

DURABILITY OF NO_x ADSORBERS

Jim Parks, Bill Epling, Aaron Watson, and Greg Campbell
EmeraChem

NO_x adsorber catalysts can obtain NO_x reduction efficiencies greater than 90 percent in lean exhaust. The capability of the NO_x adsorber to perform the NO_x reduction with a diesel-fuel-based reductant coupled with the broad temperature range of operation makes NO_x adsorber catalysts well suited for diesel engine applications. However, durability issues need to be addressed for compliance with upcoming emission regulations.

Specifically, sulfur in diesel fuel is a known masking agent, and over time sulfur accumulation directly on NO_x sorption sites degrades NO_x reduction performance. One method of controlling sulfur masking is by removal of sulfur compounds from the catalyst in a reducing environment; this process is referred to as desulfation and typically occurs at elevated catalyst temperatures. Here the effect of multiple repetitive sulfur loading and desulfation cycles on catalyst performance will be presented, and projections of NO_x performance over time will be made to predict catalyst lifetime.