BASF
We create chemistry

Product Data Sheet

0.5% Pt/AS R4753

DeOxo MS

BASF DeOxo MS / R4753 is a uniform grey alumina sphere used for safely removing H_2 from CO_2 in front of Urea units. Other uses are the catalytic removal of oxygen or hydrogen (DeOxo reaction)

General

R4753 is a catalyst in the form of spheres with a diameter ranging from 2.4 – 4 mm and with Platinum as the active component. The carefully selected surface area allows for high activity and high temperature stability. At the same time, the material shows low enough pressure drop in gas phase applications due to its size.

Product Application

R4753 is used to promote the catalytic conversion of hydrogen in the CO2 stream upstream of Urea synthesis reactors with excess oxygen added. The reaction can be described by the following chemical formula

H2 + ½ O2 → H2O (v) (ΔRH) = - 242 kJ/mol (1)

Hydrogen is a safety risk in this type of application and needs to be removed from levels of several thousand ppm by volume to below 10 ppm by volume.

Alternative uses are the conversion of oxygen with hydrogen or carbon monoxide or the conversion of hydrogen with oxygen to quantitatively remove these impurities in the respective gas streams.

BASF can provide, upon request, technical advice and recommendations on catalyst operating conditions and reactor layout.

An alternative material for this application can be:

0.5% Pt/AT R4751 (DeOxo M)

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 130 – 200°C / 265 – 390°F for the application in Urea units. For other applications, the temperature might be as low as ambient temperature. The maximum allowable temperature is 500°C / 930°F.

Special Operations

R4753 might gain maximum activity via a short activation procedure. Before unloading, the material should be oxidized.

Poisons

R4753 will last for very long times if it is not subjected to poisoning by certain impurities. The principal poisons are Sulphur, chlorine compounds, oil, unsaturated hydrocarbons and the vapors of some organic solvents. These materials will deactivate and may eventually poison the catalyst permanently.

Storage

R4753 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.

BASF
We create chemistry

Product Data Sheet

Target Properties	
Chemical Composition (dry basis)	0.5 % wt./wt. Pt on Alumina
Typical Physical Properties	
Packed Bulk Density, g/ml	0.65
Total Surface Area (BET), m^2/g	90

Packaging

- 32 l fiber drum with up to 20 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.

BASF - We create chemistry

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

BASF-10716 Rev. 03/22