Cl-Nd (Chlorine-Neodymium)

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The Nd-Cl phase diagram shown in Fig. 1 was obtained by [1963Nov] by measuring cooling curves. Five compounds are shown in Fig. 1, but crystal structure data are available only for NdCl_2 and NdCl_3 [1973Lan] (Table 1). There must be at least three more intermediate compounds in this system on the Nd-rich side of NdCl_2 because of the invariant reactions observed at 818, 808, and 764 °C. Invariant reactions at 1021 and 864 °C correspond to the melting point and

the β to α allotropic transformation temperature of Nd, respectively.

References

1963Nov: G.I. Novikov and O.G. Polyachenok: *Russ. J. Inorg. Chem.*, 1963, vol. 8 (5), pp. 545-50.

1973Lan: Landolt-Börnstein: *III7a, Crystal Structure Data of Inorganic Compounds*, Springer-Verlag, Berlin, 1973.

Table 1 Nd-Cl crystal structure data

Phase	Composition, at.% Cl	Pearson symbol	Space group	Strukturbericht designation	Prototype
(β Nd)	0	<i>cI2</i>	$\bar{Im}3m$	A2	W
(α Nd)	0	<i>hP4</i>	$P6_3/mmc$	A3'	αLa
NdCl_2	66.7	<i>oP12</i>	<i>Pmnb</i>	C23	Co_2Si
Nd_4Cl_9	69.2	...	...	...	...
$\text{Nd}_7\text{Cl}_{16}$	69.6	...	...	...	...
Nd_3Cl_7	70	...	...	...	...
NdCl_3	75	<i>hP8</i>	$P6_3/m$	...	UCl_3

Fig. 1 Cl-Nd phase diagram