

EMPRO™ LGC

For Gasoline Direct Injection (GDI) engines

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Clean Air Technology

The patented BASF Lean GDI Catalyst technology provides the additional NO_x (nitrogen oxides) removal required from the exhaust of GDI engines.

GDI engines use lean combustion (excess of air) to deliver improved fuel economy. However NO_x exhaust emissions can increase and are a challenge to remove under these lean operating conditions. The Lean GDI catalyst is designed to operate under lean conditions and can be placed after the TWC catalyst to provide additional NO_x conversion.

Lean GDI Catalyst Technology

This technology combines three active components: Oxidation catalyst - platinum (Pt), Adsorbent - barium and/or other oxides, and Reduction catalyst - rhodium (Rh).

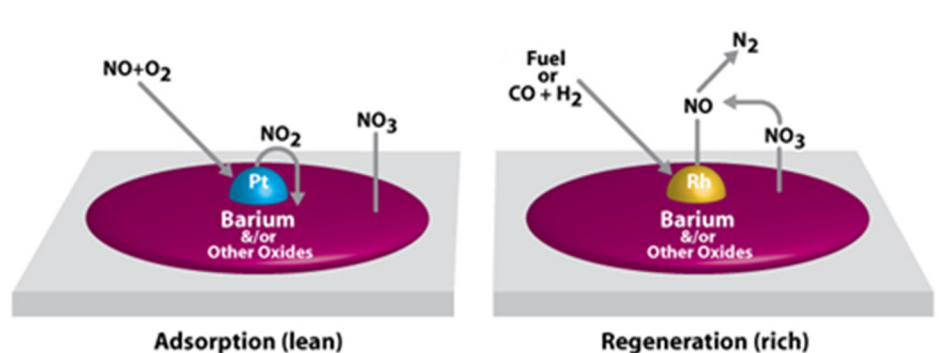
The adsorbers, which are incorporated into the catalyst washcoat, chemically bind NO_x during lean engine operation. When the adsorber capacity is saturated, the system is regenerated during a period of rich engine operation, and the released NO_x is reduced to nitrogen (N₂) over the catalyst.

Cycle of Operation

- NO reacts with oxygen on active oxidation catalyst sites to form NO₂.
- Adsorption of NO₂ by the storage material in the form of barium nitrate.
- Once exhaust is switched to the rich condition, oxygen is replaced by reducing species, including hydrocarbons, carbon monoxide (CO), and hydrogen (H₂).
- When the engine runs under excessive fuel conditions or at elevated temperatures the nitrate species become thermodynamically unstable and decompose, producing NO or NO₂.
- Under rich conditions, the nitrogen oxides are reduced to N₂ over the reduction catalyst.

Benefits

- Exceptionally high thermal stability.
- High NO_x removal activity at high temperature.
- High NO_x storage capacity.
- High NO_x reduction efficiency.



EMPRO™ Solutions

We are proud to introduce EMPRO as the new brand for BASF Mobile Emissions Catalysts. The EMPRO brand represents what makes BASF unique as value added solutions provider. As the global leader in catalysis, BASF has unsurpassed expertise in developing innovative emission control technologies for a wide range of applications, to enable clean air for a sustainable future. We are the Emissions Professionals.

The focus of the BASF Emissions Professional is always on innovative, cost-effective solutions to meet the needs of OEMs and engine manufacturers globally. With a creative, open, responsible and entrepreneurial approach we help make our customers meet regulations and be more profitable. That's the EMPRO way.

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 metals, BASF's Catalysts division develops unique, proprietary solutions that drive customer success.

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