ExxonMobil | ALBEMARLE

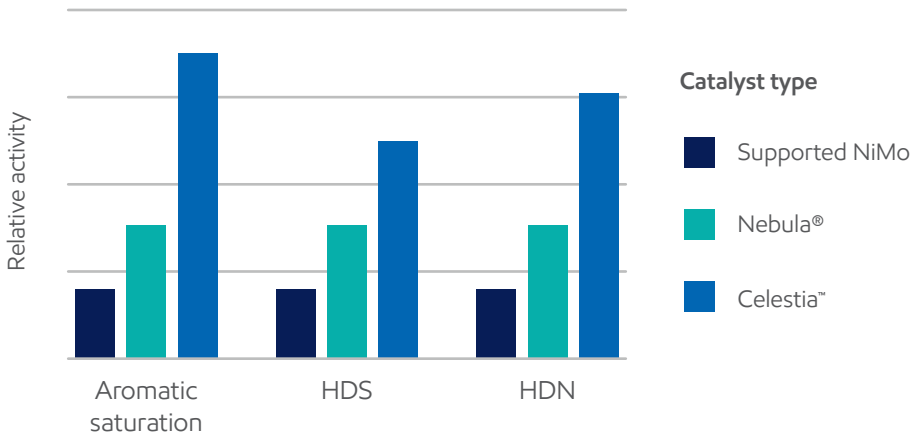
Transformative performance

Boost your margins and flexibility with Celestia™ hydroprocessing catalyst

Through unprecedented hydrodesulferization (HDS), hydrodenitrogenation (HDN) and aromatic saturation activity, Celestia ultra-high activity, bulk-metal hydroprocessing catalyst can provide you with step-out performance and operational flexibility.

Celestia catalyst application

Celestia catalyst is jointly developed by industry leaders ExxonMobil and Albemarle. Often deployed with its predecessor, Nebula®, the new Celestia catalyst provides operational flexibility, exceptional earnings and refinery optimization to add value beyond the hydrotreating battery limits. Commercial applications of these technologies are available in distillate hydrotreaters, as well as in light cycle oil (LCO) and vacuum gas oil (VGO) hydrocracker pretreaters.



Key benefits

Higher performance

- Highest activity hydrotreating catalyst in the industry
- Enables other catalysts and refinerywide debottlenecking

Margin improvement

- Crude flexibility
- Product slate improvement
- Short payback period

Hydroprocessing value

The Celestia™ catalyst activity, when used well, can help improve margins by delivering value beyond the hydrotreating unit battery limits in many ways, including:

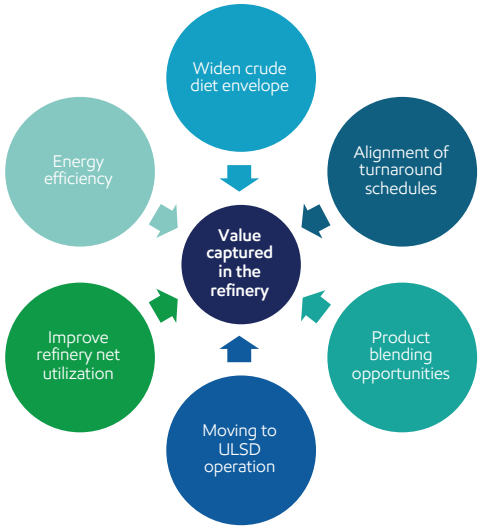
- Processing challenged/opportunity crudes
- Enabling feed scale-up
- Maximizing high-value products in the refinery

Highest activity

The pioneering technology behind the Nebula® bulk-metal catalyst is well established to deliver industry-leading performance. Celestia has now demonstrated another step-change in hydrotreating activity. Its introduction enables new horizons in hydroprocessing capability and margin achievement.

Proven performance

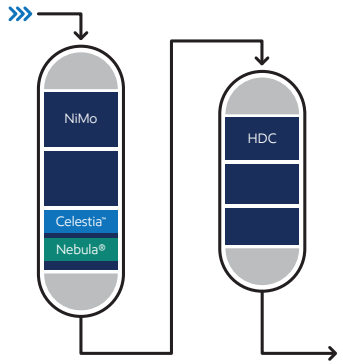
Based on the expertise gained through more than a decade of commercial experience with Nebula, Celestia was developed by ExxonMobil and Albemarle as the next step in advancing catalyst technology. Since 2015, Celestia has demonstrated step-out performance and created new opportunities for growth at ExxonMobil facilities. Now it is available to refiners in fuels application.



Case study

A stacked load of Celestia and Nebula catalysts was loaded into the pretreat section of a once-through heavy feed hydrocracker, processing a challenging blend of high endpoint virgin and coker vacuum gas oils (VGOs) to produce fuels and steam cracker feed. The unit pretreat reactor was loaded with approximately 30 percent Celestia/Nebula. The Celestia deployment was a first application; Nebula had been part of prior reactor loads.

Pretreat with Celestia™ in single-stage hydrocracking (HDC)



The addition of the Celestia catalyst produced significant value to the VGO hydrocracker operation:

- The feed rate of a highly challenging coker VGO was maximized
- Significantly reduced Nitrogen slip
- Increased aromatic saturation and unit conversion with higher diesel and jet yields
- Improved product quality, including diesel cetane and jet smoke point
- Hydrocrackate export quality improved, leading to higher profitability in an affiliate steam cracker
- Higher heat recovery leading to a reduction in furnace firing and significant energy savings

About us

ExxonMobil and Albemarle have been co-developing bulk-metal catalysts for more than 15 years. The complementary expertise of these industry leaders continues to deliver proven, reliable solutions for refiners around the world.

Developed to deliver maximum value to the refinery.

Collaborate with us today.
albemarle.com/celestia