AdE-Scat™ -110A

Advanced Hydrodesulfurization Catalyst

WWW.ADVANCEDENERGYMAT.COM

ADEM Technologies Inc. (ADEM) has developed a new hydrodesulfurization catalyst "**AdE-Scat™-110A**" specifically for ULSD production. AdE-Scat™ represents a series of products using nanowire-based materials for high performance hydrodesulfurization applications.

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

AdE-Scat™-110A is a drop-in catalyst solution for moderate to high-pressure hydrotreaters.

AdE-Scat™-110A can process feeds with high refractory sulfur content, aromatics, and unsaturates. AdE-Scat™-110A has been demonstrated to operate at mild to moderate operation conditions (pressure ~15-30 bar and temperature – 350 °C) making it a perfect solution for refiners dealing with issues in feedstock containing refractory S species. AdE-Scat™-110A catalysts are highly porous and non-sinterable due to the one-dimensional nature of nanowire-based materials. The low-temperature operation allows energy savings and a longer lifetime for catalysts. These properties ensure the durability of the AdE-Scat™-110A catalyst, reducing the number of change-outs resulting in 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

ADEM ADVANCED ENERGY MATERIALS

AdE-Scat™-110A

Advanced Hydrodesulfurization Catalyst

Test Parameter	Test I	Test II
Feed	Diesel	Diesel
Sulfur, ppmw	1000	1200
Sulfur species	Mercaptans (900 ppm) & Thiophene (100 ppm)	Thiophene (800 ppm), Benzothiophene, DBT, 4methylDBT, 4,6-DMDBT (400ppm)
H_2 pressure, bar	15	30
H_2/Oil, SCFbbl	930	1200
LHSV, hr^{-1}	1	1
Temperature, °C	350	350
Product Sulfur, ppmw	12±3	15±3

Application Areas

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

Hydrotreaters: AdE-Scat™-110A, an advanced hydrodesulfurization catalyst, has been developed specifically for hydrotreaters having issues with feeds having more difficult to remove sulfur species (DBT, 4-MDBT, 4,6-DMDBT). Test results shown in the table above demonstrates that AdE-Scat™-110A meets the 'S' specifications at low to moderate pressure 15-30 bar, and a low temperature of 350 °C. These conditions enable an increased catalyst life time.

Waste lube oil re-refining: AdE-Scat™-110A can be applied in hydrodesulfurization of waste lube oil re-refining, to produce base-II oils with S<300 ppmw at much low pressures and temperature than conventional re-refiners.

Natural gas desulfurization: Based on 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 the reforming catalyst and must be reduced to <1 ppm before being processed for hydrogen/syngas production.

AdE-Scat™-110A is designed as a ULSD catalyst for refineries that operate at low pressures (15-30 bar).

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

ADEM ADVANCED ENERGY MATERIALS