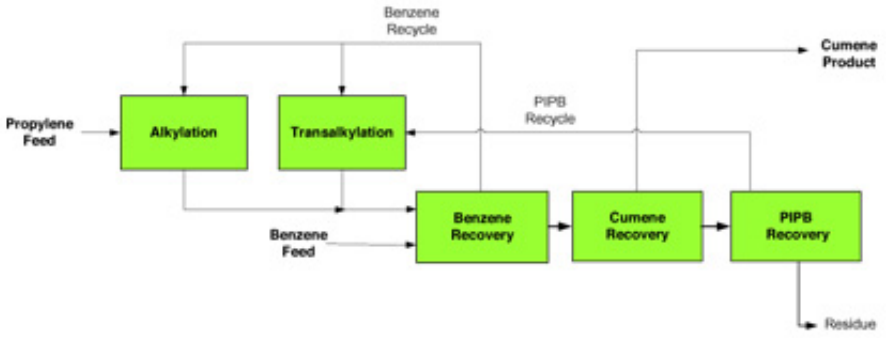
Cumene

Badger cumene technology produces cumene from benzene and propylene. The reactions take place in the liquid phase and are catalyzed in fixed beds by proprietary zeolite catalysts available through ExxonMobil. The technology is flexible and can produce cumene from a variety of propylene sources including refinery, chemical and polymer grades.

The conversion of propylene is typically higher than 99.999%, and the yield loss is typically less than 0.3% of the total raw materials consumed. Product purity above 99.97% weight has been regularly achieved in commercial operation. Benzene in stoichiometric excess is required for cumene synthesis; the excess benzene is recovered by distillation and recycled to the reactors. The cumene process licensed by Badger uses an extremely low benzene to propylene (B/P) ratio in the alkylator feed and an extremely low benzene to PIPB ratio in the transalkylator feed, resulting in very low equipment cost and fuel consumption. The ExxonMobil catalysts are noncorrosive, environmentally inert, and regenerable. These catalysts are free flowing before and after use and require no special packaging or handling. Offsite regeneration is typically the preferred method due to the long cycle length. These catalysts also enable the bulk of the plant to be constructed of carbon steel. The catalyst does not produce byproduct oligomers.



View enlarged diagram

The Cumene Process

ALKYLATION

An alkylation system converts benzene and propylene to cumene. A small fraction of the cumene is further alkylated to polyisopropylbenzenes (PIPB). The alkylation reaction is exothermic. The alkylator is staged with intermediate cooling to control the reaction temperature.

TRANSALKYLATION

A transalkylation system converts PIPB with benzene to additional cumene. Transalkylation is isothermal. The transalkylator is a single bed reactor.

PURIFICATION

A distillation train recycles excess benzene to reactors, isolates cumene as product, and recovers PIPB for transalkylation.

The Badger Cumene process is a high yield, high energy efficiency, low environmental impact process that is easy to operate and maintain, allowing for very low production cost.

About Us | Technologies & Services | Contact Us | Press Room | Legal