

Catalog # 93-4126 Niobium(V) chloride (99+%-Nb)

NbCl₅

Thermal Behavior:

- Melting point: 204.7°C
- Boiling point 254°C
- Vapor pressure: 17.1 Torr at 153.8 °C [1, see table]

Technical Notes:

1. ALD/CVD precursor niobium thin film deposition
2. Used for etching of Nb₂O₅ Thin Films by NbCl₅ [8]

Target Deposit	Deposition Technique	Delivery Temperature	Pressure	Co-reactants	Deposition Temperature	Ref.
NbN _x	ALD ALD	90°C 90°C	7.5 Torr 7.5 Torr	Me ₂ NNH ₂ NH ₃	400°C 250-500°C	2 3, 4
NbC _x	ALD	115°C	-	TMA	100-350°C	5
Nb(Si)N	ALD	95°C	-	SiCl ₄ , NH ₃	400°C	6
NbTiN	ALD	-	1.1 Torr	TiCl ₄ , NH ₃	450°C	7
NbOCl ₃	ALE	90°C	-	Nb(OEt) ₅	-	8

References:

1. [Can. J. Chem. 1976, 54, 1692](#)
2. [J. Electrochem. Soc. 2000, 147, 3377](#)
3. [Thin Solid Films 2005, 491, 235](#)
4. [Nanotechnology 2018, 29, 335303](#)
5. [J. Phys. Chem. C, 2011, 115, 25063](#)
6. [J. Electrochem. Soc. 2006, 153, G437](#)
7. [Sci. Rep. 2018, 8, 4082](#)
8. [Chem. Vap. Deposition 2009, 15, 269](#)