

ISOMPLUS®

Technology Profile

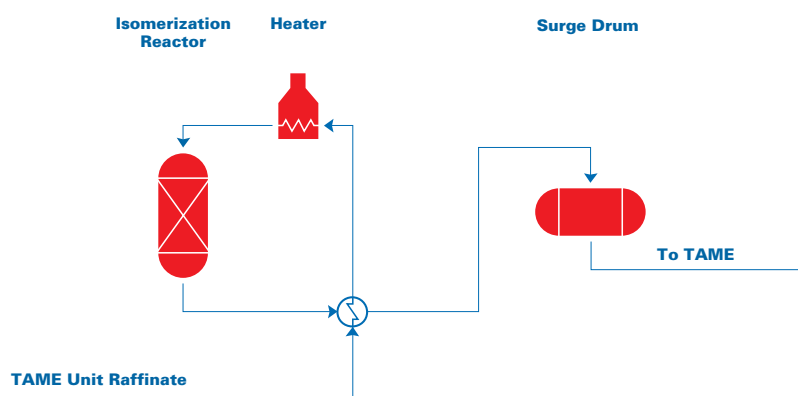
Overview The ISOMPLUS® skeletal isomerization technology processes C_5 streams from refinery or petrochemical units to produce isoamylenes. The ISOMPLUS process is jointly developed and commercialized by Catalytic Distillation Technologies (CDTECH®) and Lyondell for license to the petroleum refining and petrochemical industries. CDTECH is a partnership between Lummus Technology, a CB&I company, and Chemical Research & Licensing, a CRI company.

C_5 Olefin Skeletal Isomerization-General Isoamylenes are produced by the catalytic skeletal isomerization of normal pentenes. A zeolite-based catalyst especially developed for this service provides near equilibrium conversion of normal pentenes to isoamylenes at high selectivity and long process cycle times. A simple process scheme and moderate process conditions result in low capital and operating costs.

Hydrocarbon feed containing normal pentenes, such as TAME unit raffinate, is vaporized and superheated prior to entering the skeletal isomerization reactor. The hydrocarbon feed does not require steam or other diluents, nor the addition of catalyst activation agents to promote the reaction. The vapor stream passes through the fixed bed reactor where up to 66% of the contained normal pentenes are converted at greater than 95% selectivity to isoamylenes. The reactor effluent is condensed and pumped to a light ends column where C_4- is separated by fractionation.

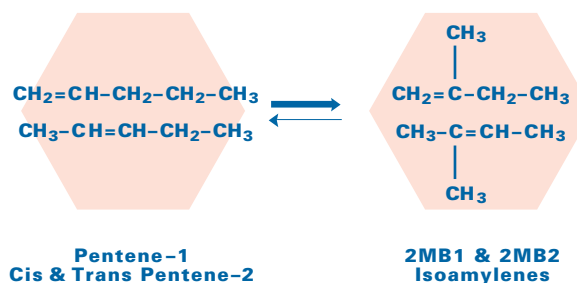
During the process cycle, coke gradually builds up on the catalyst, reducing the isomerization activity. At the end of the process cycle, the feed is switched to a fresh catalyst bed. The spent catalyst bed is regenerated by oxidizing the coke with an air/nitrogen mixture.

The pentenes isomerate is suitable for feed to a TAME unit.

ISOMPLUS Process Flow Diagram

Process Chemistry

Skeletal Isomerization



Typical Overall Material Balance

Feeds	LB/HR
Normal Pentenes	24,192
Isoamylenes	3,032
Other C ₅ s	47,241
Products	
C ₄ -	853
Normal Pentenes	6,774
Isoamylenes	19,580
Other C ₅ s	47,241
C ₆ +	17

Advantages

ISOMPLUS offers:

- Near equilibrium conversion
- High selectivity
- Long cycle length
- Simple process
- Low capital cost
- Low operating cost
- No process diluents
- No need for catalyst promoter
- No waste streams
- Increased TAME potential

CDTECH

3010 Briarpark Drive
Houston, TX 77042 USA
Tel: 713-821-5181
Fax: 713-821-3587