

Thermochemisches und kalorisches Verhalten von $\text{NdAl}_3\text{Cl}_{12}$

Thermochemical and Calorical Behaviour of $\text{NdAl}_3\text{Cl}_{12}$

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Professor Heinz Dieter Lutz zum 65. Geburtstag gewidmet

Z. Naturforsch. **53 b**, 1343–1351 (1998); eingegangen am 21. Juli 1998

Aluminium Neodymium Chloride, Decomposition, Thermochemical Data, Enthalpy, Entropy

The thermodynamical data of solid and gaseous aluminium neodymium chloride have been obtained by determination of the decomposition equilibria (of solid) from total pressure measurements and chemical transport reactions (gaseous). The melting diagram was determined by DTA. The enthalpy of formation of the solid phase was calculated from their heats of solution and from the enthalpies of formation and the heats of solution of NdCl_3 and AlCl_3 .

Data by total pressure measurement:

$\Delta H_{\text{B}}^{\circ}(\text{NdAl}_3\text{Cl}_{12,\text{f},298}) = -749,6 \pm 2,5 \text{ kcal/mol}$; $S^{\circ}(\text{NdAl}_3\text{Cl}_{12,\text{f},298}) = 118,2 \pm 3,0 \text{ cal/K}\cdot\text{mol}$.

Data by solution calorimetry: $\Delta H_{\text{B}}^{\circ}(\text{NdAl}_3\text{Cl}_{12,\text{f},298}) = -748,6 \pm 1,3 \text{ kcal/mol}$.

Data by chemical transport:

$\Delta H_{\text{B}}^{\circ}(\text{NdAl}_3\text{Cl}_{12,\text{g},298}) = -701,5 \pm 3,0 \text{ kcal/mol}$; $S^{\circ}(\text{NdAl}_3\text{Cl}_{12,\text{g},298}) = 215,0 \pm 4,0 \text{ cal/K}\cdot\text{mol}$.

* Sonderdruckanforderungen an Prof. Dr. H. Oppermann.