

Badger Isopropyl Alcohol Technology

Badger Isopropyl Alcohol (IPA) technology produces >99% purity isopropyl alcohol at a low capital and operating cost.



Deepak Phenolics Limited

The patented process produces isopropyl alcohol (IPA) from acetone. IPA has anti-viral and anti-bacterial properties, which make it an effective antiseptic and disinfectant. Badger's IPA technology allows acetone producers the flexibility to shift their production depending on market demands.

Crude IPA is produced as an intermediate stream in Badger's Acetone-to-Cumene (ATC) technology via the hydrogenation of acetone. Typically, in the ATC process, the IPA is then alkylated with benzene in a reaction step to produce cumene. However, for our process that produces IPA, the IPA intermediate is purified and becomes the final product.

Hydrogenation

A hydrogenation system converts acetone and hydrogen to isopropyl alcohol (IPA). The hydrogenation reactor operates in the mixed phase, trickle bed flow regime. Acetone and hydrogen feedstocks enter the reactor and react on a supported nickel catalyst. The effluent from hydrogenation flows to downstream processing for purification of the IPA product.

Purification

The feed to purification is a stream containing primarily isopropyl alcohol and water at a composition close to their low boiling azeotrope. The product separation is accomplished using simple distillation, with fewer columns than other technologies. The product is a commercial grade IPA product that conforms to the ASTM D-770 specification. There is also a small vent stream and a small wet purge that leave the purification system.

IPA process





Operating flexibility

- IPA unit can be integrated into existing cumene-phenol plants to produce a cumene product if combined with IPA alkylation.
- Can be a standalone IPA unit producing commercial grade IPA product.
- Enables phenol producers to balance solvent production.

Low capital investment and operating cost

- Small catalyst volume in hydrogenation reactor.
- Simple distillation scheme to purify the IPA product.
- High yield and low energy consumption.

Commercial Experience

Badger's IPA process has been licensed six times for a total licensed capacity of 290 KTA, and the first unit started up successfully in early 2020.

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