

LTF

LZ-135

Si(71), Al(29)

Contributed by Qisheng Huo

Verified by E.-P. Ng, S B. Hong, S. Komaty

Type Material $\text{Na}_{26}(\text{TMA})_6[\text{Si}_{76}\text{Al}_{32}\text{O}_{216}]$
(TMA = Me_4N^+)

Method L.B. McCusker, Ch. Baerlocher, S.T. Wilson, and R.W. Broach [1]

Batch Composition 5.0 SiO_2 : 1.0 Al_2O_3 : 2.80 Na_2O : 5.0 TMACl : 5.0 TEABr : 156 H_2O (TEA = Et_4N^+)

Source Materials double distilled water sodium hydroxide (NaOH) sodium aluminate (NaAlO_2) silica sol(Ludox LS, 30%) tetramethylammonium chloride (TMACl) tetraethylammonium bromide (TEABr)

Batch Preparation (for 59 g product)

- (1) [solid sodium hydroxide + solid sodium aluminate + an approximately equivalent weight of water], heat to get a clear solution
- (2) [(1)^a + silica sol (Ludox LS, 30%)], mix for 0.5 min in a blender
- (3) [(2) + TMACl and TEABr in the remaining water], blend at high speed for 4 min

Crystallization

Vessel: PTFE-lined vessel
Temperature: 100° C
Time: 240 hours
Agitation: high speed rotation

Product Recovery

- (1) Filter and wash with water
- (2) Dry at ambient temperature

Product Characterization

XRD: LTF^b; competing phase: no
Elemental analysis: 2.34 Si / 1.0 Al / 0.80 Na / 0.18 TMA / 0.01 TEA

Reference

- [1] L. B. McCusker, Ch. Baerlocher, S.T. Wilson, R.W. Broach, J. Phys. Chem. C 113 (2009) 9838
- [2] B. K. Macus and Brent. M. Lok. U.S. Pat. 4,857,288 (1989)

Notes

- a. Warm suspension
- b. Synchrotron powder diffraction data were collected on the UNICAT beamline 33-BM-C at the Advanced Photon Source (APS) at Argonne, Illinois.