AdE-Scat™-102B

Advanced Hydrodesulfurization Catalyst

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ADEM Technologies Inc. (ADEM) has developed an advanced hydrodesulfurization catalyst "**AdE-Scat™-102B**" for ULSD production. AdE-Scat™ product represents a series of advanced hydro-desulfurization catalysts using nanowire-based materials.

ADEM introduces its new generation of HDS catalysts "AdE-Scat™" developed with improved production techniques after years of proven R&D and scale-up testing. AdE-Scat™ catalysts contain well dispersed, high density of active sites for higher activity at milder operating conditions.

AdE-Scat™-102B is a drop-in catalyst solution for hydrotreaters replacing conventional catalysts. The advantage of this catalyst is that the high dispersion of active phase with increased porosity and having high mechanical strength. AdE-Scat™-102B has been demonstrated to operate at milder operation conditions (lower pressure ~15 bar and temperature – 350 °C) and low hydrogen requirement makes it more suitable for small to medium scale refiners. Most importantly, the low temperature operation not only brings energy savings, but also enables a longer lifetime of the catalyst. AdE-Scat™-102B catalysts are highly porous and are non-sinterable due to one dimensional nature of nanowire materials used. These properties ensure the durability of AdE-Scat™-102B catalyst, reducing the number of change outs resulting in a significant cost savings in operational costs for the refiners.

311 E Lee St. Louisville, KY 40208 Phone: (502) 499-0095 Email: adem.louisville@gmail.com

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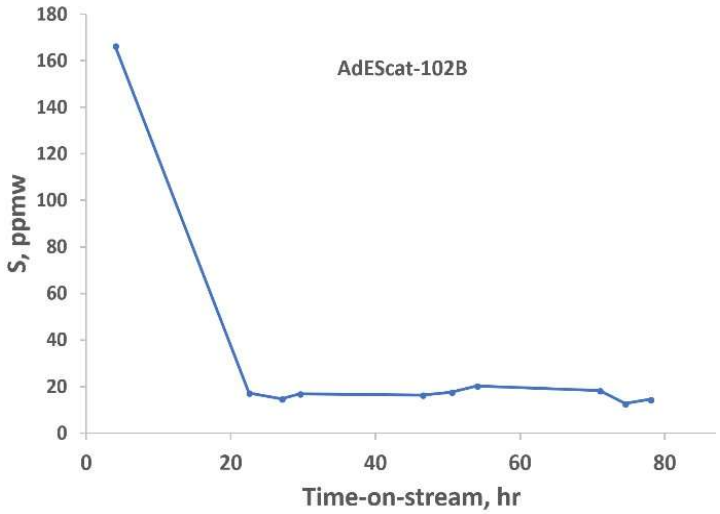
Test results for AdE-Scat™-102B

Feed	Diesel
Sulfur, ppmw	1000
H_2 pressure, bar	15
H_2/Oil, SCFbbl	652
LHSV, hr^{-1}	1
Temperature, °C	350
Product Sulfur, ppmw	12±3

HDS activity of AdE-Scat™-102B vs Process Time



Application Areas

Feedstocks: Hydrodesulfurization of feedstocks such as Gasoline, Diesel, Kerosene, Light Cycle Oil, Gas oil, Waste lube oil re-refining and natural gas.

Low-Medium pressure hydrotreaters: AdE-Scat™-102B is developed specifically for use in small to medium pressure hydrotreating rectors and refineries with limited supply of hydrogen. Above table and test data shows that AdE-Scat™-102B is a high-performance catalyst for ULSD production meeting the 'S' specifications at low severe conditions (P – 15 bar and T-350 °C) and at a reduced hydrogen requirement.

Waste lube oil re-refining: AdE-Scat™-102B can be applied in hydrodesulfurization of waste lube oil re-refining, to produce base-II oils with S<300 ppmw at much lower pressures and temperatures than conventional re-refiners.

Natural gas desulfurization: Based on the regulations, pipe line natural gas contains 6-10 ppm of organic sulfur, COS added as odorants. The 'S' present in the gas is detrimental to a reforming catalyst and must be reduced to <1 ppm before being processed for hydrogen/syngas production. This catalyst is active for natural gas hydrodesulfurization at low pressure and temperatures.

AdE-Scat™-102B is designed as a ULSD catalyst for refineries that operate at low pressures (15-30 bar). AdE-Scat™-102B requires lower H_2 amounts compared to our AdE-Scat™-110A product.

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