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 COMMONWEALTH SCIENT ORG *AU 8546-119-A
 14.08.84-AU-006565 (+ AU-046119) (20.02.86) B01j-23/78
 Fischer tropch catalyst contg. cobalt - silica and base or alkali, esp.
 for prodn. of hydrocarbon(s) from syn-gas
 C86-040227

E(5-G3A, 10-A22G, 10-J2C3, 10-J2D, 31-P5A) H(4-E5, 4-F2E)
 J(4-E4) N(1-A, 1-B, 1-D, 2-B, 5-D, 5-E1)

and/or alkylphosphonium hydroxide, opt. contg. ions of Gp. I
 and/or II.

(d) The catalyst may also contain a salt of a metal(loid),
 e.g. As, Sb, Al, Mg, Zn, Cu, Mn, Cr, V, Ge, B, Mo, La
 and/or the rare earths. The ratio of (a):(d) is 0.01-10
 (0.1-5).

(e) The catalyst may contain the anions F⁻, Cl⁻, Br⁻, I⁻,
 SCN⁻, NCO⁻, BO³⁻, PO⁴⁻, and/or MoO⁴⁻, in ratio (e):(c) of
 0.01-10 (0.5-1). It may also contain a different clay or non-
 clay material.

CLAIMED PREPARATION

Components (a), (b) and (c) are reacted in aq. soln. or
 suspension, under pressure (0-1000 psi), at 50-500 (240-
 270)°C, for 1 h. to at least 20 days (10-20 h.). Reaction may
 be in an autoclave under air, an inert gas, or in a reducing
 atmos.

The catalyst may be activated in a reducing atmos., at
 200-700 (300-450)°C until a significant amt. of the Co is
 reduced. Opt., before the redn. step, the catalyst is cal-
 cined in air at 200-700 (300-600)°C.

A catalyst for Fischer-Tropsch reactions contains, chemically
 combined, (a) Co or a material contg. Co, (b) SiO₂ or a pre-
 cursor, or a material contg. SiO₂, and (c) a base or
 alkaline material. The ratio (a):(b):(c) is 1:0.1-100:0.1-100.

USE

Conversion of simple molecules, esp. syngas, to hydro-
 carbons or other fuels, on the catalyst.

PREFERRED CATALYST

The ratio (a):(b):(c) is 1:1-100:2-100 (1:0.6-2.3-10).
 The catalyst may be a 2:1 layer silicate.

Components are: (a) Co(NO₃)₂.6H₂O, CoSO₄.7H₂O,
 CoCl₂.6H₂O, hexammine Co(III) chloride or aquapentammine
 Co(III) chloride. (b) Na₂SiO₃, "Ludox" (RTM) and/or
 "Snowtex" (RTM), and the SiO₂ is finely divided. (c) is an
 alkali metal hydroxide or carbonate, and/or an alkylammonium

EXAMPLE

(A) A soln. of $\text{Co}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$, 29.3 g, in water at 80°C was added to a hot soln. of 13.4 g NaOH and 10g "Snowtex" 40 (RTM: colloidal SiO_2) in 45 ml water, and the mixt. was heated in an autoclave at 250°C , under a H_2 pressure of 500 psi, for 16 h, followed by sepn. of the solid.

(B) The compsn. from (A) was heated in flowing H_2 at 400°C , GHSV = 1600, for 16 h., and cooled to 220°C . $\text{CO} + \text{H}_2$ (1.45:1 molar) was passed over the activated catalyst at GHSV = 700 and atmos. pressure. In the gas phase prod., the selectivity was: CH_4 15, 2-5C 27, 6-13C 58, 2-5C 1-alkenes 74, and CO_2 10. The condensate was mainly up to 24C alkanes, with a peak at 11-12C. (27pp510RKMHDwgNo0/0).