

COMPONENTS: (1) Gadolinium iodide; GdI_3 ; [13572-98-0] (2) Tetrahydrofuran; C_4H_8O ; [109-99-9]	ORIGINAL MEASUREMENTS: Kachkimbaeva, S.A.; Chalova, E.P.; Bleshinskii, S.V. Khim. Kompleks. Soedin. Redk. Sopot- stvuyushchikh Elem. <u>1970</u> , 122-6.
VARIABLES: T/K = 293	PREPARED BY: T. Mioduski
EXPERIMENTAL VALUES: <p>The solubility of GdI_3 in tetrahydrofuran at 20°C was reported to be</p> 2.67 g dm^{-3} $(0.00496 \text{ mol dm}^{-3}, \text{ compiler})$	
AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE: The solute-solvent mixtures were equilibrated isothermally with constant agitation. Solid and liquid phases separated by decantation, and in some cases by centrifuging. Gd determined by the oxalate method. I determined by titration with an $AgNO_3$ solution (the Volhard method).	SOURCE AND PURITY OF MATERIALS: GdI_3 prepared by heating cp grade iodine with an excess powdered metal (Gd-0-Sort) in an ampoule at 1200°C. The iodide formed sublimated from the hot to the cold part of the ampoule. The product was analyzed for Gd and I contents, and found to contain GdI_2 . The I/Gd ratio was 2.67. Cp grade solvent (GDR) bp=65.6°C, dried with NaOH and Na and distilled from metallic sodium.
ESTIMATED ERROR: Nothing specified.	
REFERENCES:	

COMPONENTS: (1) Gadolinium iodide; GdI_3 ; [13572-98-0] (2) 1,4-Dioxane; $C_4H_8O_2$; [123-91-1]	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
EXPERIMENTAL VALUES: <p>The solubility of GdI_3 in p-dioxane at about 25°C was given as</p> <p style="text-align: center;">0.4 mass %</p> <p>The corresponding molality calculated by the compiler is</p> <p style="text-align: center;">0.0075 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 at 25°C or at room temperature. Authors state that the difference found for the solubility was within experimental error limits. Gd 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. <hr/> ESTIMATED ERROR: Nothing specified. <hr/> REFERENCES: 1. Taylor, M.D.; Carter, C.P. <i>J. Inorg. Nucl. Chem.</i> <u>1962</u> , <i>24</i> , 387.

COMPONENTS: (1) Gadolinium iodide; GdI_3 ; [13572-98-0] (2) Alkyl 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 style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">solvent</th> <th></th> <th></th> <th colspan="2" style="text-align: center;">solubility^a</th> </tr> <tr> <th></th> <th></th> <th></th> <th style="text-align: center;">mass %</th> <th style="text-align: center;">mol kg⁻¹</th> </tr> </thead> <tbody> <tr> <td>1-propanamine;</td> <td>n-C₃H₉N;</td> <td>[107-10-8]</td> <td style="text-align: center;">4.3</td> <td style="text-align: center;">0.084</td> </tr> <tr> <td>2-propanamine;</td> <td>iso-C₃H₉N;</td> <td>[75-31-0]</td> <td style="text-align: center;">14.8</td> <td style="text-align: center;">0.323</td> </tr> <tr> <td>1-butanamine;</td> <td>n-C₄H₁₁N;</td> <td>[109-73-9]</td> <td style="text-align: center;">17.0</td> <td style="text-align: center;">0.381</td> </tr> <tr> <td>2-butanamine;</td> <td>sec-C₄H₁₁N;</td> <td>[13952-84-6]</td> <td style="text-align: center;">11.5</td> <td style="text-align: center;">0.242</td> </tr> </tbody> </table> <p>^aMolalities calculated by the compilers.</p>		solvent			solubility ^a					mass %	mol kg ⁻¹	1-propanamine;	n-C ₃ H ₉ N;	[107-10-8]	4.3	0.084	2-propanamine;	iso-C ₃ H ₉ N;	[75-31-0]	14.8	0.323	1-butanamine;	n-C ₄ H ₁₁ N;	[109-73-9]	17.0	0.381	2-butanamine;	sec-C ₄ H ₁₁ N;	[13952-84-6]	11.5	0.242
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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> , 24, 387.																														

COMPONENTS: (1) Gadolinium iodide; GdI_3 ; [13572-98-0] (2) <i>N,N</i> -Dimethylformamide; C_3H_7NO ; [68-12-2]	ORIGINAL MEASUREMENTS: Moeller, T.; Galasyn, V. <i>J. Inorg. Nucl. Chem.</i> <u>1960</u> , <i>12</i> , 259-65.
VARIABLES: $T/K = 298.15$	PREPARED BY: M. Salomon
EXPERIMENTAL VALUES: <p>The solubility of GdI_3 in $HCON(CH_3)_2$ at $25^\circ C$ was reported as</p> 451.0 g dm^{-3} <p>and as</p> $0.4018 \text{ mol dm}^{-3}$ <p>The solid phase is the solvate $GdI_3 \cdot 8HCON(CH_3)_2$. The melting point (sealed tube method) of this solvate given as $102.0 - 104.0^\circ C$.</p>	
AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE: Authors state that solubilities were determined by analysis of aliquots after equilibration at $25 \pm 0.025^\circ C$, and that techniques were generally similar to those described in (1). The rare earth content was determined by complexometric titration with EDTA at $60^\circ C$. Iodide was determined by the Volhard method, and carbon, hydrogen, and nitrogen by usual microanalytical techniques.	SOURCE AND PURITY OF MATERIALS: The initial material was the rare earth oxide of 99.9+% purity. Iodides were prep'd by two methods. 1. Acetyl iodide method (2) where the hydrated acetate is treated with acetyl iodide in benzene. Acetyl iodide prep'd as in (3). 2. The iodide was prep'd by metathesis by reaction of the hydrated $GdCl_3$ with KI in DMF followed by addition of benzene and distillation of the benzene-water azeotrope. For both preparations the solvate $GdI_3 \cdot 8DMF$ and its electrolytic conductance was $\geq 3.7 \times 10^{-7} \text{ S cm}^{-1}$ at $25^\circ C$.
REFERENCES: 1. Moeller, T.; Cullen, G.W. <i>J. Inorg. Nucl. Chem.</i> <u>1959</u> , <i>10</i> , 148. 2. Watt, G.W.; Gentile, P.S.; Helvenston, E.P. <i>J. Am. Chem. Soc.</i> <u>1955</u> , <i>77</i> , 2752. 3. Biltz, H.; Biltz, W. <i>Laboratory Methods of Inorganic Chemistry (2nd Edition)</i> . John Wiley. N.Y. <u>1928</u> . 4. Leader, G.R.; Gormley, J.F. <i>J. Am. Chem. Soc.</i> <u>1951</u> , <i>73</i> , 5731. 5. Thomas, A.B.; Rochow, E.G. <i>J. Am. Chem. Soc.</i> <u>1957</u> , <i>79</i> , 1843.	ESTIMATED ERROR: Soly: precision around $\pm 0.1\%$ (compiler). Temp: precision $\pm 0.025 \text{ K}$ (authors).