

CLAIMS:

1. A method for forming a raffinate and an extract, comprising:

hydrotreating a feedstock having a T5 boiling point of at least 400°F and a T95 boiling point of 1500°F or less under hydrotreating conditions comprising less than 15% feed conversion relative to a conversion temperature of 700°F to form a hydrotreated effluent, the feedstock having a 650°F+ aromatics content of 25 wt% to 90 wt% and a sulfur content of greater than 1000 wppm, the hydrotreated effluent comprising a hydrotreated effluent fraction having a T5 boiling point of at least 400°F, an aromatics content of at least 10 wt%, a sulfur content of less than 1000 wppm, and a combined amount of Ni, V, and Fe of less than 10 wppm; and

performing a solvent extraction on the hydrotreated effluent fraction to form at least a raffinate product having a nitrogen content of less than 50 wppm and an extract product comprising at least 70 wt% aromatics.

2. The method of claim 1, wherein the raffinate product has a nitrogen content of 10 wppm or less.

3. The method of claim 1, further comprising dewaxing at least a portion of the hydrotreated effluent fraction prior to performing the solvent extraction.

4. The method of claim 1, further comprising dewaxing at least a portion of the raffinate product.

5. The method of claim 4, wherein the dewaxing comprises solvent dewaxing, catalytic dewaxing, or a combination thereof.

6. The method of claim 1, wherein the hydrotreating conditions comprise exposing the separated fraction to a hydrotreating catalyst at a pressure of 500 psig to 1200 psig, a temperature of 300°C to 450°C, and a LHSV of 0.1 to 5.0 hr⁻¹.

7. The method of claim 1, wherein the feedstock has a sulfur content of at least 2.0 wt%.

8. The method of claim 1, wherein the feedstock has a 650°F+ aromatics content of less than 50 wt%, and the raffinate product having an aromatics content of 2 wt% to 20 wt%.

9. The method of claim 1, wherein the feedstock has a 650°F+ aromatics content of 50 wt% to 90 wt%.

10. The method of claim 1, wherein the hydrotreated effluent fraction has a naphthene content of 30 wt% to 80 wt%, and the extract product having a naphthene content of at least 10 wt%.

11. The method of claim 1, wherein the feedstock has a nitrogen content of less than 1000 wppm, and wherein the extract product has a nitrogen content of less than 1000 wppm.

12. A raffinate product having a pour point of 0°C or less comprising at least 55 wt% of total naphthenes, 6 wt% to 15 wt% of 4+-ring naphthenes, less than 1000 wppm of sulfur, less than 50 wppm of nitrogen, and less than 3.0 wt% of polycyclic aromatics.
13. The raffinate product of claim 12, wherein the raffinate product has a metals content of less than 10 wppm.
14. The raffinate product of claim 12, the raffinate product comprising 2 wt% to 20 wt% of total aromatics.
15. The raffinate product of claim 12, wherein the raffinate product comprises 9 wt% to 17 wt% of 3-ring naphthenes, 6 wt% to 8 wt% of 4+-ring naphthenes, or wherein the raffinate product comprises 60 wt% to 75 wt% of total naphthenes, or a combination thereof.
16. The raffinate product of claim 12, wherein the raffinate product has a pour point of -9°C or less.
17. An extract product comprising at least 70 wt% aromatics, 15 wt% to 20 wt% of 4-ring aromatics, less than 15 wt% of 3-ring aromatics, and less than 1000 wppm of sulfur, the extract product having a T5 boiling point of at least 400°C, and a T95 boiling point of 560°C or less.
18. The extract product of claim 17, wherein the extract product has a metals content of less than 10 wppm.
19. The extract product of claim 17, wherein the extract product has a nitrogen content of less than 1000 wppm.
20. The extract product of claim 17, wherein the extract product has a total naphthene content of 10 wt% to 20 wt%.