

84-283723/46 E17 H04 J04 BRPE 08.04.83  
 BRITISH PETROLEUM PLC \*EP -124-999-A  
 08.04.83-GB-009585 (14.11.84) B01j-29 C07c-01/04  
 Catalyst compsn. for conversion of synthesis gas to hydrocarbon(s) -  
 contains oxide(s) of zinc, gallium or indium, and another metal, and  
 a zeolite

C84-120366

D/S: BE DE FR GB IT NL SE.

CLAIMED COMPOSITION

Catalyst compsn. comprises a mixture of

- (a) zinc oxide;
- (b) gallium and/or indium oxide;
- (c) an oxide of an additional metal of Group IB, III-V, VIB, VIIB or VIII including the lanthanides and actinides; and
- (d) a porous crystalline tectometallosilicate.

USE/ADVANTAGE

A synthesis gas of hydrogen:carbon monoxide ratio 0.2:1 to 6:1 is passed over the catalyst at e.g. 350-475°C, 30-100 bar. The product is rich in 5-10 C isoparaffins, and low in 1-2 C hydrocarbons. It is useful as a gasoline blending component.

PREFERRED

(c) is an oxide of copper, titanium, zirconium, hafnium,

E(10-J2D, 31-P2, 34-E, 35, 35-C, 35-F) H(4-E5, 4-F2E) J(4-E4) N(2, 3, 6-A) 076

chromium, iron, manganese, ruthenium, cobalt, nickel, silicon, cerium, thorium or uranium.

(d) is a zeolite of MFI structure (e.g. ZSM-5), MEL structure (e.g. ZSM-11), MOR structure, or ZSM-12, -23, -35 or -38, or zeolite beta or Theta-1.

(a) is 1-95%, (b) is 1-75% and (c) is 4-98% of the oxides.

PREPARATION

(d) and the oxides are mixed to give particles less than 50 BSS mesh. The oxides used are prepd. by precipitating the hydroxides from solution and calcining.

EXAMPLE

Boiling solutions of 17.2 g sodium carbonate in 200 ml water and 24 g thorium nitrate + 14.8 g zinc nitrate hexahydrate in 400 ml water were mixed. The precipitate formed was washed, dried and calcined for 2 hr. at 300°C. To 5 g of the oxide mixture so formed, 50 ml gallium nitrate solution (0.025 g Ga/ml) at pH 2.9, and 10 g urea, were added. After refluxing, solid was separated and dried. 5 g of this solid was mixed with 5 g MFI aluminosilicate (silica:alumina ratio 35:1) in hydrogen form, and 10 g

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colloidal silica. The mixture was dried at 100°C, crushed and sieved to 12-30 mesh BSS. (16pp1644RKMHDwgNo0/0).  
(E)ISR: No Search Report.