CRI Catalyst Company (CRI) Environmental Catalyst and Systems’ (ECS) low to mid temperature NOx removal catalyst (140°C/280°F to 400°C/750°F) via Selective Catalytic Reduction (SCR Catalyst) is an extruded trilobe composed of vanadium pentoxide on a titanium dioxide carrier. It offers high activity, along with excellent selectivity, low deactivation rate, excellent mechanical strength, and low pressure drop characteristics. Moreover, high NOx removal efficiencies with simultaneous control of NH3 slip can be obtained at relatively low temperatures.

**APPLICATIONS**

SHELL DENOX SYSTEM (SDS): S-096 is a highly active catalyst for the removal of nitrogen oxides.

COMMON APPLICATIONS WHERE S-096 HAS BEEN SUCCESSFULLY INSTALLED FOR NOX CONTROL:
- Gas Turbines
- Waste Incineration
- Nitric Acid Plants
- Caprolactam Plants
- Adipic Acid
- Catalyst Manufacturing
- Refinery Heaters
- Engines
- Boilers
- Ethylene Crackers
- Biomass Combustion

**PACKAGING, AVAILABILITY, & STORAGE**

CRI’s DeNOx catalyst is available in 1000 kg (2200 lb) bulk bags or super sacks. Check with your CRI catalyst representative for specific product availability. Store in a dry, weather-protected area away from moisture.

**CONTACT INFORMATION**

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**TYPICAL PHYSICAL PROPERTIES**

**PHYSICAL APPEARANCE:**
Yellow, orange to green in color

**PARTICLE SIZE:**
Ranges in size from 0.6mm to 5.0mm

**FEATURES**
The use of SDS, which provides a high-activity catalyst and a low pressure drop, results in a cost-effective technology for NOx reduction.

**HEALTH, SAFETY, & ENVIRONMENTAL INFORMATION**

CRI Catalyst Company has prepared a Material Safety Data Sheet for CRI S-096. Full attention to the hazards and precautionary information found in this document is essential. The Material Safety Data Sheet should be reviewed and provided to employees and other persons who may be exposed to the product.
SHELL DENOX SYSTEM

NOX REMOVAL VIA SELECTIVE CATALYTIC REDUCTION
CRI provides highly reliable technology for Selective Catalytic Reduction (SCR) of nitrogen oxides (NOx) from stationary and mobile combustion sources and chemical processes. Proven around the world, CRI SCR/Shell DeNOx System (SDS) catalyst technology is unique in its ability to provide high NOx reduction across a broad range of conditions. At low temperatures, it outperforms any other catalyst system, making it a highly cost-effective retrofit for existing facilities where exhaust temperatures are low.

ABOUT CRI’S SCR CATALYST SYSTEM
The CRI SCR System is based on the addition of ammonia (NH₃) to the NOx-containing flue gas and passing the mixture over an active catalyst. This converts the nitrogen oxides (NO and NO₂) to naturally occurring nitrogen (N₂) and water (H₂O). Together, our high-activity catalyst and low pressure drop result in cost-effective NOx reduction.

CRI SCR technology is impressively cost-efficient compared to other NOx control technologies. In addition, because of its LFR-based design, low-temperature activity and extremely low pressure drop, it delivers the performance required while consuming less energy – supporting a facility’s overall energy reduction program. For certain applications, it can be installed between the economizer/HRSG and the stack, helping to reduce installation costs, plant downtime and disruption. Backed by the strength of Shell, the CRI SCR System not only delivers powerful environmental and cost benefits, it also comes with the service and support expected from a respected global leader.

APPLICATIONS
With its proven performance at a variety of operating temperatures and compact size, CRI SCR technology can be applied to a wide range of combustion, chemical and incineration processes, both in new or existing facilities:

Gas turbines
Unlike alternative NOx control technologies, the CRI SCR System does not disrupt turbine or heat-recovery equipment operation.

Nitric acid and other chemical plants
The CRI SCR System can be installed in either the high-pressure position upstream of the expander or in the low-pressure position downstream of the expander at very low oxygen concentrations.

Waste incineration
High NOx removal capability at low temperatures allows the CRI SCR System to be integrated at the end of flue gas treatment systems on waste incineration plants – with minimal or no gas reheat.

Catalyst manufacturing
Enhanced ammonia adsorption accommodates changing flue gas streams and composition (e.g., high NO₂ concentrations) while exceeding performance requirements.

Refrigeration systems
For existing installations, no modifications to either the furnace or the heat recovery section are necessary. For new furnaces, the location of the CRI SCR System helps maximize operational flexibility of the furnace.

Ethylene crackers
The CRI SCR System offers significant performance advantages over primary NOx reduction measures when low NOx emission levels are required.

Boilers
The Shell DeNOx System offers outstanding operational performance, including low ammonia slip, low pressure drop, tolerance against tube rupture and direct water contact.

Biomass
Enhanced activity allows SCR catalyst to tolerate contaminated gas streams.

Engines
SDS is well suited for constant vibrations, as catalytic activity is impregnated through each pellet.

CRI Catalyst Company LP (CRICC) is a wholly owned affiliate of CRI/Criterion Inc. and an affiliate of the Shell Global Solutions network of companies. CRICC and its affiliates are dedicated to providing a broad customer base with effective and cost-efficient catalysts and technologies available in focus areas which include hydrogenation, oxidation, dehydrogenation and environmental catalysts and systems. The information contained in this material is intended to be general in nature and must not be relied on as specific advice in connection with any decisions you may make. CRICC is not liable for any action you may take as a result of you relying on such material or for any loss or damage suffered by you as a result of you taking this action. Furthermore, these materials do not in any way constitute an offer to provide specific products or services. Some products or services may not be available in certain countries or political subdivisions thereof.