



>>Entry Name: Mordenite

Synonym(s): Ptilolite

CAS Registry Number: 12173-98-7

Related CAS Registry Numbers(s): 1344-00-9

Extra CAS Registry Numbers(s): 12445-20-4

$\text{Na}_8(\text{Al}_8\text{Si}_{40}\text{O}_{96}) \cdot 24\text{H}_2\text{O}$

Molecular Formula: $\text{Al}_8\text{Na}_8\text{O}_{96}\text{Si}_{40}$

Molecular Weight: 3059.132

Accurate Mass: 3054.359368

Percentage Composition: Al 7.06%; Na 6.01%; O 50.21%; Si 36.72%

of 1D channels, one 650 x 700 pm with (Si,Al-O)₁₂ rings and the other 260 x 570 pm with (Si,Al-O)₈ rings

Source/Synthesis: Mineral occurs in veins and cavities in igneous rocks as a hydration product of glasses and as an authigenic deposit in sediments. Found in USA, Canada, Italy, Iceland, Scotland, USSR, Japan and elsewhere. Hydrothermal synth. from gels at 300–415° and 1–3 x 10³ atm.

Physical Description: White cryst. (aq. melt)

Other Data: Many ion exchanged forms known: Ag, Ba, Ca, Cr, K, Li, NH₄ etc.

References:

- Barrer, R.M. *et al.*, *J.C.S.*, 1948, 2158; 1952, 1561; 1959, 195, (*synth, ion exch, powder struct*)
Meier, W.M., *Z. Kristallogr.*, 1961, **115**, 439, (*cryst struct*)
Hawkins, D.B., *Mater. Res. Bull.*, 1967, **2**, 951, (*synth*)
Daniels, R.H. *et al.*, *J.A.C.S.*, 1978, **100**, 3097, (*synth*)
Fyfe, C.A. *et al.*, *J. Phys. Chem.*, 1982, **86**, 1247, (*Al-27 nmr*)
Klinowski, J. *et al.*, *Zeolites*, 1983, **3**, 5, (*Si-29, Al-27 nmr*)
Pechar, F. *et al.*, *Zeolites*, 1983, **3**, 329, (*ir*)
Nambar, S. *et al.*, *Zeolites*, 1984, **4**, 77, (*absorption*)
Nagy, J.B. *et al.*, *Zeolites*, 1984, **4**, 133, (*Al-27 nmr*)
Townsend, P.R. *et al.*, *Zeolites*, 1984, **4**, 191, (*ion exch props*)
Hays, G.R. *et al.*, *Zeolites*, 1984, **4**, 377, (*Si-29 nmr*)
Lippmaa, E. *et al.*, *J.A.C.S.*, 1986, **108**, 1730, (*Al-27 nmr*)
Bajpai, P.K., *Zeolites*, 1986, **6**, 2, (*synth, rev*)
Meier, W.H. *et al.*, *Atlas of Zeolite Structure Types*, 2nd edn., Butterworth, London, 1987, 102
Loizidou, M. *et al.*, *Zeolites*, 1987, **7**, 153, (*ion exch props*)
Davis, M.E. *et al.*, *Chem. Comm.*, 1988, 920, (*synth*)
Enzel, P. *et al.*, *J. Phys. Chem.*, 1989, **93**, 6270, (*use*)