AU-A-23906/88

E(10-J2D3) H(4-E5, 4-F2E) N(1-D, 2-B, 3-B)

90-319850/42 £17 H04 ESSO 29.08.88 EXXON RES & ENG CO *US 4960-801-A 29.08.88-US-237361 (02.10.90) C07c-01/04 Prodn. of C5 hydrocarbon(s) via synthesis reaction - with a catalyst comprising cobalt on a titania support containing silica C90-138461 C5+ hydrocarbons are prepd. by reacting hydrogen and

(b) an inorganic refractory support, comprising a major portion of titania, to which up to 15 wt. % of silica, in the form of silica or a silica precursor has been added. ADVANTAGE (I) is more active for CO conversion than catalysts not containing silica, and allows reduced operating temp, with

(a) cobalt in a catalytically active amt., and

carbon monoxide in the presence of a catalyst (I) comprising:

consequent decrease in selectivity to methane and increase PREFERRED CATALYST

in C5+ yield.

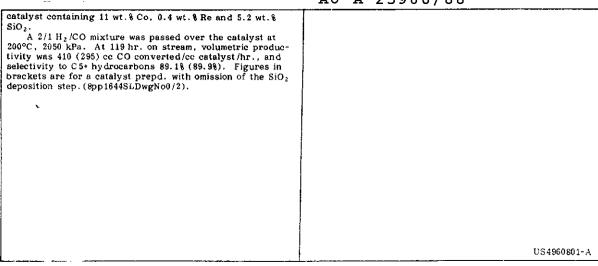
(1) contains 5-20 wt. % Co, opt. with a promotor metal, esp. rhenium in Re:Co wt. ratio 0.025-0.1:1. Silica is 1-10. esp. 3-7 wt. %. The titania has rutile:anatase ratio 4:1 to

100:1, or is 100% rutile; surface area of the support is less than $50 \text{ m}^2/\text{g}$. The catalyst may be prepd. by gellation or cogellation techniques, or esp. by depositing the metals on a previously pilled, pelleted, beaded, extruded or sieved support material by a conventional impregnation method followed by

REACTION CONDITIONS Reaction pref. takes place at 160-300°C, H,CO ratio

oxidation with an oxygen-containing gas.

0.5:1 to 10:1, GHSV 100-5000. EXAMPLE Cobalt and rhenium were deposited from acctone solution onto calcined TiO2 (rutile 97%, surface area 14 m2/ g) using a slurry technique. The slurry was dried, calcined at 250°C, and screened to remove fines. SiO, was deposited onto the product by incipient wetness impregnation with a solution of tetraethoxysilane in methanoi in an inert atmosphere, followed by decomposition of the silane by treatment with water-saturated He at 25-400°C. The product was reduced with hydrogen at 450°C to obtain a US4960801-A+



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E(10-J2D) H(4-E5, 4-F2E) N(1-D, 2-B1, 3-A, 3-B, 3-E, 6-E) ESSO 28.01.87 89-023418/03 E17 H04 *US 4794-099-A **IEXXON RES & ENG CO** 28.01.87-US-007494 (27.12.88) B01j-21/06 B01j-23/84 also be present. Hydrocarbon synthesis catalyst comprising cobalt on support contg. titania, and minor amt. of silica giving higher productivity PREPARATION The SiO, or its precursor may be added to the support C89-010540 before or after the incorporation of the Co. E.g. a CoRe/TiO, catalyst may be SiO, promoted by incipient wetness impregnation with a soln. of tetraethoxysilane (TEOS) in MeOH, followed by treatment with H.O-satd. He at up to 400° C to Hydrocarbon synthesis catalyst comprises Co in catalytically active amt, composited with an inorganic refractory support decompose the TEOS. consisting of TiO, to which up to 15 (e.g. 3-7) wt. \$ SiO,, EXAMPLE in the form of SiO, or a precursor has been added. A prior art catalyst (A) contained (wt. %) about 11.6 Co and 0.46 Re on TiO2 (97% rutile), and a catalyst of the USE/ADVANTAGE invention in addn. contd. 5.2 SiO2, introduced as above. The catalyst is useful in the prodn. of hydrocarbons from Both were steamed. H, and CO (2:1) were reacted at 200° C, H, and CO. The added SiO, increases the activity, either as 2100 kPa and about 60% CO conversion. After 190 and 119 hrs Co-time yield or as Co site-time yield, by pref. more than respectively, the volumetric productivity (cc converted/cc 40% (esp. more than 50%). The synthesis temp, can then be CAT. hr) was (A) 240, (B) 410.(8pp1492CGDwgNo0/2) reduced and the CH4 selectivity thereby reduced and the 5C+ yield increased. Carburisation of the catalyst is drastically inhibited. PREFERRED COMPONENTS The TiO, may have a rutile: anatase ratio of at least 2:3, .US4794099-A or esp. may be 100% rutile. Re in catalytic amt. and Th may