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MOBIL OIL CORP

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Catalytic composite of iron component, zeolite and matrix - for conversion of synthesis gas, esp. to naphtha

H(4-D, 4-E5, 4-F2E) N(2-A1).

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high activity in converting synthesis gas to olefinic or aromatic naphtha, producing \leq 30 wt % methane + ethane. Little aging is evident.

DETAILS

(I) is pref. ferrous oxalate and may be formed in situ. (II) may be siliceous, Al_2O_3 or SiO_2/Al_2O_3 . (III) is pref. ZSM-5. The composite is pref. spray-dried before the CO-treatment which is effected at 288-343°C for 0.5-24 hrs.

The spray-drier is pref. operated with air at 500-1000 °F, the particles at the completion of the drying pref. being at 200-350°F. Following this step, the catalyst is heated to decompose the organic Fe cpds., e.g. at 115-1200F for 1-48 hrs.

In a prefd. embodiment, (II) is made from mixtures of colloidal SiO_2 and Al_2O_3 , usually in a slurry contg. a weighting agent (e.g. clay). Following this, (III) and (I) are added and the mixt. homogenised and dried. (47pp920).

(E) ISR: US4086262, FR2268771.

D/S: E(DT,GB,SW).

A catalyst compsn., having been prepd. by (a) forming a mixture of a water-insoluble Fe deriv. of an organic cpd. (I), a matrix (II) and an acidic crystalline aluminosilicate zeolite (III) having an SiO_2/Al_2O_3 ratio of > 12 , a pore size of ≥ 5 Å and a constraint index of 1-12, (b) drying the mixture, and (c) treating the dried composite with CO (or synthesis gas), is claimed.

Also claimed is the use of the catalyst in the conversion of synthesis gas at 500-600°F and 50-1000 psig.

USES

In the prodn. of hydrocarbons, esp. naphtha, from synthesis gas pref. 1:1 H_2/CO at 550-580°F, 150-400 psig and with a GHSV of 500-6000.

ADVANTAGES

The catalysts, which require no promoters, exhibit