



>>Entry Name: Lithium hexafluoroaluminate(III) (Li_3AlF_6), 8Cl

Synonym(s): Trilithium aluminium fluoride. Hexafluoroaluminate(3-) trilithium salt, 9Cl

CAS Registry Number: 13821-20-0

Li_3AlF_6

Molecular Formula: AlF_6Li_3

Molecular Weight: 161.795

Accurate Mass: 162.019966

Percentage Composition: Al 16.68%; F 70.45%; Li 12.87%

Source/Synthesis: Prepd. by melting together LiF and AlF_3 at 780°

Physical Description: Colourless orthorhombic cryst. Undergoes orthorhombic to tetragonal transition at 510° and tetragonal to cubic transition at 597°

Melting Point: Mp 785°

Other Data: $\Delta H_f^\circ -3384 \text{ kJ mol}^{-1}$; $\Delta G_f^\circ -3224 \text{ kJ mol}^{-1}$; $S^\circ 187.9 \text{ JK}^{-1} \text{ mol}^{-1}$

References:

Rolin, M. *et al.*, *Bull. Soc. Chim. Fr.*, 1964, 891, (*synth*)

Garton, G. *et al.*, *J. Inorg. Nucl. Chem.*, 1965, **27**, 2466, (*powder struct*)

Burns, J.H. *et al.*, *Acta Cryst. B*, 1968, **24**, 225, (*cryst struct*)

Holm, J. *et al.*, *Acta Chem. Scand.*, 1969, **23**, 1065, (*polymorphs*)

Arthurs, S.D. *et al.*, *J. Inorg. Nucl. Chem.*, 1973, **35**, 3435, (*synth*)

Dewing, E.W., *Metall. Trans. B*, 1980, **11**, 245, (*thermodyn*)

Chase, M.W. *et al.*, *J. Phys. Chem. Ref. Data*, 1985, **14**, 109, (*thermochem data*)