New-Generation UOP Unicracking™ Catalysts

A COMPLETE PORTFOLIO FOR FLEXIBILITY AND ENHANCED H₂ MANAGEMENT

Increase hydrocracking unit profitability in a changing market
The refining segment is a challenging environment today.

Fluctuating crude prices, heavier feeds and more stringent product quality requirements are driving the need for advanced solutions that can help you best maximize your assets while increasing your profitability. UOP catalyst innovation is focused on helping you address these challenges through a portfolio of high-quality products that offer higher selectivity, higher activity and lower hydrogen consumption where it will help you to meet your product objectives.

UOP new-generation Unicracking catalysts provide the technological edge you need to reach your market goals.

UOP offers a well established portfolio of hydrocracking catalysts to meet a wide range of product selectivity and quality targets. In recent years we have developed six new Unicracking catalysts to address the changing demands of our industry and give you the flexibility to achieve your market plans.

UOP’s new family of catalysts are designed to provide you with hydrogen management solutions to meet your product and process objectives.

Our catalysts will support your production needs over a range of diesel and naphtha products.

**Distillate Production**
- HC-120 Catalyst
- HC-215 Catalyst

**Flexible Production**
- HC-140 Catalyst
- HC-150 Catalyst

**Max Naphtha Production**
- HC-175 Catalyst
- HC-185 Catalyst

Drivers for UOP Hydrocracking Catalyst Innovation

- Lower H₂ Consumption
- Higher Activity
- Higher Selectivity
- Higher Product Quality
- Higher Processing Flexibility during a Cycle
Continuous Innovation

Our new-generation hydrocracking catalysts are designed for yield, quality and performance improvements that will enhance your profitability. These new generation products offer you distinct operating benefits.

Optimized Hydrogen Addition
UOP’s new-generation hydrocracking catalysts are designed to add hydrogen where it best enhances product value.

Improved Product Properties
Depending on your specific goals, UOP catalysts can help you achieve higher cetane, improved cold-flow properties, higher octane and/or higher viscosity index (VI).

Higher Activity
The high activity levels of our innovative portfolio allow for extended run length, increases throughput, lower operating temperatures and the ability to process more difficult heavy feeds.

Improved Selectivity
These advanced products operate at higher selectivity to produce more of your desired product.

Find the Right Solution
Your optimum catalyst solution depends greatly on your specific unit configuration, market plans and business objectives. UOP will work closely with your team to evaluate current unit performance and to identify the best available technologies for your needs. We leverage 50 years of hydrocracking catalyst and process technology know-how to assist you with both process and catalyst issues.

Backed by Commercial Experience
UOP’s new-generation hydrocracking catalysts have been utilized by refiners all over the world to realize improved yield and product quality.

<table>
<thead>
<tr>
<th></th>
<th>Sold</th>
<th>Operated</th>
<th>Launched</th>
</tr>
</thead>
<tbody>
<tr>
<td>HC-215</td>
<td>16*</td>
<td>14</td>
<td>3/2003</td>
</tr>
<tr>
<td>HC-120</td>
<td>4</td>
<td>2</td>
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<td>HC-150</td>
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<td>10</td>
<td>3/2004</td>
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<td>HC-140</td>
<td>Now ready for commercialization</td>
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<tr>
<td>HC-185</td>
<td>4*</td>
<td>3</td>
<td>2/2007</td>
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<tr>
<td>HC-175</td>
<td>1</td>
<td>Q409 Start-up</td>
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* includes repeat orders

UOP puts rigorous focus on continuously enhancing our technology, and the process we employ is straightforward. We work closely with our customers to clearly identify and prioritize market requirements, and then execute development programs tailored to address key issues and challenges and achieve real-world solutions that best support your needs.

Our research and development programs are led by world-class scientists and engineers with access to state-of-the-art facilities and tools, and our pilot plant capabilities are designed to enable rapid commercialization. Since the first commercial catalysts were introduced this type of innovation has enabled continuous step-change improvements in refining processes.
A Complete Portfolio

UOP’s six new-generation Unicracking catalysts are each designed to address current market challenges, and to provide you with a wide range of solutions to meet your process operability, product selectivity and product quality targets.

<table>
<thead>
<tr>
<th>Catalyst</th>
<th>Distillate</th>
<th>Flexible</th>
<th>Max Naphtha</th>
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<tbody>
<tr>
<td></td>
<td>DHC-8</td>
<td>HC-120</td>
<td>HC-215</td>
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<tr>
<td>Activity</td>
<td>Base</td>
<td>+++</td>
<td>++</td>
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<tr>
<td>Distillate yields, Wt%</td>
<td>Base</td>
<td>+</td>
<td>+++</td>
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<tr>
<td>H₂ consumption</td>
<td>Base</td>
<td>-</td>
<td>Base</td>
</tr>
<tr>
<td>Kerosene smoke point</td>
<td>Base</td>
<td>Base</td>
<td>Base</td>
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<tr>
<td>Diesel cetane</td>
<td>Base</td>
<td>Base</td>
<td>Base</td>
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<tr>
<td>Cold flow properties</td>
<td>Base</td>
<td>++</td>
<td>++</td>
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<tr>
<td>Stability</td>
<td>Base</td>
<td>++</td>
<td>++</td>
</tr>
</tbody>
</table>

+ Better than base
- Lower than the base

Find out more

If you are interested in learning more about UOP’s portfolio of hydrocracking catalysts, please contact your UOP representative or visit us online at www.uop.com.