0.3% Pd/AS R4578

DeOxo DS3

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

General

DeOxo DS3 / R 4578 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.

Product Application

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

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

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. An alternative material for this application can be 0.5% Pd/AS R4577 (DeOxo DS).

Due to the high exotherm of reaction (1), 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. The maximum allowable temperature is 500°C / 930°F.

Special Operations

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

Poisons

As every Pd containing catalyst DeOxo DS3 / R4578 is sensitive against Sulfur and its components. Heavy metal containing compounds 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

DeOxo DS3 / R4578 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 (dry basis)</th>
<th>0.3 % wt/wt. Pd on special Alumina</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical Physical Properties</td>
<td></td>
</tr>
<tr>
<td>Packed Bulk Density, g/ml</td>
<td>0.7</td>
</tr>
<tr>
<td>Total Surface Area (BET), m(^2)/g</td>
<td>90</td>
</tr>
</tbody>
</table>

Packaging

– 210 l steel drum with nominal 140 kg net
– 30 l fiber drum with nominal 30 kg net

Point of Shipment

– Rome, Italy
About Us

BASF’s Catalysts division is the world’s leading supplier of environmental and process catalysts. The group offers exceptional expertise in the development of technologies that protect the air we breathe, produce the fuels that power our world and ensure efficient production of a wide variety of chemicals, plastics and other products, including advanced battery materials. By leveraging our industry-leading R&D platforms, passion for innovation and deep knowledge of precious and base metals, BASF’s Catalysts division develops unique, proprietary solutions that drive customer success.

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