

AET

AlPO₄-8

Al(50), P(50)

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Type Material: [Al₃₆P₃₆O₁₄₄]

Method: J. O. Perez, N.K. Mcguire, A. Clearfield [1]

Batch Composition: 1 Al₂O₃ : 1 P₂O₅ : 1 DPA : 45 H₂O (DPA = di-*n*-propylamine)

Source Materials

hydrated pseudoboehmite alumina (Catapal B-alumina, Vista Chem. Co.; 74% Al₂O₃, 26% H₂O)
phosphoric acid (Fisher Reagent grade, 85%)
di-*n*-propylamine, *n*-Pr₂NH
distilled water

Batch Preparation

- (1) [13.8 g pseudoboehmite + 41.1 g water] stir the slurry for 10-15 min
- (2) [23.1 g 85% H₃PO₄ + 27.4 g water + (1)] under continuous stirring^a
- (3) gel is obtained and aged for 10 h at room temperature
- (4) [(3) + 10.1 g of DPA] stir and add DPA dropwise; continue stirring for 20-30 min

Crystallization

Vessel: Teflon-lined stainless steel autoclave
Temperature: 125° C
Time: 20-25 hours
Agitation: No

Product Recovery

- (1) Dilute reaction mixture with water
- (2) Filter and wash with water
- (3) Dry at 50 °C

Product Characterization

XRD: AET; competing phases: no

References

- [1] J. O. Perez, N K. Mcguire, A. Clearfield, Catal. Lett. 8 (1991) 145

Notes

- a. phosphoric acid solution should be added in the pseudoboehmite slurry in increments of 7 mL with a 2 min interval between additions