

PuriStar® R3-81 T5x3

Purification of Refinery Off-Gas Streams

PuriStar® R3-81 is a robust copper catalyst used in sulfided form for the removal of O₂, NO_x and traces of acetylene from refinery off-gas. PuriStar® R3-81 is the focal point of a group of products used for the recovery of ethylene from refinery off-gases.



BASF PuriStar® R3-81 comes in the form of tablets with a nominal diameter of 5 mm and height of 3 mm (approx. 3/16" x 1/8").

Product Application

Refinery off-gas (ROG) refers to a gas mixture consisting mostly of hydrogen, methane, ethylene, ethane and a number of different impurities. This type of gas is e.g. generated in catalytic cracking units (FCC, DCC, CPP). The H₂ and C₂H₄ present in the stream can be recovered in ethylene recovery units (ERU).

R3-81 is used in sulfided form. The sulfiding is typically done in situ (in the reactor itself). For smaller amounts, an ex-situ sulfiding at a recommended toller is also possible. For details, please contact BASF.

R3-81 removes O₂, NO_x and traces of acetylene by selective hydrogenation while showing low olefin loss.

R3-81 is used in gases with high contents of CO and avoids the formation of carbonyls (like Ni carbonyls).

The operating temperature of R3-81 is 180 to 275°C (360 to 530°F) depending on the off-gas composition.

The composition and its properties make R3-81 suitable for regenerations and tolerant to poisons like AsH₃, chlorine or mercury.

Typical Properties

Chemical

Main Components CuO

Balance Silicate with promoters

Physical

Crush Strength Approx. 5 kg (11 lbs), side wall
~ 900 kg/m³ (56 lbs/ft³), tapped

Bulk Density ~ 830 kg/m³ (52 lbs/ft³), sock loaded

Packaging

- 800 kg net (1763.7 lbs) in 1150 l super sacks (IBC flexible)
- 100 kg net (220.5 lbs) in 120 l steel drums

Shipping Point

- Ludwigshafen, Germany

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 and 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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