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06.07.84-NL-002149 (08.01.86) B01j-23/74 C07c-1/4 C10g-47/14  
Hydrocarbon prodn. from synthesis gas - using cobalt catalyst with  
specified ratio of external to internal surface area  
C86-003885 E(AT BE DE FR IT NL SE)

Prodn. of hydrocarbons is effected by contacting synthesis gas at elevated temp. and pressure with a catalyst comprising 3-60 pts. wt. Co, 0.1-100 pts. wt. Zr, Ti and/or Cr and 100 pts. wt. SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub> or SiO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub>.

The catalyst (prepd. by kneading and/or impregnation) is in the form of a fixed bed with an external surface area (S<sub>e</sub>) of 5-70 cm<sup>2</sup>/ml and an internal surface area (S<sub>i</sub>) of 10-400 m<sup>2</sup>/ml, such that S<sub>e</sub><sup>2</sup> x S<sub>i</sub> is less than 1,000,000 and greater than 25,000.

#### ADVANTAGE

The process gives high C<sub>5+</sub> selectivities, e.g. 76-79% at 58-63% conversion.

#### MORE SPECIFICALLY

The catalyst bed has S<sub>e</sub> = 10-50 cm<sup>2</sup>/ml and S<sub>i</sub> = 15-200 m<sup>2</sup>/ml, with S<sub>e</sub><sup>2</sup> x S<sub>i</sub> being less than 250,000 and greater than 30,000.

E(10- AU-A-44575/85 1-C, 1-D, 2-B, 2-F, 3-B, 3-D)

The catalysts are prepd. as described in NL8301922 and satisfy the relationship:

$$(3 \times 4R) > L/S_i > Z (0.3 + 0.4R)$$

where L = the total amt. of Co on the catalyst (mg/ml) and R = the wt. ratio between the amt. of Co applied to the catalyst by kneading and the total amt. of Co on the catalyst.

#### PREFERRED CONDITIONS

The reaction is effected at 125-350°C and 5-100 bar, with an H<sub>2</sub>/CO molar ratio of 1.75-2.25, using a catalyst comprising 15-50 pts. wt. Co, 100 pts. wt. SiO<sub>2</sub> and either (i) 0.1-5 pts. wt. Zr if the Co was applied to the catalyst first or (ii) 5-40 pts. wt. Zr if the Zr was applied first.

Prods. boiling above the middle distillate range are hydrocracked using a catalyst comprising 0.1-2 wt. % Pt or Pd on SiO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub> to produce middle distillates. (12pp367RKMHDwgNo0/0).

(E)ISR: No Search Report.

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