

**CLAIMS:**

1. A method for making lubricant base stock, comprising:

performing solvent deasphalting using a C<sub>3</sub> solvent under effective solvent deasphalting conditions on a feedstock having a T5 boiling point of at least 400°C to produce deasphalted oil and rock, a yield of deasphalted oil being 40 wt% or less;

hydroprocessing at least a portion of the deasphalted oil under first effective hydroprocessing conditions to form a hydroprocessed effluent, the at least a portion of the deasphalted oil having a kinematic viscosity at 100°C of at least 30 cSt, the hydroprocessed effluent having a sulfur content of 50 wppm or less and a nitrogen content of 20 wppm or less, the first effective hydroprocessing conditions comprising first hydrotreating conditions, first hydrocracking conditions and first aromatic saturation conditions, and comprising a first amount of conversion of the at least a portion of the deasphalted oil relative to 370°C, the first amount of conversion being 7 wt% to 25 wt%;

separating the hydroprocessed effluent to form at least a fraction comprising fuels boiling range portion and a hydroprocessed bottoms fraction; and

hydroprocessing at least a portion of the hydroprocessed bottoms fraction under second effective hydroprocessing conditions to form a catalytically dewaxed effluent, the second effective hydroprocessing conditions comprising second catalytic hydrotreating conditions, catalytic dewaxing conditions and second catalytic aromatic saturation conditions, and further comprising a second amount of conversion of the at least a portion of the hydroprocessed bottoms fraction relative to 370°C, the second amount of conversion being 10 wt% to 20 wt%, a yield of a 370°C+ portion of the catalytically dewaxed effluent being at least 50 wt% relative to the at least a portion of the deasphalted oil,

wherein the 370°C+ portion of the catalytically dewaxed effluent comprises a VI of at least 100, a pour point of -10°C or less, and a kinematic viscosity at 100°C of 8 cSt to 20 cSt.

2. The method of claim 1, wherein the at least a portion of the deasphalted oil has a sulfur content of more than 500 wppm.

3. The method of any of the above claims, further comprising separating the catalytically dewaxed effluent under separation conditions comprising a pressure of at least 90 kPaa to form a 370°C+ portion, the separating the hydroprocessed effluent comprising separating the hydroprocessed effluent under separation conditions comprising a pressure of at least 90 kPaa.
4. The method of any of the above claims, wherein the 370°C+ portion of catalytically dewaxed effluent has a VI of at least 110.
5. The method of any of the above claims, wherein the catalytically dewaxed effluent, the 370°C+ portion of the catalytically dewaxed effluent, and/or the 510°C+ portion of the catalytically dewaxed effluent comprises a saturates content of at least 90 wt%.
6. The method of any of the above claims, wherein the catalytically dewaxed effluent, the 370°C+ portion of the catalytically dewaxed effluent, and/or the 510°C+ portion of the catalytically dewaxed effluent has a pour point of -10°C or less; or a cloud point of -10°C or less; or a combination thereof.
7. The method of any of the above claims, wherein the first effective hydroprocessing conditions comprise conditions for conversion of 10 wt% to 40 wt% of the at least a portion of the deasphalted oil relative to a conversion temperature of 510°C.
8. The method of any of the above claims, wherein the second effective hydroprocessing conditions further comprise second hydrocracking conditions, optionally in the presence of a noble metal hydrocracking catalyst.
9. The method of any of the above claims, wherein the first and/or second aromatic saturation conditions comprise exposure to a hydrofinishing catalyst including a Group VIII noble metal under effective hydrofinishing conditions, the effective hydrofinishing conditions including temperatures from 125°C to 425°C, a hydrogen partial pressure from 500 psig (3.4 MPa) to 3000 psig (20.7 MPa), liquid

hourly space velocity from  $0.1 \text{ hr}^{-1}$  to  $5 \text{ hr}^{-1}$  LHSV, and a hydrogen treat gas rate of from  $35.6 \text{ m}^3/\text{m}^3$  to  $1781 \text{ m}^3/\text{m}^3$  (200 SCF/B to 10,000 SCF/B).

10. The method of any of the above claims, wherein the first effective hydroprocessing conditions comprise exposing the deasphalted oil sequentially to a hydrotreating catalyst, a hydrocracking catalyst, and an aromatic saturation catalyst, optionally wherein the catalysts are arranged in a stacked bed.

11. The method of any of the above claims, wherein the second effective hydroprocessing conditions comprise exposing the at least a portion of the hydroprocessed bottoms fraction to a noble metal hydrocracking catalyst prior to dewaxing, and wherein the first amount of conversion is lower than 15 wt%, and the second amount of conversion is greater than 10 wt%.

12. The method of any of the above claims, wherein the deasphalted oil is exposed to the hydrotreating catalyst under effective hydrotreating conditions, the hydrotreating catalyst comprising at least one Group VIII non-noble metal and at least one Group VI metal, the effective hydrotreating conditions including a temperature of from  $200^\circ\text{C}$  to  $450^\circ\text{C}$ , a pressure of 250 psig (1.8 MPag) to 5000 psig (34.6 MPag), a liquid hourly space velocity of (LHSV) of  $0.1 \text{ hr}^{-1}$  to  $10 \text{ hr}^{-1}$ , and a hydrogen treat rate of 200 scf/B ( $35.6 \text{ m}^3/\text{m}^3$ ) to 10,000 scf/B ( $1781 \text{ m}^3/\text{m}^3$ ).

13. The method of any of the above claims, wherein the deasphalted oil is exposed to a hydrocracking catalyst under effective hydrocracking conditions, the hydrocracking catalyst containing a sulfided base metal on an acidic support, the effective hydrocracking conditions including a temperature of from  $600^\circ\text{F}$  ( $343^\circ\text{C}$ ) to  $815^\circ\text{F}$  ( $435^\circ\text{C}$ ), hydrogen partial pressures of from 1500 psig to 3000 psig (10.3 MPag to 20.9 MPag), a liquid hourly space velocity of from  $0.25 \text{ h}^{-1}$  to  $50 \text{ h}^{-1}$ , and a hydrogen treat gas rate of from  $213 \text{ m}^3/\text{m}^3$  to  $1068 \text{ m}^3/\text{m}^3$  (1200 SCF/B to 6000 SCF/B).

14. The method of any of the above claims, wherein the at least a portion of the hydroprocessed bottoms fraction is catalytically dewaxed over a dewaxing catalyst under effective catalytic dewaxing conditions, the dewaxing catalyst containing a

metal hydrogenation component and a molecular sieve, the effective catalytic dewaxing conditions including a temperature of from 280°C to 450°C, a hydrogen partial pressure of from 3.5 MPag to 34.6 MPag (500 psig to 5000 psig), and a hydrogen circulation rate of from 178 m<sup>3</sup>/m<sup>3</sup> (1000 SCF/B) to 1781 m<sup>3</sup>/m<sup>3</sup> (10,000 scf/B).

15. The method of any of the above claims, wherein the at least a portion of the deasphalted oil has a kinematic viscosity at 100°C of 30 cst to 80 cst.