

Xylene Isomerization Catalyst - Ethylbenzene Reforming Type

Oparis™ series catalyst is a new generation xylene isomerization-ethylbenzene reforming type catalyst with a greatly improved paraxylene (PX) yield over other commercial catalysts. The catalyst combines high activity for conversion of ethylbenzene into xylenes with very low by-product make and superior stability. Approach to equilibrium for paraxylene is close to the thermodynamic limit.

Oparis™ catalyst was developed in the labs of IFP/Axens and is manufactured and marketed by Zeolyst International. Grassroots licences are available in conjunction with Axens.

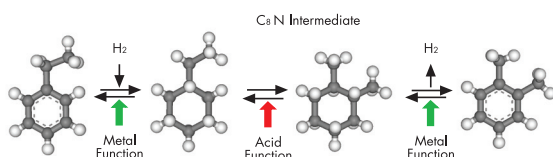
This catalyst has been commercialized since 2001. To date, it has been applied at 14 commercial units, with multiple successful regeneration experiences.

Applications

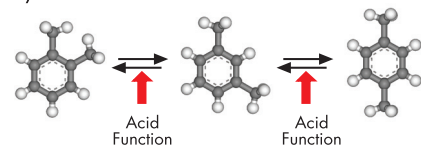
Oparis™ catalysts are used in aromatics complexes when conversion of ethylbenzene to xylenes is required in combination with isomerization of xylenes into the equilibrium composition. Appropriate process conditions can achieve very high ethylbenzene conversion levels while the approach-to-equilibrium for paraxylene is almost at the thermodynamic limit of 100%.

Owing to its very high activity and selectivity, Oparis™ catalyst can be used for catalyst replacement when debottlenecking and/or minimum benzene production is desirable.

Ethylbenzene Isomerization to Xylenes



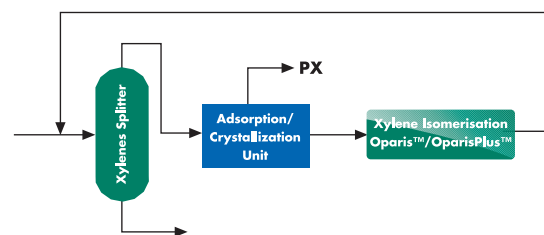
Xylene Isomerization



Feeds

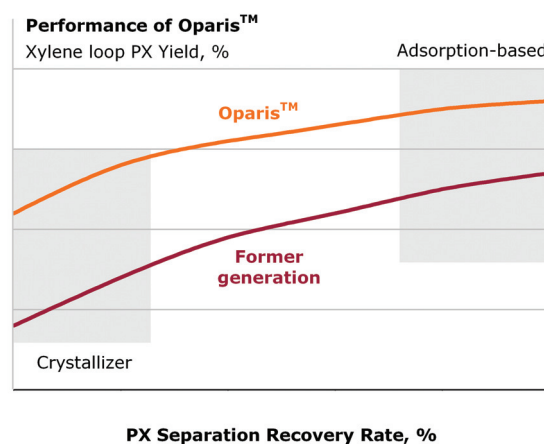
Typical feeds processed over Oparis™ catalyst are C₈ aromatic streams depleted of paraxylene, and sometimes also of orthoxylene; usually effluent from a crystallizer or from an adsorption based paraxylene recovery unit.

When Oparis™ catalyst is applied, high concentrations of ethylbenzene in the fresh feed to the complex can be used because the high conversion limits build-up of ethylbenzene in the recycle. This gives the user the ability to blend in large amounts of C₈ aromatics extracted from pygas streams that are high in ethylbenzene.



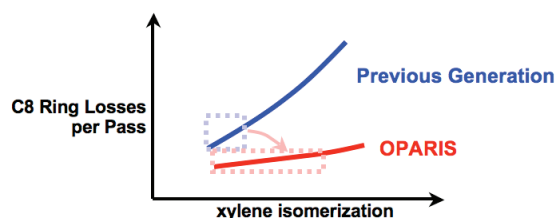
Oparis™ Advantages

- (1) High Selectivity
- Improved Process Economics



The PX yield achieved with an Oparis™ based xylene loop is significantly higher than previous generation catalysts, and improvements of more than 10% in yields can be achieved.

(2) Enhanced Isomerization Activity

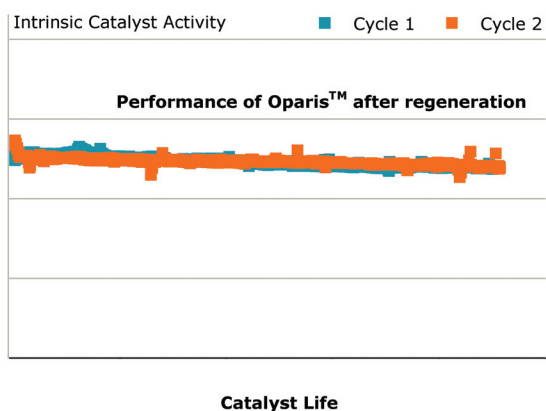


As compared to previous generation catalysts, Oparis™ catalyst can achieve very high PX approach-to-equilibrium whilst maintaining low losses. This allows the plant to widen the operating window and optimize based on the various operation scenarios.

(3) Better Operational Stability

After the initial stabilization period, the catalyst activity is very stable. The 1st cycle length is typically more than 3 years.

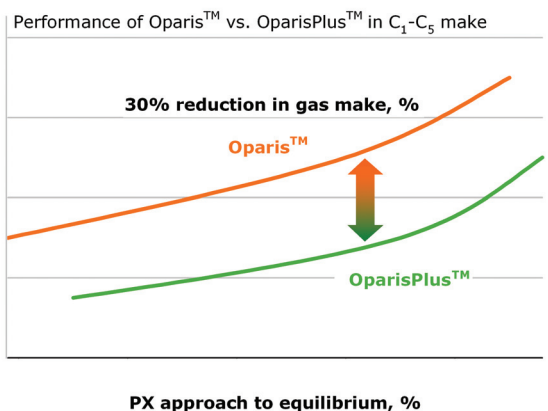
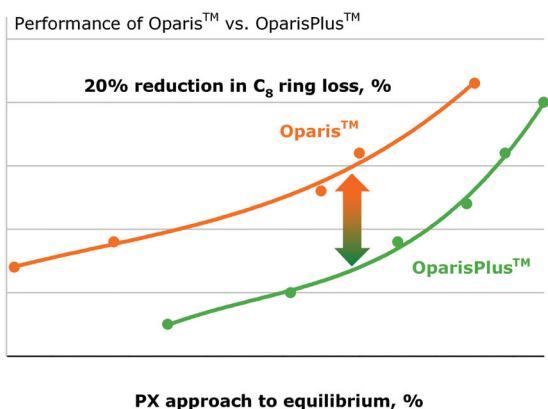
The activity of the catalyst can be easily restored by a carbon burn-off, and this can be done either in-situ or ex-situ. Based on numerous regeneration experiences, close to fresh catalyst activity can be achieved after each regeneration.



OparisPlus™ - An Improved Catalyst

OparisPlus™ catalyst was developed with innovative improvements, resulting in an excellent catalyst performance.

Its catalyst activity is enhanced whilst overall C₈ ring loss is reduced by 20% as compared to Oparis™. Moreover, there is a 30% drop in gas make, which significantly improves the operational economics.



ZEOLYST AROMATICS
Your Performance Advantage

For more information on how Zeolyst International, Criterion Catalysts & Technologies and Shell Global Solutions can contribute to your operations, contact your nearest Criterion sales representative or visit our website at www.zeolyst.com

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