Do you want to contribute to sustainable growth?

BASF N₂O decomposition and DeNOx technologies improve your processes ecologically and economically.

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, leveraging our industry-leading R&D capabilities, 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

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Environmental Catalysts

BASF’s globally operating Environmental Catalysts Group supplies catalysts and technologies to reduce emissions from stationary sources and industrial processes. Tailor-made solutions, catalyst services and long-term experience in emission reduction help our customers fulfill their sustainability goals.

Your Benefits:
- Long catalytic lifetime
- Durability saves up to 50%
- No leaching into the HNO3
- Works with all types of platinum (Pt) gauzes
- Extremely low pressure drop
- Good economic value with low investment

Our Service:
- Full catalyst design based on process simulation
- Activity tests
- Confidentiality license agreement
- Supply of fresh catalyst

Your Benefits:
- Extremely low NH3 slip
- No substantial N2O generation
- Low pressure drop combined with optimized fluid dynamics
- Flexibility – covers all relevant operating windows
- Cost-effective solution

Our Service:
- Refills
- Revamps
- New plants together with our engineering partner

N2O Decomposition Technology

BASF’s N2O decomposition technology absores N2O (laughing gas) and almost eliminates N2O emissions. This decomposition of N2O results in the formation of N2 and O2 gases. To overcome N2O’s environmental impact, BASF has developed a series of decomposition catalysts. The new, low-critical additional component is introduced into the atmosphere. The N2O decomposition technology is thus proved valuable for nitric acid and adipic acid plants. Initially only used in BASF plants, the technology has been developed and optimized for third-party plants around the globe.

To break N2O down into its harmless, natural components (N2 and O2), BASF has developed a series of decomposition catalysts. Because it does not emit any additional compounds into the atmosphere, the N2O decomposition technology has proven valuable for nitric acid and adipic acid plants. Initially only used in BASF plants, the technology has been developed and optimized for third-party plants around the globe.

DeNOx Technology

BASF’s DeNOx catalysts are based on the selective catalytic reduction of NOx (DeNOx) from stationary source gases. The process reduces the formation of pollutants without producing any residues which require disposal. Using a vanadium pentoxide (V2O5) catalyst on a titanium dioxide (TiO2) matrix, the selective catalytic process is employed at the tail end of the HNO3 plants. Treatment of NOx contained in the HNO3 vapor ensures the conversion of nitrogen oxides into N2 and H2O.

<table>
<thead>
<tr>
<th>Catalyst</th>
<th>Shape</th>
<th>Dia. mm</th>
<th>Density, kg/L</th>
<th>Min. Operating Temperature, °C</th>
<th>Max. Operating Temperature, °C</th>
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<tbody>
<tr>
<td>O3-81</td>
<td>Star extrudates</td>
<td>6 (diameter)</td>
<td>0.9</td>
<td>450</td>
<td>&gt;800</td>
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<td>O3-85</td>
<td>Star extrudates</td>
<td>3, 6 (diameter)</td>
<td>0.9–1.0</td>
<td>750</td>
<td>&gt;900</td>
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<td>O4-89</td>
<td>Extrudates</td>
<td>4.5 (diameter)</td>
<td>1.1</td>
<td>180</td>
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“Selective” refers to the ability of the NH3 to react directly with the NO instead of being oxidized by air. The use of BASF’s SCR DeNOx catalyst in the tailgas reduces the amount of NH3 slip.

DeNOx Technology

BASF offers catalysts for the selective catalytic reduction of NOx (DeNOx) from stationary source gases. The process reduces the formation of pollutants without producing any residues which require disposal. Using a vanadium pentoxide (V2O5) catalyst on a titanium dioxide (TiO2) matrix, the selective catalytic process is employed at the tail end of the HNO3 plants. Treatment of NOx contained in the HNO3 vapor ensures the conversion of nitrogen oxides into N2 and H2O.

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