



C3 Liquid-Phase Hydrogenation Catalyst

APPLICATION

The C3 liquid-phase hydrogenation process is a crucial step in purifying propylene-rich streams derived from fluid catalytic cracking (FCC) units, steam crackers, propane dehydrogenation (PDH), or Methanol-To-Olefins (MTO) plants. This process aims to remove impurities such as methylacetylene (MA), propadiene (PD), and other reactive compounds, ensuring that the propylene meets polymer-grade or chemical-grade specifications.

The process selectively hydrogenates impurities (MA and PD) while preserving the maximum amount of propylene and minimizing the formation of green oil. For most of applications, the concentration of MAPD shall be reduced to less than 10 ppm.

Delion's catalyst solution is designed to handle feedstocks with a wide range of impurity concentrations and selectively converts MAPD to propylene with approximately 80% selectivity.

The C3 liquid-phase single-step hydrogenation process is a highly efficient and selective method for refining propylene streams, ensuring they meet stringent quality requirements for downstream applications.

DESCRIPTION

The catalyst is based on alumina as the carrier, palladium as the active component, and includes composite modifying elements that create synergistic effects and inhibit green oil formation, along with alkali metal and alkaline earth metal additives. The catalyst exhibits good thermal stability, high strength, and excellent hydrogenation activity and selectivity. It demonstrates low green oil generation, outstanding anti-coking performance, a long service life, and reliable operational stability.

PHYSICAL & CHEMICAL PROPERTIES

Parameter	Unit	Specification
Form	-	trilobes
Color	-	gray-brown
Mean diameter	mm	2.5×5-10
Bulk Density	g/ml	0.65±0.05
Crushing Strength	N/cm	>40
Al ₂ O ₃	%	>98
Active component		Pd

PROCESS CONDITIONS & PERFORMANCE

Element	Unit	Specification
Pressure	MPa	>2.0
Temperature	°C	30-80
LHSV	m ³ _{feed} /m ³ _{catalyst} ×h	40-80
Catalyst cycle	months	18
Catalyst life	years	>5
Green oil	ppm	<400
MAPD conversion	%	>99

