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Product Data Sheet

0.5% Pd/AS R5281

R5281 is used for DeOxo (O_2 removal e.g. with H_2) and CatOx (catalytic oxidation of hydrocarbon)

General

R5281 is a catalyst in the form of spheres with a nominal diameter of 4 – 8 mm and with Palladium as active component. While showing high activity, the larger sphere shows low pressure drop. The material was formerly referred to as “DEDUX 0.5”.

Product Application

R5281 is used for the conversion of hydrogen in the presence of oxygen to form water (DeOxo 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, when adding H_2 to remove oxygen. Alternative materials for this application can be

0.1% Pd/AS R5279 or 0.3% Pd/AS R5280

Alternatively, the material can also be used for the conversion of CO or hydrocarbons with oxygen according to the following chemical formulae.

$CO + ½\ O_2 \rightarrow CO_2 \quad (\Delta_R H) = -283\ kJ/mol\ (2)$

$C_xH_y + (x + y/4)\ O_2 \rightarrow x\ CO_2 + y/2\ H_2O$

$\Delta_R H < 0\ kJ/mol\ (3)$

Due to the high exotherm of these reactions, proper instrumentation and safety measures always need to be put in place to assure 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

R5281 might gain maximum activity via a short activation procedure when used in reduced form. Before unloading, the material should be oxidized.

Poisons

As every Pd containing catalyst, R5281 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

R5281 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.

Target Properties	
Chemical Composition (dry basis)	0.5 % wt./wt. Pd on high surface Alumina
Typical Physical Properties	
Packed Bulk Density, g/ml	0.75
Total Surface Area (BET), m^2/g	300

Packaging

– 210 l steel drum with up to 50 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, 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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