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Product Data Sheet

0.5% Pd/AS R5281

R5280 is used for the removal of hydrogen by reaction with oxygen (De-oxo reaction).

General

R 5281 is a catalyst in the form of spheres with a nominal diameter of 4 – 8 mm and with Palladium as active component. The high surface area carrier allows for high activity. At the same time, the material shows low pressure drop due to its large size. 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 (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, when adding hydrogen 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 with oxygen according to the following chemical formula.

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

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). The maximum allowable temperature is 500°C / 930°F. Other applications for this material, like certain hydrogenations are possible.

Special Operations

R5281 might gain maximum activity via a short activation procedure. 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

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Americas
BASF Corporation
25 Middlesex/Essex Turnpike
Iselin, New Jersey, 08830, USA
Tel : +1-732-205-5000
Fax: +1-732-205-7725
Email: catalysts-americas@basf.com

Asia Pacific
BASF (China) Company Limited
300 Jiang Xin Sha Road,
Pudong, Shanghai 200137
P.R. China
Tel: +86-21-2039 2549
Fax: +86-21-2039 4800-2549
Email: catalysts-asia@basf.com

Europe, Middle East, Africa
BASF De Meern BV Catalysts
The Netherlands
Tel: +31-30-666 9437
Email: catalysts-europe@basf.com

www.catalysts.basf.com/adsorbents

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