PURITY OF MATERIALS: Nothing specified. Presumably, the anhydrous chloride was 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.