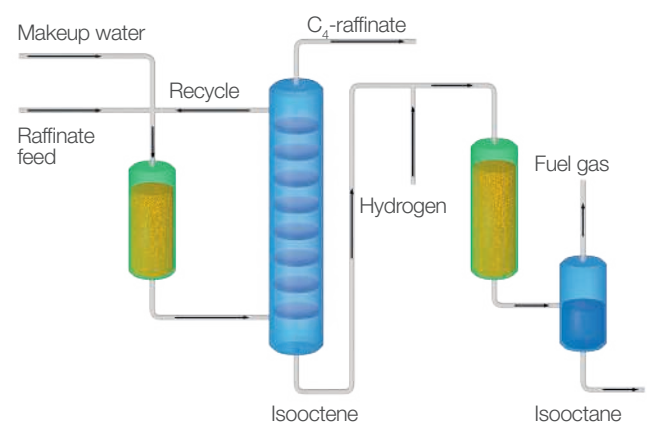


NEXOCTANE™

Isobutylene to Premium Octane Value Component

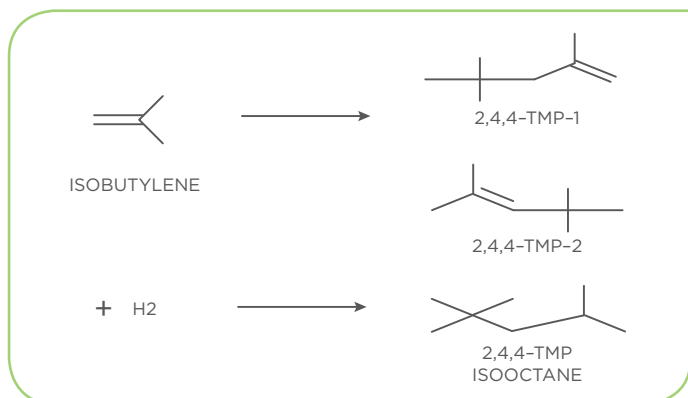


NEXOCTANE™ concept with hydrogenation section

NEXOCTANE™

Process of Choice For Clean Fuel Component with Excellent Product Value

All gasoline fuel producers face today the challenge of achieving current and future specifications with high availability at low cost. Environmental concerns and market requirements steer the customers towards clean-burning and non-aromatic hydrocarbons with premium octane values. With right process, isooctene and isooctane will be the optimum hydrocarbon components for any gasoline pool – now and in the future.



The isobutylene dimerization takes place in the liquid phase in adiabatic reactors over fixed beds of acidic ion-exchange resin catalyst. The product quality, specifically the distribution of dimers and oligomers, is controlled by recirculating alcohol from product recovery section to the reactors. Alcohol is formed in the dimerization reactors through the reaction of a small amount of water with olefin present in the feed. The alcohol content in the reactor feed is typically kept at a sufficient level so that the isooctene product contains less than 10 percent oligomers. The dimerization product recovery step separates the isooctene product from the unreacted fraction of the feed and also produces a concentrated alcohol stream for recycle to the dimerization section. The C4-raffinate is free of oxygenates and suitable for further processing in an alkylation unit or a dehydrogenation plant.

Isooctene produced in the dimerization section is further processed in a hydrogenation unit to produce the saturated isooctane product. The hydrogenation section consists of trickle-bed reactor(s) and a product stabilizer.

Process Solution

The NEXOCTANE™ process consists of two independent sections. Isooctene is produced by dimerization of isobutylene in the dimerization section, and subsequently, the isooctene can be hydrogenated to produce isooctane in the hydrogenation section. Dimerization and hydrogenation are independently operating sections.

Benefits

Economical Benefits

- The NEXOCTANE™ technology offers a low cost retrofit of existing MTBE or ETBE facilities.
- For refinery applications NEXOCTANE™ dimerization section alone is an attractive minimum cost alternative delivering excellent blending properties of isooctene.
- Product recovery with existing MTBE distillation equipment in most revamp applications.
- Excellent availability and long catalyst age.

Easy Operability

- Environmentally friendly and non-corrosive dimerization catalyst system using proprietary ion exchange resin.
- Ease of loading and unloading of catalyst.

Flexibility of Design

- The NEXOCTANE™ process is suitable for a wide variety of C4 feedstocks derived from refinery FCC, olefin plant raffinate and isobutane dehydrogenation.
- MTBE or ETBE as an alternative option for swing-mode production is easily built in.
- Independent sections for dimerization and hydrogenation enable a choice of technology ensemble that yields either an olefinic or completely saturated product.

Product Benefits

- Low RVP – leads to maximization of lighter, lower value streams.
- Greater blending flexibility – owners maximize profits by increasing production of higher grade gasoline.
- Non-aromatic product – to meet tightening environmental specifications.
- Essentially no sulfur in saturated isooctane product.

Licensing in Europe, Russia and Turkey:

Neste Oyj

Engineering Solutions

P.O.Box 310, FI-06101 Porvoo, Finland

Visiting address: Teknologiantie 36, Kilpilahti

Phone +358 (0)10 458 11 / Email: nex@neste.com

www.neste.com/engineeringsolutions

Outside of Europe, Russia and Turkey through:

KBR Technologies

601 Jefferson Street

Houston, TX 77002 | USA

Phone +1 713.753.2000

www.kbr.com/technologies

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