

## Vapor-phase synthesis of alumina particles through thermal decomposition of aluminum tri-isopropoxide

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Aluminum tri-isopropoxide (ATI) vapor was thermally decomposed in a 500mL batch reactor at 170–250°C. The conversion was 58% at 250°C. The addition of hydrogen chloride by 10 mol% of the ATI increased the conversion to 96%. The as-produced particles were spherical and distributed in size range 50 to 150 nm, and contained chlorine ~1.0 at%. Upon heating in a thermogravimetric analyzer, the mass decreased to 70% at 1080°C, then rather increased thereafter to 80% of the initial mass at 1200°C. The as-produced particles were amorphous, but turned into  $\alpha$ -phase by calcination 1200°C for 2 hours. Investigated were the effects of reaction temperature and the amount of hydrogen chloride on the particle morphology, particle size and chemical composition of produced alumina particles.