R5279 is used for the removal of hydrogen by reaction with oxygen (De-oxo reaction).

**General**

R 5279 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 also referred to as “DEDUX 0.1”.

**Product Application**

R5279 is used for the conversion of hydrogen in the presence of oxygen to form water (De-oxo reaction) according to the following chemical formula:

\[ \text{H}_2 + \frac{1}{2} \text{O}_2 \rightarrow \text{H}_2\text{O} \quad (\Delta H) = -242 \text{kJ/mol} \quad (1) \]

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

- 0.3% Pd/AS R4578 (DeOxo DS3)
- 0.5% Pd/AS R4577 (DeOxo DS)

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

\[ \text{CO} + \frac{1}{2} \text{O}_2 \rightarrow \text{CO}_2 \quad (\Delta H) = -283 \text{kJ/mol} \quad (2) \]

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**

R5279 might gain maximum activity via a short activation procedure. Before unloading, the material should be oxidized.

**Poisons**

As every Pd containing catalyst R5279 is sensitive against Sulfur and its components. Heavy metals 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**

R5279 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**

<table>
<thead>
<tr>
<th>Chemical Composition</th>
<th>0.1 % wt./wt. Pd on high surface Alumina</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical Physical Properties</td>
<td></td>
</tr>
<tr>
<td>Packed Bulk Density, g/ml</td>
<td>0.75</td>
</tr>
<tr>
<td>Total Surface Area (BET), m(^2)/g</td>
<td>300</td>
</tr>
</tbody>
</table>

**Packaging**

- 210 l steel drum with up to 120 kg net

**Point of Shipment**

- Rome, Italy
Although all statements and information in this publication are believed to be accurate and reliable, they are presented gratis and for guidance only, and risks and liability for results obtained by use of the products or application of the suggestions described are assumed by the user. NO WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE MADE REGARDING PRODUCTS DESCRIBED OR DESIGNS, DATA OR INFORMATION SET FORTH. Statements or suggestions concerning possible use of the products are made without representation or warranty that any such use is free of patent infringement and are not recommendations to infringe any patent. The user should not assume that toxicity data and safety measures are indicated or that other measures may not be required. © 2015 BASF