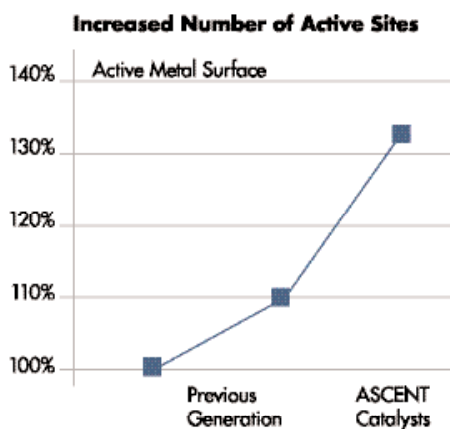


Introducing DN-3551 NiMo for FCC Pretreat Service



The ASCENT manufacturing process dramatically enhances catalyst activity

For high activity and regenerability, our newest catalyst stands alone

Now you can get performance without compromise in FCC pretreat. DN-3551 NiMo is our latest innovation in high-activity nickel moly catalyst for FCC pretreat service. It delivers exceptionally high activity, yet it can also be conventionally regenerated back to 90% of its original performance.

With outstanding performance plus excellent regenerability, DN-3551 delivers bottom-line value at every phase of the catalyst life cycle.

- Maximum FCC conversion
- Exceptional catalyst strength for increased recovery during regeneration
- Provided in an oxide form to meet your handling and loading requirements
- Flexible feedstock capability

Criterion Catalysts & Technologies' ongoing research and development program develops leading-edge products. These products play a key role in helping refiners meet fuels specification challenges and refinery profitability demands.

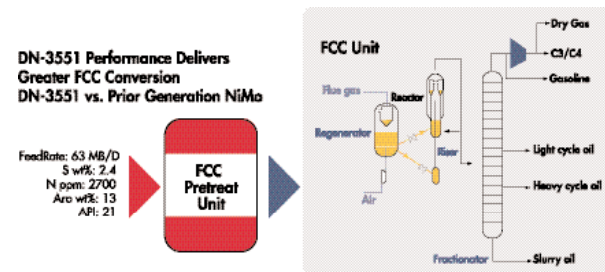
A targeted R&D program at Criterion Catalysts & Technologies has recently produced a new Nickel Molybdenum catalyst specifically designed for processing severe FCC feeds. It surpasses performance achieved with previous generation NiMo catalysts. DN-3551 NiMo catalyst for FCC Pretreat application builds upon Criterion's reputation as a leading innovator in FCC pretreat catalyst technology.

Catalyst life cycle value for FCC feed pretreatment can be measured by:

- Maximum FCC Conversion
- Flexible Feed Stock Capability
- Cycle Life vs. Severity Economics
- Multi-cycle Catalyst Usage Capabilities
- Handling and Turnaround Costs

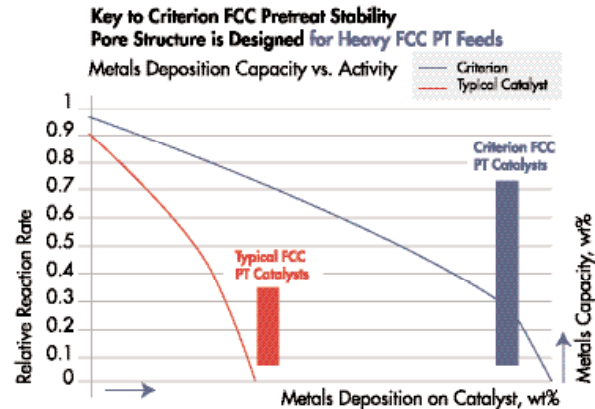
DN-3551 NiMo catalyst achieves the highest score in the life cycle value equation

DN-3551 NiMo achieves industry-leading HDN and aromatic saturation performance. Activity enhancement is achieved by application of the ASCENT manufacturing process, which increases the number of active sites in the reactor. Significant improvement in HDN and aromatic saturation also leads to FCC conversion benefits.



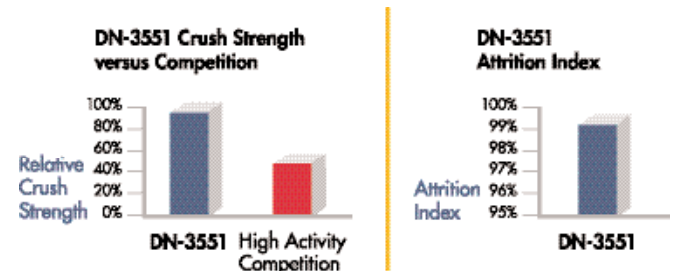
	H2 Cons SCF/BB1	Product S	N	Aro	FCC Conversion	Econ \$MM/yr
Prior Gen NiMo	Base	0.22	1569	7.44	Base	Base
DN-3551 <small>ASCENT</small>	+31	0.19	1300	6.85	+1.50	+12.2

Cycle life economics are driven by a catalyst's ability to tolerate high feed contaminant metal and con-carbon levels encountered in typical FCC pretreat services while achieving the desired cycle length. The stability of Criterion FCC pretreatment catalysts is built on our knowledge of optimized catalyst pore structure. This results in providing industry-leading contaminant metals uptake capacity and feed con-carbon tolerance. Unique pore structure provides the capability to process higher margin opportunity feeds while maintaining catalyst stability. DN-3551 NiMo continues this heritage.



Innovations in catalyst active-site chemistry and configuration have produced substantial activity gains in the last five years. Regeneration of these catalysts to 90% of fresh activity has generally required the use of special proprietary regeneration processes. DN-3551 NiMo can be regenerated to 90% of fresh activity using conventional regeneration. Additionally, the ASCENT manufacturing process increases catalyst physical strength which has the benefit of increasing yield recovery during regeneration. These features provide the opportunity to generate significant multi-cycle use economics.

DN-3551 NiMo is provided to our customers in an oxide form. This may have the benefit of reduced turnaround costs associated with transportation, storage, loading and general handling when compared to other high-activity catalysts. In one case, this extra cost was determined to be in excess of \$400,000.



Criterion Catalyst & Technologies' latest innovation in FCC Pretreat Service, DN-3551 NiMo catalyst, not only caters to more severe operation but also continues to improve the life cycle value equation.

Contact your Criterion representative for more details.

www.criterioncatalysts.com