MAPD REMOVAL CATALYSTS

AT A GLANCE

CUSTOMER DRIVERS
High Selectivity, High Activity, Stability

SOLUTION
High performance promoted palladium catalysts

VALUE DELIVERED
Stable, reliable, selective MAPD removal

PROOF POINT
Numerous commercial examples in multiple isothermal and adiabatic MAPD removal systems

Introduction
The selective hydrogenation of methyl acetylene (MA) and propadiene (PD) in a C3 stream is a critical catalytic process in obtaining polymer and/or chemical grade propylene. Commonly referred to as MAPD removal, the hydrogenation is typically carried out using a promoted palladium-based catalyst. The selective hydrogenation can be performed in a variety of reaction system processes, including gas phase or trickle phase; in adiabatic or isothermal reactors. CRI offers catalysts with a proven history of optimal performance; meeting stringent industry demands within the full range of MAPD processes.

History of Proven Performance
In 1997, through the acquisition of KataLeuna, CRI acquired 40 years of expertise in delivering catalytic and technical solutions to the selective hydrogenation market. Today, under CRI, the MAPD hydrogenation application continues to be a core technology where CRI continues to deliver innovative catalyst solutions.

Gas Phase MAPD Removal: KL7743
CRI’s KL7743 gas phase MAPD removal catalyst represents CRI’s continual performance improvement in the selective hydrogenation market, building on the performance of the previous generation catalyst KL7741A. The CRI catalyst KL7743 yields significantly higher stability (low aging), and lower green oil formation, resulting in a longer catalyst life. This catalyst is offered in the 5 x 5 mm tablet form “T5”.

Figure 1: KL7743 Catalyst
KL7743 Reliability
The first commercial installation of KL7743 has been in operation for over four (4) years, exhibiting exceptional performance. In operation, the catalyst demonstrates stable activity while achieving greater than 95% MAPD conversion, boasting an average selectivity of 90%. The KL7743 is expected to operate through a full ethylene cracker maintenance cycle without requiring catalyst regeneration. Figure 2 shows this stable temperature performance.

Figure 2: KL7743 Temperature

Trickle phase MAPD Removal: KL7752
CRI’s KL7752 has a proven performance record in trickle phase operations. CRI customizes the Pd loading to match activity requirements to the customer’s specific operational needs, taking into consideration LHSV, product specifications (conversion targets) and desired cycle length. The standard catalyst is offered in a 3 x 3 mm tablet form “T3” as well as 5 mm tablets.

KL7752 Reliability
KL7752 has demonstrated high stability with cycle lengths of greater than five (5) years. The example in Figure 3 shows temperature and hydrogen ratio increases through the first 4.5 years of life in a specific application. Figure 4 offers propylene selectivity and outlet MAPD during this same operational window.

Figure 3: KL7752 Temperature, H2 Ratio

Figure 4: Propylene Selectivity

PROOF POINT
Upon installation of CRI’s KL7752 at a customer site in Germany, and the associated technical support, the customer achieved an overall cost savings of >2 million €/year.

In addition to catalysts, CRI provides guard bed solutions to protect the catalyst against common feed contaminants, further enhancing operational reliability.

CRI, with its global technical support group, is eager to work with our customers to provide customized catalyst and technology solutions. Technical support can include operational and start-up assistance, routine performance monitoring, and additional technical services to drive operational excellence in your selective hydrogenation application.

Contact CRI, “Delivering Innovation” and solving your process needs.

HOW CAN KL7743 and KL7752 WORK FOR YOU?

- Improve selectivity/reliability
- Ease of operability through high stability

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