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 BRITISH PETROLEUM PLC (FOST/) *WO 8601-500-A
 29.08.84-GB-021828 (13.03.86) B01j-23/74 B01j-35/10 C07c-01/04
 Supported fischer-tropsch catalyst - contg. metal and gp/VI or gp/VIII
 element, reducing prodn. of carbon di:oxide
 C86-034963 E(BE DE FR GB IT NL) N(AU JP NO US)

E(10-J2D) H(4-E5, 4-F2E) J(4-E4) N(2-A, 2-B)

PREFERRED

Partic., the catalyst activity is such that CO conversion is at least 50% at 300 deg. C, H₂:CO ratio of 2:1, pressure of 0.7 MPa abs., and GHSV 500/h.

Components (A) and (B) are introduced in separate steps. Element (B) is added as a non-metallic cpd., partic. an organic cpd., and esp. as a chlorohydrocarbon which decomposes to give Cl under the conditions of introduction or reaction. The non-metallic cpd. may be an ammonium cpd.

The catalytic metal is supported on C having BET surface area at least 100 square m/g, a ratio of BET:basal plane surface area not greater than 4:1, and a ratio of basal plane: edge surface area of at least 10:1.

EXAMPLE

(I) "Katepon" BKIV (RTM : activated C) was heated from room temp. to 1700 deg. C in a stream of He during 1 h, and cooled in the He stream to 25 deg. C. The C was then heated in air in a muffle furnace at 520 deg. C, to give 20 % wt. loss, followed by heating in He to 1800-1850 deg. C as before, and cooling to room temp. in He.

The properties were: BET surface area 710-749 square

WO8601500-A*

Full Patentees: British Petroleum Co Plc; Foster A I (for US only)

A supported Fischer-Tropsch catalyst contains (A) a metal and (B) a minor amt. of a Gp. VI and/or VII element. Pref. metal is Co or Fe. Element is in the form of an anion, pref. a chloride. The amt. is such that the conversion of CO by the catalyst is not less than 20% of the conversion under the same conditions, with a catalyst prepd. in the same way, but without element B, esp. 0.001-3 (0.1-2) wt. % of the catalyst.

USE

The catalyst is used in the conversion of synthetic gas to hydrocarbons which are liq. at normal temp. and pressure.

ADVANTAGE

The amt. of CO₂ is reduced.

m/g; basal plane surface area 416-666 square m/g; edge surface area 3.6-3.8 square m/g. The support was ground and sieved to 0.5-1 mm, and washed in dil. HCl and then water, followed by impregnation in an aq. soln. of $\text{Co}(\text{NO}_3)_2$, to give 16.7 wt. % Co on the catalyst. Impregnation was at 50-80 deg. C and 200-800mbar, and the impregnated C was dried overnight at 120 deg. C and 200-300 mbar. Before use, the catalyst was reduced for 2-8 h in a stream of H_2 at 400-450 deg. C and 8 bar.

(II) The catalyst from (I), after redn., was impregnated with NH_4Cl to add 0.1 wt. % Cl.

(III) Syngas, $\text{H}_2:\text{CO}$ ratio 2:1, was passed at GHSV 500/h and 6 bar guage, at (I) 245 deg. C, or (II) 247 deg. C. Results were: CO conversion, (I) 70%, (II) 34%; selectivity to organic prods., (I) 83%, (II) 94%; selectivity to CO, (I) 17%, (II) 6%; alpha factor (for 3-10C prods.), (I) 0.60, (II) 0.60. (18pp510RHDwgNo0/0).

(E)ISR: GB-621902 GB1565074 US4054644 US4478954.