Desulfurization from Gas Oil: sulfur removal of gas oil to 10 ppm

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1. Introduction

The source of energy most used in the world is crude oil. Major portions of the crude oils are used as transportation fuels such as diesel, gasoline and jet fuel. However, the crude oil contains sulfur, typically in the form of organic sulfur compounds. The sulfur content and the API gravity are the properties that have more influence on the value of the crude oil. The sulfur content is expressed as a percentage of sulfur by weight and varies from less than 0.1% to greater than 5% depending on the type and source of crude oils[1].

The removal of organo-sulfur compounds (ORS) from diesel fuel is the key to reduce air pollution, reducing the emission of toxic gases (such as sulfur oxides) and other polluted materials. The adsorption desulfurization process is one of the easily and fast method to remove sulfur from diesel oils[2].

The adsorptive desulphurization of gasoline over nickel based adsorbent, provide high capacity and selectivity for the adsorptive desulfurization of gasoline. The adsorption involves C-S bond cleavage as evidenced, forming ethyl benzene from benzothiophene in the absence of hydrogen gas.

The hydrodesulfurized straight run gas oil having less than 50

ppm sulfur is treated with activated carbon fiber to attain the ultra-low sulfur gas oil having less than 10 ppm sulfur, for example.

The next paragraphs describe the desulphurization of gasoline with some of the used methods.

[1]Desulfurizati on of Gasoline and Diesel Fuels, Using Non-Hydrogen Consuming Techniques, Abdullah Al-Malki, King Fahad University of Petroleum and Minerals, October 2004

[2]Adsorption Process of Sulfur Removal from Diesel Using Sorbent Materials, Isam A. H. Al Zubaidy, Fatma Bin Tarsh, Noora Naif Darwish, Balsam Sweidan Sana Abdul Majeed, Aysha Al Sharafi, and Lamis Abu Chacra, Journal of Clean Energy Technologies, Vol1, No. 1, January 2013

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