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PRODUCTION OF HIGH VISCOSITY INDEX LUBRICANTS

ABSTRACT

Petroleum wax feeds are converted to high viscosity index lubricants by a two-step hydrocracking-isomerization process in which the wax feed is initially subjected to hydrocracking under mild conditions with a conversion to non-lube range products of no more than about 30 weight percent of the feed. The hydrocracking is carried out at a hydrogen pressure of at least 1000 psig (7000 kPa) using an amorphous catalyst which preferentially removes the aromatic components present in the initial feed. The hydrocracked effluent is then subjected to hydroisomerization in a second step using a low acidity zeolite beta catalyst which effects a preferential isomerization on the paraffin components to less waxy, high V.I. isoparaffins. The second stage may be operated at high pressure by cascading the first stage product into the second stage or at a lower pressure, typically from 200 to 1000 psig. The second stage catalyst is preferably a noble metal containing zeolite beta catalyst which contains boron as a framework component of the zeolite to give a low alpha value, typically below 10. The second stage is carried out at relatively low temperature, typically from 600 to 650°F with a 650°F+ conversion in the range of 10 to 20 weight percent of the second stage feed but with high selectivity for isomerization of the paraffins. A final dewaxing step to target pour point may be used with relatively low loss, typically no more than 15 weight percent, during this dewaxing. The final products typically have V.I. values in excess of 140 and usually in the range of 143 to 147 and are characterized by exceptional stability.

FIGURE 1 IS SUGGESTED FOR PUBLICATION.

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