13.12.88-US-283690 (+US-134796) (08.05.90) B01i-27/12 Particulate fluorided GP = VIII metal-on-alumina catalyst - useful for hydro-treating wax to obtain liq. fuel C90-077470

A novel particulate fluorided Group VIII metal-on-alumina

catalyst (1) has (a) a Gp. VIII metal concn. 0.1-2 wt. %; the metal is esp. Pt; (b) a bulk fluoride concn. 2-10 (5-8) wt. %: the fluoride concn. is less than 3.0 (0.5) wt. % at the outer surface to a depth of less than 0.01 in.; the surface fluoride concn. is less than the bulk fluoride concn.; (c) an aluminium fluoride hydroxide hydrate (II) level greater than 60 (100), where 100 corresponds to the X-ray diffraction peak height at 5.66Å for a reference standard; and (d) a N/Al ratio less than 0.005 (0.002). Prepn. of (I) is also claimed.

wax, esp. middle distillate hydrocarbons with low freezing point and high diesel cetane index by hydroisomerising and hydrocracking a Fischer-Tropsch wax.

to distribute fluoride within the alumina; a distinct inner ring of fluoride is formed; and

PREPARATION

USE

(ii) drying at a temp, not more than 650 deg. F. EXAMPLE A precalcined commercial reforming catalyst (Ketjen CK-306, (RTM) in the form of 1/16 in.dia. extrudates was covered with an 11.6 wt. % HF solution for six hours, the solution decanted and the catalyst washed, dried at up to 260 deg. F and then reduced by contact with hydrogen at 650 deg. F; average pore dia, was 100-150 A, pore vol.

0.5-0.6 cc/g, surface area 121.8 m2/g. A major part of the

fluoride was present as (II).

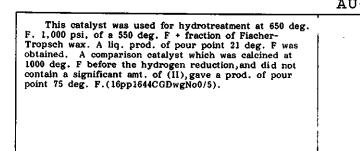
, US4923841-A+

(1) is of use for producing liq. hydrocarbon fuels from

Catalyst (1), in which the metal is Pt, is prepd. by:

(i) contacting a calcined platinum-on-alumina catalyst with

an aq. solution contg. 10-20% HF and having pH below 3.5



H(4-A7, 4-B3, 4-D3, 4-F2A, 4-F2B, 4-F2D) N(1-C2, 2, 4-D, 6-E)

*EP -321-301-A **EXXON RES & ENG CO** 18.12.87-US-134796 (21.06.89) B01j-23/40 B01j-37/26 C10g-45/62 C10g-47/14 Particulate catalyst for producing liq. hydrocarbon from wax comprising Gp=Vill metal on fluorided alumina with specified

H04 (H06)

ESSO 18.12.87

wt. 8 of a Gp. VIII metal, (b) bulk fluoride concn. 2-10 wt., and less than 3% in the outer surface layer to a depth of less than 0.254 mm, with the surface fluoride concn. less than the bulk fluoride concn. (c) an Al fluoride hydroxide hydrate level about 60, where a level of 100 corresponds to the X-ray diffracton peak at 0.566 nm for a Reference Standard, and (d) N/Al ratio less than 0.005 (e.g. less than 0.002).

A particulate fluorided metal-on-Al₂O₃ catalyst has (a) 0.1-2

USE

index.

89-180134/25

distribution of fluorine

C89-079542 R(DE FR GB IT NL)

The catalyst is used in prodn. of liq. hydrocarbon fuels from wax, esp. in hydro-isomerising and -cracking a Fischer-Tropsch wax to liq, hydrocarbon, esp. to more valuable mid distillate hydrocarbons with low f.pt. and high diesel cetane

PREFERRED CATALYST The metal is Pt, the Al fluoride hydroxide hydrate level is at least 80 (e.g. at least 100), the surface fluoride concn. is less than 1 (e.g. less than 0.5) wt. %, and the fluoride concn. is 5-8 wt. & w.r.t. total catalyst.

PREPARATION (a) A calcined Pt-on-Al₂O₃ compsn. with U.1-2 wt. % Pt is contacted with a HF soln. with pH below 3.5 (pref. an aq. soln, contg. 10-20% HF), to distribute fluoride within the interior of the Al₂O₃ and to give a compsn. contg. 2-10% fluoride, with a distinct inner ring of fluoride, (b) the compan, is dried at not above 343.3 deg. C (e.g. not above 148.9 deg. C), and (c) the catalyst, pref. with Al fluoride

hydroxide hydrate level of at least 100, is recovered.

EXAMPLE

(I) A 1/16 inch extrudate of 'Ketjen' CK-306 (RTM: precalcined reforming catalyst) was contacted with 11.6% HF soin, washed, dried in flowing air, and then at 260 deg. F. (A) The catalyst was reduced in H2 at 650 deg. F, giving a catalyst with pore dia. 100-150 Å, pore vol. 0.5-0.6 cc/g, EP-321301-A+

EP-321301-A