Catalyst & Technology News

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DC-2531 – For Ultra Low Sulphur Diesel Production

ASCENT CATALYST TECHNOLOGY

Overview

DC-2531, manufactured with our new ASCENT Catalyst Technology, is the ideal catalyst for increased operational flexibility when producing ULSD at low-to-moderate operating pressures, especially when it is critical to limit hydrogen addition to the feed. DC-2531 is easily regenerated to near fresh activity using conventional regeneration technologies, creating options to improve multi-cycle life economics. DC-2531 has a lower density that many competitive ULSD catalysts and is available in either the oxide or presulfided form. DC-2531's strong physical characteristics reduce the risk of pressure drop problems and catalyst losses during regeneration and reuse.

ULSD HDS Activity

The success of a catalyst to aid in the production of diesel to the 10ppm sulphur levels is dependent on many variables including feedstock composition & chemistry and unit process conditions. In order to truly understand the range of a catalyst's capability for producing ULSD, it must be evaluated across a wide range of factors. Figure 1 summarizes the ULSD HDS activity advantage of DC-2531 versus current market leading ULSD catalysts, over a broad range of conditions found in commercial units.

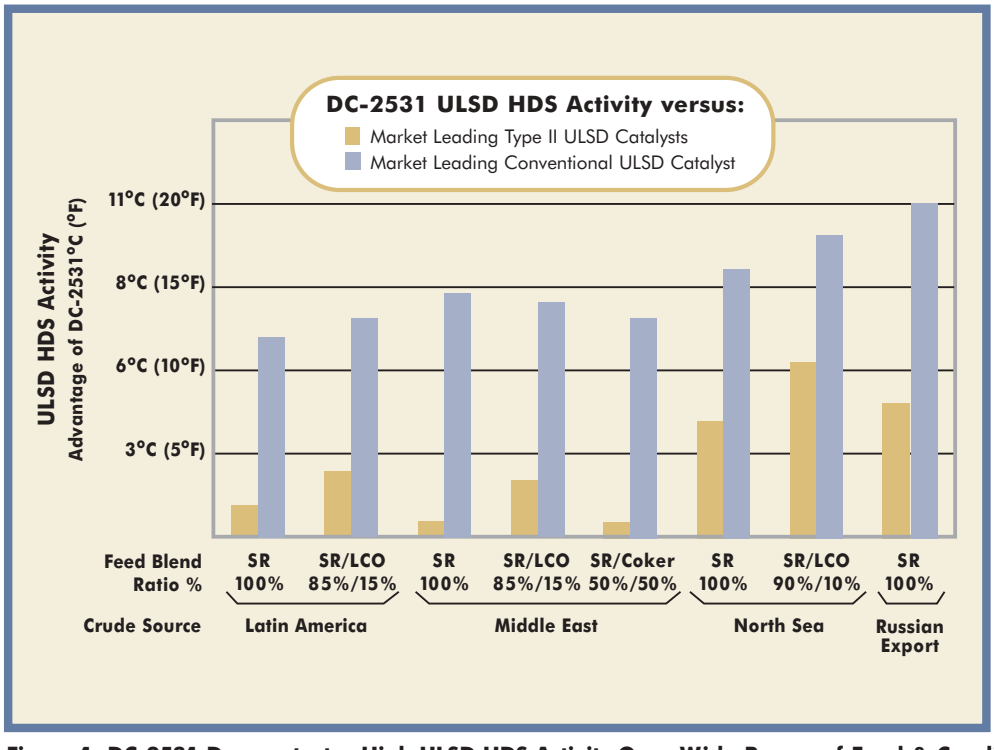

Figure 1: DC-2531 Demonstrates High ULSD HDS Activity Over Wide Range of Feed & Conditions

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Regeneration

Regeneration of high activity ULSD catalysts creates options to improve multi-cycle life economics for many refiners. Regeneration of catalysts can allow re-use in the same application, cascading to other units & services or sales to third parties. In order to assess regeneration effectiveness, the regenerated catalyst must be compared to fresh catalyst at ULSD production conditions. Conventional regeneration (oxidic removal of carbon and sulphur) has been demonstrated to return spent DC-2531 to 90%+ activity of fresh.

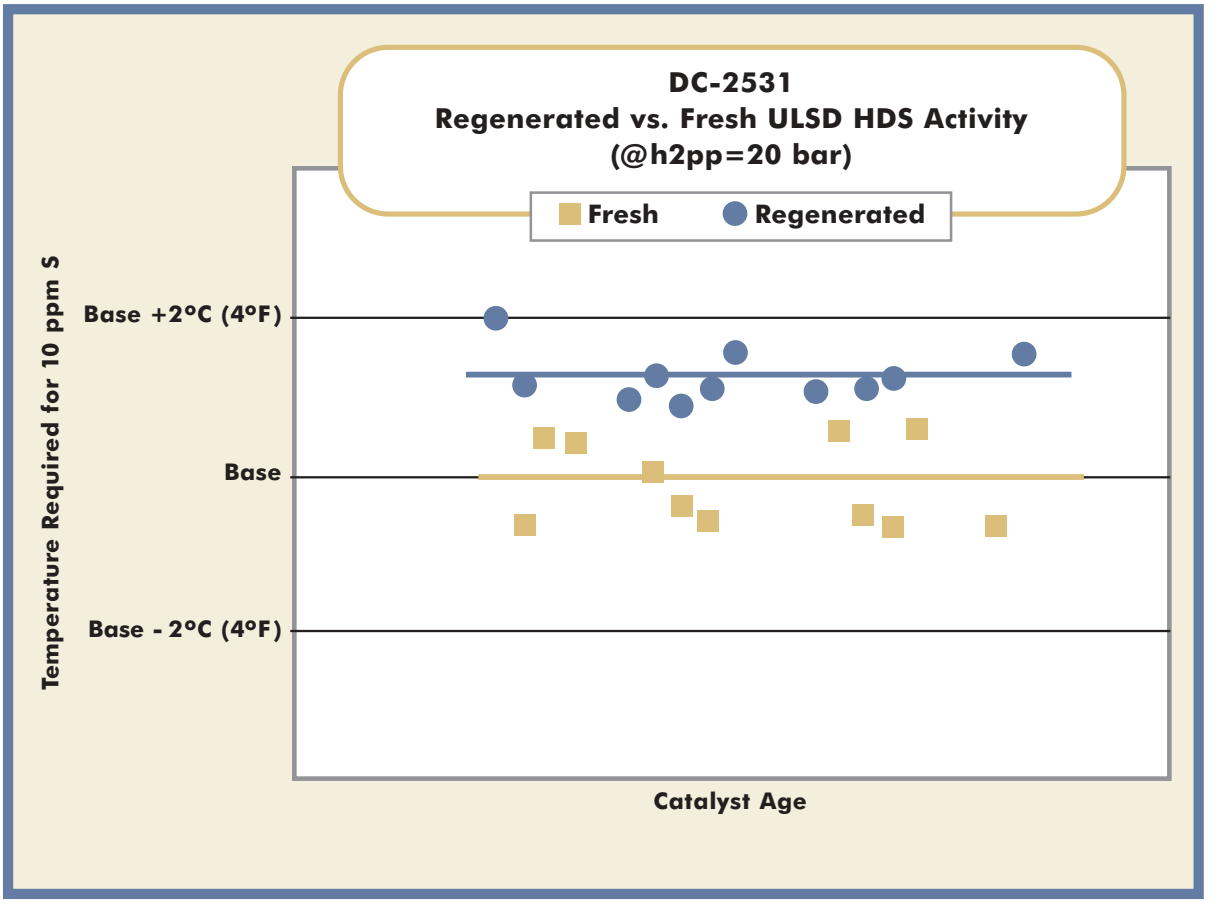

Figure 2: Conventional Regeneration Returns DC-2531 to 90%+ of Fresh Activity

Hydrogen Consumption

Production of diesel fuel to ultra low sulphur levels requires removal of sulphur from less reactive (i.e. more refractive & aromatic) compounds. Additional hydrogen can be required for these reactions and thus hydrogen consumption may increase with lower product sulphur requirements. However, hydrogen consumption can be managed by use of catalyst systems that are selective to removing sulphur versus saturation of aromatic species, whether or not required for production of ULSD. DC-2531 demonstrates selective hydrogen consumption for ULSD production.

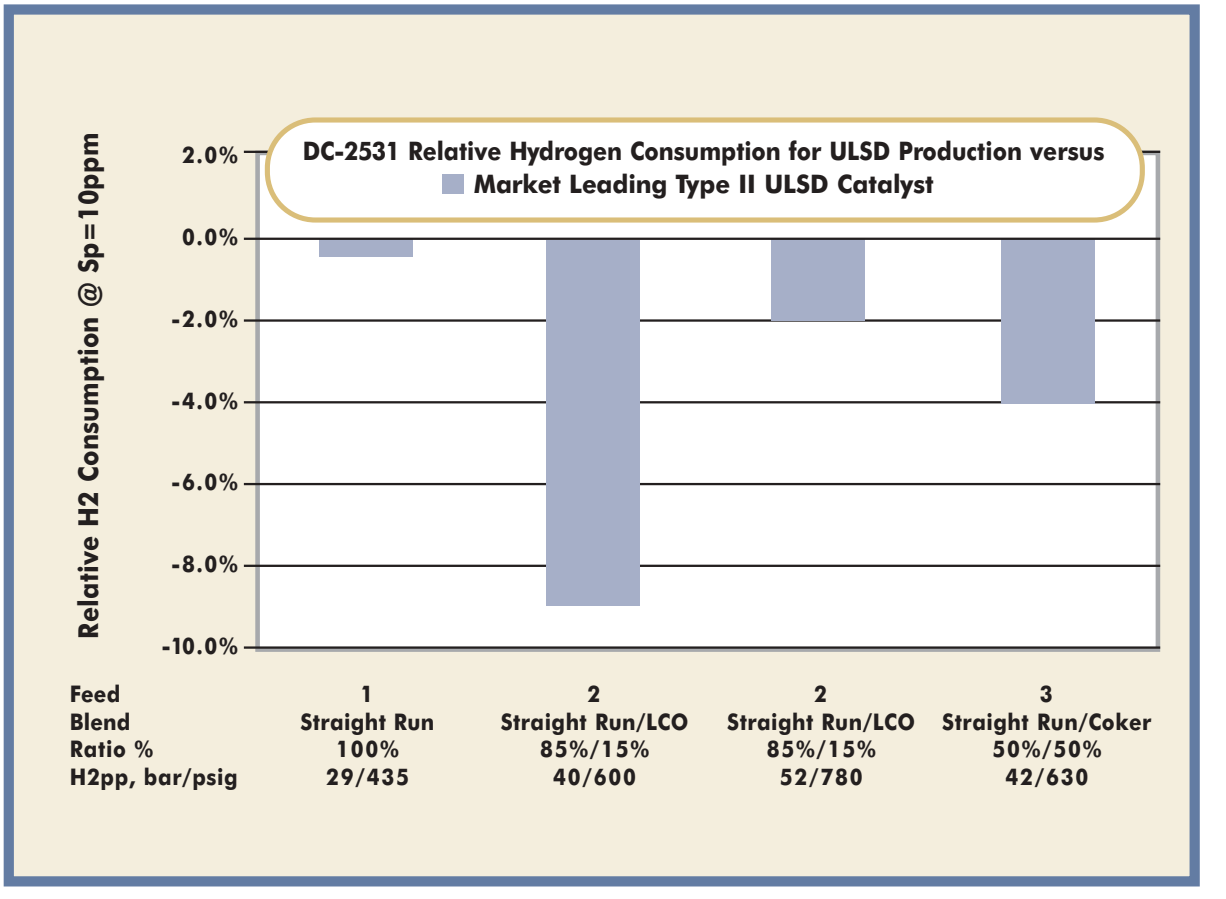

Figure 3: DC-2531 Has Selective Hydrogen Consumption for ULSD Production

Physical Properties

DC-2531 is a strong catalyst with very high crush strength and low attrition. These physical characteristics minimize production of fines and dust during all types of catalyst handling (e.g. reactor loading/unloading, regeneration, etc.). The net benefit to the refiner is improved cycle life cost through lower losses and higher retention of active catalyst along with reduced risk of pressure drop problems.

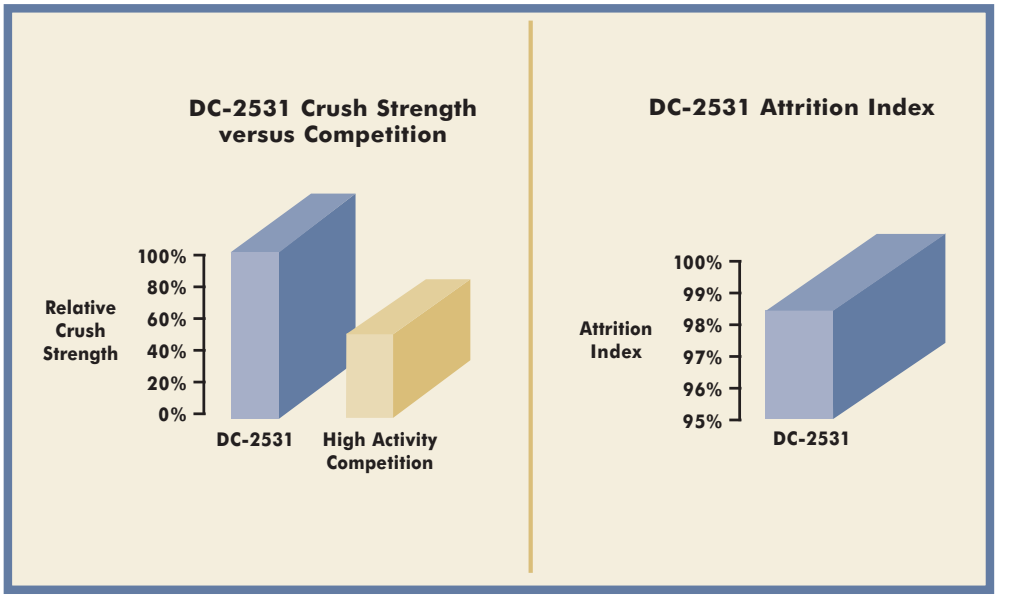

Figure 4: DC-2531 Has Nearly Twice the Crush Strength of Competitive High Activity ULSD Catalysts & Outstanding Attrition Resistance

Summary

DC-2531 is a catalyst that provides refiners benefits by delivering many additional requirements over other catalysts currently available today. DC-2531's combination of:

- High ULSD HDS Activity
- Selective Hydrogen Consumption
- Standard Regeneration & Activation
- Strong Physical Characteristics

results in outstanding overall value.

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