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Upgrading gasoline derived from synthesis gas - by vapour-phase contact with a gallium-contg. aluminosilicate catalyst

H(4-D, 4-E5, 4-F2D) N(3-G, 6-B)

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D/S: E(BE DE FR GB IT NL SE)

Low-grade gasoline made from synthesis gas is upgraded by vapour-phase contact at elevated temps. with a catalyst (I) comprising an aluminosilicate having a Ga cpd. deposited on it and/or an aluminosilicate in which cations have been exchanged with Ga ions, the aluminosilicate having a SiO_2:Al_2O_3 molar ratio of at least 5:1.

USE/ADVANTAGES

The process is esp. suitable for processing gasoline made from synthesis gas derived from coal. The upgraded product has an octane rating RON (clear) of above 100, a bromine number of below 2, and a reduced olefin content. H_2 is generated as a useful co-product.

DETAILS

The gasoline may be mixed with satd. and/or unsatd. 3-4C hydrocarbons prior to contact, e.g. those produced as by-products from the Fischer-Tropsch synthesis of liqs. from synthesis gas or from cracking of wax distillates. The wt. ratio low grade gasoline : 3-4C hydrocarbons is 1:2 - 6:1.

The aluminosilicate pref. has an SiO_2:Al_2O_3 ratio of 20-200:1 and formula $M_{2/n}O.Al_2O_3.ySiO_2zH_2O$ (where M is H, a metal ion or organic ion of valency n (esp. Na or K); y is >5 and z is 0-40). H is e.g. a ZSM zeolite. The amt. of Ga present is 0.05-10 wt.%. The catalyst is activated prior to use by heating at 400-650 (esp. 500-600)°C in an O_2-contg. atmosphere. The feedstock is contacted with the catalyst at 300-700 (pref. 400-600)°C in an inert atmosphere.(11pp959).

(E) ISR: No Search Report.