

Catalytic

Distillation

Technologies

## Advanced Sulfuric Acid Catalyzed Alkylation Process for the Production of Motor Fuel Alkylate

# CDAlky<sup>SM</sup>

Technology Profile

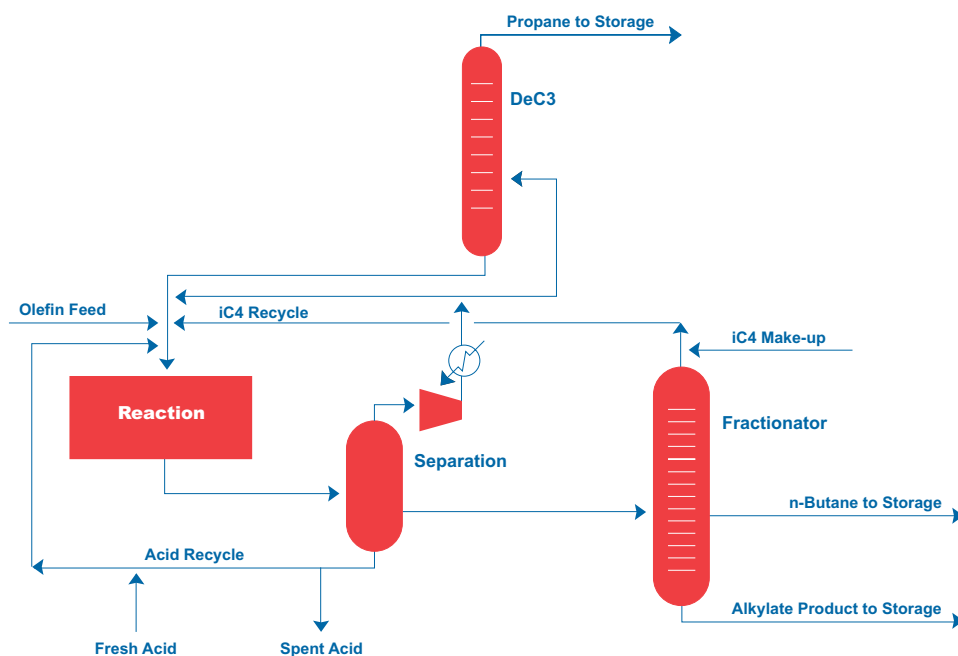
**Overview** The CDAlky catalytic alkylation technology reacts light olefin streams from refinery sources such as fluid catalytic cracking units or from steam cracking units with iso-paraffins to produce motor fuel alkylate. Central to the CDAlky process is a novel contactor/reactor design that significantly improves mass transfer relative to conventional contactors. The CDAlky process is available for license to the petroleum refining and petrochemical industries. CDTECH is a partnership between ABB Lummus Global Inc. and Chemical Research & Licensing, a CRI Company.

**Alkylation for Motor Fuel** The patented CDAlky process is an advanced sulfuric acid-catalyzed alkylation process for the production of motor fuel alkylate.

The process flow diagram shows the basic configuration to process a mixed C<sub>4</sub> olefin feed and produce a bright, clear, high-quality motor fuel alkylate, without the need for water/caustic washes or bauxite treatment. The CDAlky process yields a higher quality product while consuming significantly less acid than conventional technologies. The flow scheme is also less complex than conventional designs, which reduces capital and operating costs.

Conventional sulfuric acid alkylation units use mechanical mixing in their contactors to achieve the required contact between acid and hydrocarbon phases, and are characterized by their high acid consumption. In addition, conventional technologies are unable to take the full benefit of operating at lower temperature, which substantially improves alkylate quality and lowers acid consumption. CDTECH has overcome these operating constraints by developing a novel contactor that takes advantage of our unique expertise in mass transfer technologies to lower operating temperature and to reduce acid consumption by 50 percent or more.

### CDAlky Process Flow Diagram



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**Advantages**

The benefits of the CDAlky process:

- \* Lower acid consumption
- \* Lower utilities
- \* Reduced operating cost
- \* Reduced environmental exposure
- \* Higher octane product
- \* Lower capex – simpler flowsheet with fewer pieces of equipment
- \* Highly flexible operation range – maximum absolute product octane or maximum octane barrels
- \* Lower maintenance – no mechanical agitator or complex seals
- \* Less corrosion due to dry system
- \* No caustic waste stream

Other features:

The CDAlky process uses conventional product fractionation, which can consist of a single column or two columns.

This process has been designed to make it possible to reuse equipment from idled facilities.

Consistent with our time-tested methodology for developing new processes, CDTECH has been operating a two bbl/day pilot plant in this novel mode of operation for an extended period of time without the penalties associated with conventional technologies.

**CDTECH**

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