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Catalyst for Saturation of Alkynes and Diolefins

APPLICATION

The catalyst is designed for the complete saturation of trace alkynes and diolefins through selective hydrogenation, converting these compounds to butenes while minimizing the loss of olefinicity. The typical feedstock includes Raffinate I and Raffinate II C4 hydrocarbon streams (polishing treatment). The objective is to pretreat these fractions to meet the specifications required for downstream processes such as alkylate production in refineries, propylene production via metathesis, synthetic rubber manufacturing, and fuel additive production.
The catalyst is often employed in the pretreatment stage prior to metathesis process because it also performs the selective isomerization of double bond positions in C4-olefins, catalysing the conversion of butene-1 to butene-2, which then reacts with ethylene to produce propylene.

DESCRIPTION

This is an alumina-based catalyst made from modified high-activity alumina as the carrier, palladium as the active component, and processed through a specialized preparation method with trace additives. The catalyst exhibits excellent hydrogenation activity and selectivity, exceptional anti-coking performance, extended operating time, and reliable operational stability.
The catalyst provides outstanding operational stability and ensures high safety standards.
The C4 selective hydrogenation catalyst plays a critical role in processes such as the purification of raw C4 streams and the production of high-purity butenes for the metathesis process. Additionally, the catalyst facilitates the positional isomerization of double bonds in the butenes fraction.

PHYSICAL & CHEMICAL PROPERTIES

Parameter	Unit	Specification
Form	-	cylinders
Color	-	brown
Mean diameter	mm	2.5×5-10
Bulk Density	g/ml	0.65±0.05
Crushing Strength	N/cm	100
Al_2O_3	%	>99.5
Active component	-	Pd

PROCESS CONDITIONS & PERFORMANCE

Element	Unit	Specification
Pressure	MPa	1.5–3.0
Temperture	°C	50–90
WHSV	$kg_{feed}/kg_{catalyst}×h$	2–8
Catalyst lifetime	years	>3
Conversion of 1-butene to 2-butene	%	>70
Residual Butadiene	ppm	<50

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