AdE-Sulfur™-010

Catalytic Sorbent for Desulfurization of Gas Phase Hydrocarbons

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ADEM Technologies Inc. (ADEM) has developed a new catalytic sorbent "**AdE-Sulfur™-010**", for vapor phase deep to ultra-deep desulfurization of fuels such as diesel/jet fuel and gases such as pipeline natural gas at atmospheric pressure. AdE-Sulfur™-010 utilizes catalytic compositions that can keep active metals in zero-valent state and nanowire based materials for high activity towards ultra-deep desulfurization.

ADEM introduces its new generation of sorbent "AdE-Sulfur™" made with improved production techniques following years of R&D and scaleup tests. AdESulfur™ contains highly dispersed, more number of active metallic sites and keeping the active metals in zero valent state makes it high capacity 'S' sorbent. AdE-Sulfur™ specifically removes 'S' containing chemicals and retains 'S' with in the sorbent without releasing any H_2S at atmospheric pressure.

AdE-Sulfur™-010 is a high capacity, fast reacting sorbent that effectively removes sulfides, disulfides, mercaptans, thiophenes, carbonyl sulfide (COS), tetrahydrothiophene (THT), hydrogen sulfide (H_2S) and reduce the sulfur concentration of the fuel to < 1 ppmv level. The advantage of this sorbent is that it requires minimal hydrogen, having high mechanical and attrition resistance makes it excellent choice for the intended use of AdE-Sulfur™-010, to remove sulfur from gaseous flow streams, including natural gas and propane.

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ADEM ADVANCED ENERGY MATERIALS

AdE-Sulfur™-010

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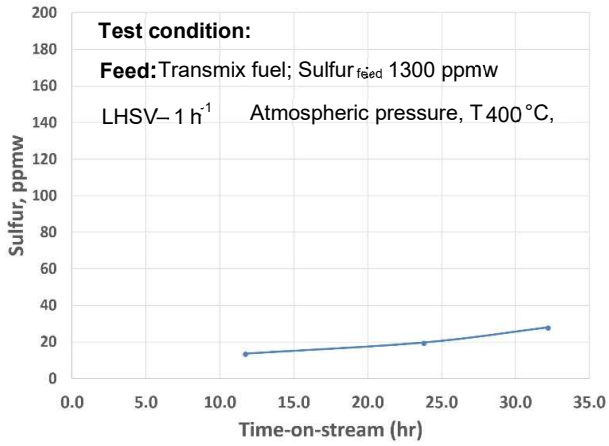
Test results for AdE-Sulfur™-010

Feed	Transmix fuel
Sulfur, ppmw	1300
H_2 pressure, bar	1
H_2/Oil, SCFbbl	280
LHSV, hr^{-1}	1
Temperature, °C	350-400
Product Sulfur, ppmw	≤ 20 ± 3



Desulfurization activity of AdE-Sulfur™-010 vs Process Time

APPLICATION AREAS

Feedstocks: AdE-Sulfur™-010 is an excellent choice for the removal of sulfur from various gaseous fuel streams as diesel fuel, naphtha, kerosene, jet fuel, pipeline natural gas, biofuels, biogas and waste lube oil re-refiners.

Fuel cells: AdE-Sulfur™-010 sorbent could effectively desulfurize LSD/ULSD / jet fuel to ppb level for fuel cell applications.

Waste lube oil re-refining: AdE-Sulfur™-010 is an excellent catalytic sorbent for desulfurization applied in waste lube oil re-refiners and plants cracking waste lube oil-to-diesel, especially for those with extremely limited supply of on-site hydrogen to produce oil with S < 15 ppmw at atmospheric pressure.

Natural gas desulfurization for fertilizer companies: Based on the regulations, pipe line gas contains 6-10 ppm of organic sulfur, COS added as odorants and H2S. AdE-Sulfur™ can desulfurize gas in a single step, eliminating the problems associated with a two-step conventional HDS process. AdE-Sulfur™ requires none to minimal hydrogen for gas desulfurization and eliminates H2S produced as a byproduct.

Desulfurization of used motor oil (UMO)
AdE-Sulfur™-010 at atmospheric pressure

REGENERATION

Spent sorbent can be regenerated and recycle for desulfurization without much appreciable loss of its initial activity.

AdE-Sulfur™-010 is a catalytic adsorbent, a product that can remove "S" at 1 atmospheric pressure without any H_2S release.

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