DERWENT PUBLICATIONS LTD.

76143

76143 D/42 E17 H09 (H04) MOBI 24.03.80
MOBIL OIL CORP *EP --37-213
24.03.80-US-133384 (07.10.81) B01j-29/30 C07c-01/04

Conversion of synthesis gas into hydrocarbon rich in alpha-olefin - using non-active ZSM-5 type zeolite contg. carbon oxide-reducing component in its pores

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

Synthesis gas is converted into hydrocarbons by contact at elevated temp. with a non-active ZSM-5 type zeolite having a carbon oxide-reducing component (I) in its pores.

USE/ADVANTAGES

The use of the above catalyst enhances the selectivity of the product to linear alpha-olefins (esp. 4-6C olefins) which can be used in the prodn. of soaps and lubricants.

DETAILS

(I) is esp. a Fischer-Tropsch catalyst (e.g. Fe, Co or Ru). The acidity, if any, of the zeolite is eliminated by base exchange e.g. with Na. (I) is included in the pores of the zeolite by impregnation with an aq. soln. of a salt of the desired metal (e.g. a nitrate).

The process is carried out at 260-343 (esp. 287-316)°C; a GHSV of 400-20,000 (esp. 500-6,000); a H_2 : COx ratio of 0.5-2 (esp. 1) : 1; and a pressure of 3.4-68 (esp. 10.2-27.2) atm.g.

EXAMPLE

ZSM-5 having a SiO_2/Al_2O_3 ratio of 1600, a Na content of 1.6 wt.% and K content of 1 wt.% was impregnated with aq. soln, contg. 1 wt.% Fe. Conversion of syngas was at 27.2 - 54.4 atm.g., 288-316 °C and 520-740 GHSV. Conversion was 10% and the prod. contained 67.04% linear α-olefins. (24pp959)

(E)ISR: US4172843 US4086262

E(10-J2C3) H(4-E5) N(6-B)

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