

GRACE

ACHIEVE® FCC Catalysts

Grace is expanding its portfolio of catalysts to address the current market challenges, in particular to lower slurry yield to take advantage of distillate crack spreads as well as to address the trend towards increased residue and opportunity crude processing.

Grace has developed new technologies through extensive Grace R&D program that addressed the octane debits encountered by North American refiners processing tight oil. This R&D program resulted in advances to the following five functionalities to deliver the yield flexibility desired by refiners:

- Higher Diffusivity Matrices
- Flexible Hydrogen Transfer
- Higher Activity
- Advanced Metals Tolerance
- Dual Zeolite Functionality

Tailor-Made Catalyst Formulas Allow You to ACHIEVE® the Advantage

Designing the best catalyst systems from these functionalities encompasses the Grace approach to customized FCC catalyst design. The new products will complement the products launched over the last two years that were focused on resid conversion and managing shale or tight oil feed stocks in the FCC. ACHIEVE® catalysts are fully compatible with all of Grace's FCC additives and prior-generation catalysts.

Technical Service

An equally critical component associated with processing challenging feeds is solid technical service support. Grace has been providing industry-leading technical service to the refining industry since 1947.

Grace's experienced engineers support FCC customers with:

- Application and operations expertise
- Start-up and optimization assistance
- Industry benchmarking
- Feed characterization and pilot plant studies

Understanding feed impacts earlier allows opportunity to optimize the operating parameters and catalyst management strategies, enabling a more stable and profitable operation.

The formulation flexibility of the ACHIEVE® FCC catalyst series allows for an optimized design to meet your specific operating challenges. Contact your Grace representative today to learn how ACHIEVE® can improve your operation and profitability.

ACHIEVE® Case Study

Using **ACHIEVE® 200**, Refinery C was able to selectively upgrade 2-3 wt% slurry into LCO while maintaining excellent coke and gas selectivity despite a very refractory feed thus boosting refinery profitability.

ACHIEVE® 200 Case Study	
Feed Concarbon	6wt%
Feed sp gr	0.95
Ecat Ni + V	9500 ppm

Table 1. Refinery C, processing challenging feed, successfully used ACHIEVE® 200 catalyst.

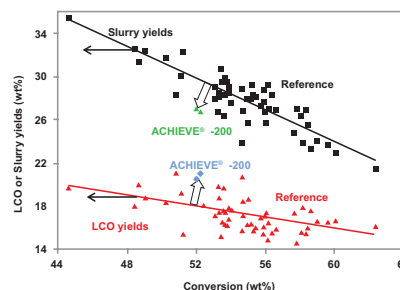


Fig. 1. ACHIEVE® 200 increased LCO yield while maintaining coke selectivity at Refinery C.

Innovation

The ACHIEVE® series is the latest in a long line of Grace's innovation in catalyst technology, and is the product of Grace's global team of research scientists.

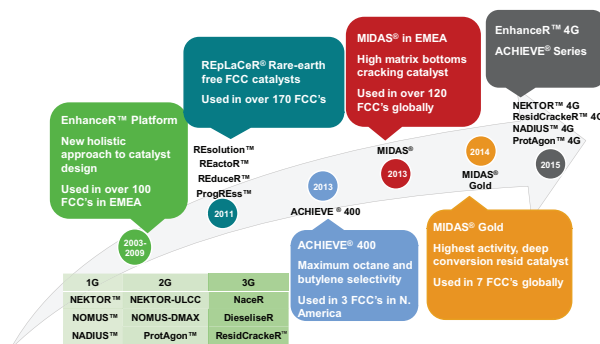


Fig. 2. The ACHIEVE® series results from Grace's innovation in FCC catalyst technology.

ACHIEVE® Platform to Meet Today's Refining Challenges

The ACHIEVE® series (100, 200, 300, 400, 800) comprises state-of-the-art catalysts technologies designed to maximize refiners' profitability.

Feeds		HT/Light VGO	VGO/ Resid	Any	Any	Resid
Metals		Low to moderate	Moderate	Any	Any	Moderate to high
Desired Advantage	Functional Quality	ACHIEVE® 100	ACHIEVE® 200	ACHIEVE® 300	ACHIEVE® 400	ACHIEVE® 800
Increase distillate yield	High Diffusivity Matrix	•	•	•	•	••
Balanced LPG to gasoline	Optimized RE exchange	•	•	•	•	•
Reduce dry gas	Integral metals traps		•	•	•	••
Maximize resid barrels	Ultra-low delta coke		•	•	•	••
Boost octane and LPG olefins	Dual-zeolite			• C ₃ =	• C ₄ =	
Drive conversion	Ultra-high activity zeolites	••		•	•	•

Table 2. ACHIEVE® is a complete portfolio of options to improve your FCC unit operations and profitability.



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