

90-246669/32 H07 (H04) ESSO 18.12.87
 EXXON RES & ENG CO *US 4943-672-A
 13.12.88-US-283643 (+US-134797) (24.07.90) C07c-05/13
 Lubricating oil prodn. from Fischer-Tropsch wax - by hydro-
 isomerisation using fluorided metal alumina catalyst
 C90-106582

H(4-A7, 4-A10, 4-F2A); N(1-C2, 2-F2)

content;

(iii) an Al fluoride hydroxide hydrate level above 60, where a value of 100 corresponds to the X-ray diffraction peak height at 5.66 Angstroms for a reference standard comprising 0.6% Pt and 7.2% F on gamma-alumina with a surface area of 150 m²/g; and

(iv) a N/Al ratio below 0.005.

MORE SPECIFICALLY

The hydroisomerisation catalyst contains 0.3-0.6% Pt and 5-8% F. The hydrotreating catalyst is unsulphided. Hydrotreating is effected at 700-750 deg. F and 1000-1500 psig. The effluent from (b) is hydrofined at 310-450 deg. F and 300-1500 psi, using a Pt/Al₂O₃ catalyst, before step (c). (8pp367SLDwgNo0/1).

Lubricating oil with a high V.I. and low pour point from Fischer-Tropsch (FT) wax is produced by:

(a) hydrotreating the FT wax using a catalyst contg. Co, Ni, Mo and/or W;

(b) hydroisomerising the hydrotreated wax using a fluorided M/Al₂O₃ catalyst, where M is a Group VIII metal;

(c) fractionating the effluent from (b) to obtain a lubricating oil fraction with an atmospheric b.pt. above 640 deg. F; and

(d) dewaxing the lubricating oil fraction to obtain a dewaxed oil with a V.I. of at least 130 and a pour point below 0 deg. F.

The hydroisomerisation catalyst has:

(i) a bulk F content of 2-10 wt. %;

(ii) a surface F content (to a depth of less than 0.01 inch) which is less than 3 wt. % and less than the bulk F

89-194405/27

H04 (H07)

ESSO 18.12.87

EXXON RES & ENG CO

*EP -323-092-A

18.12.87-US-134797 (05.07 89) C10g-45/62 C10g-65/04

Lubricating oil prodn. from Fischer-Tropsch wax - by severe hydro-treating to remove impurities and partially crack high boiling wax, then hydro-isomerising, fractionating and dewaxing

C89-085938 R(DE FR GB IT NL)

H(2-A), 4-A2, 4-A7, 4-A10 4-B3 4-E, 4-E6, 4-F2A, 4-F2B, 4-F2E) N(1-C2, 2, 4-D)

Reference Standard, and (iii) N/AI ratio less than 0.005;

(c) fractionating the effluent from (b) in a fractionation zone (F-1) to produce a lubricating oil fraction boiling above 640°F (337.8°C) (e.g. above 700°F, 371.1°C) at atmos. pressure; and

(d) dewaxing the lubricating oil fraction from (c) in a dewaxing zone (D-1) to produce a dewaxed lubricating oil having a viscosity index of at least 130 (e.g. at least 140) and a pour pt. less than 0°F (-17.8°C), e.g. below -5°F (-21.1°C).

ADVANTAGES

Hydrotreating in (a) under relatively severe conditions removes impurities which have adverse effects in the hydro-isomerisation/hydrocracking catalyst, and converts some of the higher boiling wax, partic. the fraction boiling above 1050°F.

PREFERRED EMBODIMENT

The isomerate from (b) is contacted with H₂ and fluorided Gp.VIII metal-on-alumina base catalyst in a hydrofinishing zone (R-3) under mild conditions to reduce unsaturation of the

Prodn. of lubricating oil with high density index and low pour pt. from a Fischer-Tropsch wax comprises:

(a) contacting the wax with hydrotreating catalyst (opt. unsulphided) and H₂ in a hydrotreating zone (R-1) to reduce oxygenate and trace metal levels and to partially hydrocrack and isomerise the wax;

(b) contacting the prod. from (a) with H₂ in a hydroisomerisation zone (R-2) in the presence of a fluorided Gp.VIII metal-on-alumina catalyst having (i) bulk fluoride concn. of 2-10 wt.%, where the fluoride concn. is less than 3.0 wt.% at the outer surface layer to a depth less than 1/100 inch (0.254 mm), provided the surface fluoride concn. is less than the bulk concn., (ii) aluminium fluoride hydroxide hydrate level above 60 (e.g. at least 100) where an aluminium fluoride hydroxide hydrate level of 100 corresponds to the X-ray diffraction peak height of 5.56 Å (0.566 nm) for a

isomerisate and improve its daylight stability and oxidn. stability, before passing to (c). Conditions in (a) include 700-750°F and H₂ pressure 1000-1500 psig.

Hydrofinishing conditions include 340-450°F and pressure 300-1500 psig, with a Pt/Al₂O₃ catalyst as for (b), pref. contg. 0.3-0.6 wt. % Pt and 5-8 wt. % F. Pref. 10-30 wt. % of the wax introduced into the hydroisomerisation zone is converted to distillate and lighter products, and the lubricating oil fraction recovered from (c) has a b.pt. of 700-1000°F. The residue from (c) is pref. recycled to the hydroisomerisation zone. (10pp1762CGDwgNo-0/1).

(E) ISR: No Search Report.