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Product Data Sheet

0.3% Pd/AS R4578

DeOxo DS3

R4578 / DeOxo DS3 is primarily used for the removal of hydrogen by reaction with oxygen (De-Oxo reaction)

General

R4578 / DeOxo DS3 is a catalyst in the form of spheres with a nominal diameter of 2.4 – 4 mm and with Palladium as active component. The lower surface alumina carrier has been carefully chosen for providing optimum activity and high selectivity. The material is delivered dry and pre-reduced.

Product Application

R4578 / DeOxo DS3 is used for the conversion of hydrogen in the presence of oxygen to form water (De-Oxo reaction) according to the following chemical formula:

$H_2 + ½\ O_2 \rightarrow H_2O\ (v) \quad (\Delta_R H) = -242\ kJ/mol\ (1)$

This reaction can be applied in the production of pure hydrogen or in the production of inert gases like N_2 or He or Ar when adding H_2 to remove oxygen. Alternative materials for this application can be 0.5% Pd/AS R4577 (DeOxo DS).

For electrolysis applications (e.g. green hydrogen), Purivate™ Pd 15 is recommended.

The material can also be used for the conversion of CO or hydrocarbons with oxygen (catalytic oxidation).

Due to the high exotherm of these reactions, proper instrumentation and safety measures always need to be put in place to ensure full control of the reaction.

Typical reaction temperatures are in the range of 50 – 100°C / 120 – 210°F for reaction (1). For other reactions higher temperatures will be required.

The maximum recommended temperature is 500°C / 930°F.

Special Operations

R4578 / DeOxo DS3 might gain maximum activity via a short activation procedure when used in reduced state. Before unloading, the material should be oxidized.

Poisons

Every catalyst containing Pd, R4578 / DeOxo DS3 is sensitive against Sulfur and its components. Heavy metals containing components like AsH_3 can also have a detrimental effect on its performance. CO will have an impact on activity but might be compensated e.g. via higher temperature.

Storage

R4578 / DeOxo DS3 does not deteriorate or constitute any hazard when stored in sealed containers. The containers should not be allowed to become damp or wet and should not be stored in contact with organic or easily oxidizing vapors.

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Target Properties*	
Chemical Composition (dry basis)	0.3 % wt./wt. Pd on special Alumina
Typical Physical Properties	
Packed Bulk Density, g/ml	Approx. 0.7
Total Surface Area (BET), m^2/g	Approx. 90

*These indicative properties do not represent process capabilities nor specifications

Packaging

- 210 l steel drum with nominal up to 140 kg net
- 30 l fiber drum with nominal up to 30 kg net

Point of Shipment

– Rome, Italy

About Us

BASF is a leading global manufacturer of catalysts for the chemical industry, with solutions across the chemical value chain. The business comprises chemical catalysts and adsorbents and custom catalysts. Priority is given to developing new and improved products that enable the chemical industry transformation to net-zero emissions.

BASF's chemical catalysts and adsorbents business is part of the company's Performance Chemicals division. The division's portfolio also includes refinery catalysts, fuel and lubricant solutions, as well as oilfield chemicals and mining solutions. Customers from a variety of industries including Chemicals, Plastics, Consumer Goods, Energy & Resources and Automotive & Transportation benefit from our innovative solutions.

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