

Lean NOx Trap

NOx emissions control solutions

Lean NOx Traps (LNT), also known as NOx adsorbers, can control NOx (nitrogen oxides) emissions from lean burn gasoline or diesel engines.

Technology

The LNT technology combines three active components:

- Oxidation catalyst - platinum (Pt)
- Adsorbent - barium and/or other oxides
- Reduction catalyst - rhodium (Rh)

Operation

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

The overall cycle of operation is:

- 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.

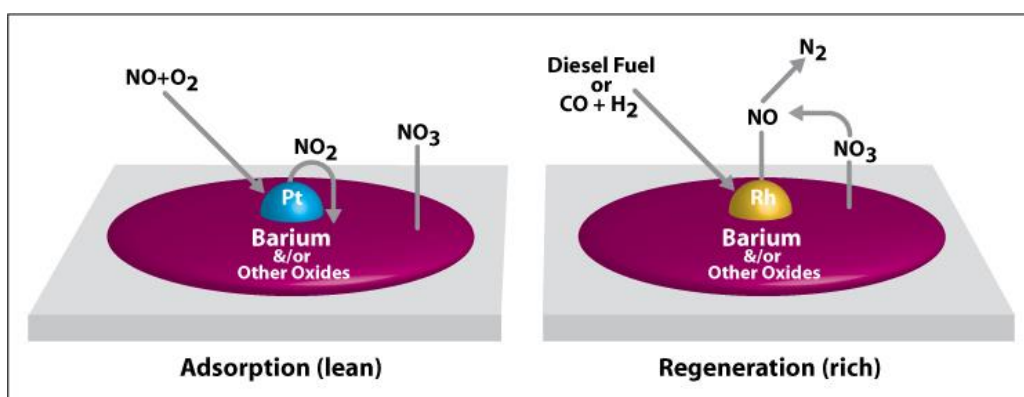
Benefits

The advantages of BASF's LNT technologies include:

- High NOx removal activity
- Low light-off temperature
- Cost-effective emissions control

SCR

BASF has also developed advanced SCR (Selective Catalytic Reduction) technologies for NOx removal, providing more options to meet challenging emission requirements.



About Us

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