CLAIMS:

1. A Group III base stock comprising:

at least about 30 wt. % of naphthenes;

about 30 wt. % to about 70 wt. % paraffins;

wherein the Group III base stock has a viscosity index of about 120 to about 133;

wherein the Group III base stock has a kinematic viscosity at 40° C. (KV40) of about 18.07 cSt to about 19.89 cSt; and

wherein the Group III base stock has a ratio of molecules with multi-ring naphthenes to single ring naphthenes, 2R+N/1RN, of less than about 0.46.

2. The base stock of claim 1, wherein the base stock has an amount of saturated hydrocarbons of at least 95 wt. %.

3. The base stock of claim 1, wherein the base stock has a kinematic viscosity at 100° C. (KV100) of about 4.0 cSt to about 5.0 cSt.

4. The base stock of claim 1, wherein the base stock has a kinematic viscosity at 100° C. (KV100) of about 5.0 cSt to about 12.0 cSt.

5. The base stock of claim 4, wherein the base stock has a viscosity index of about 120 to about 133.

6. A lubricating composition comprising the base stock of claim 1 and an additive.

7. The lubricating composition of claim 6, wherein the base stock has a viscosity index of about 120 to about 133.

8. A method for producing a diesel fuel and a base stock, comprising:

providing a feed stock comprising a vacuum gas oil;

hydrotreating the feed stock under first effective hydrotreating conditions to produce a first hydrotreated effluent;

hydrotreating the first hydrotreated effluent under second effective hydrotreating conditions to produce a second hydrotreated effluent;

fractionating the second hydrotreated effluent to produce at least a first diesel product fraction and a bottoms fraction;

hydrocracking the bottoms fraction under effective hydrocracking conditions to produce a hydrocracked effluent;

dewaxing the hydrocracked effluent under effective catalytic dewaxing conditions to produce a dewaxed effluent, the dewaxing catalyst including at least one non-dealuminated, unidimensional, 10-member ring pore zeolite, and at least one Group VI metal, Group VIII metal or combination thereof;

hydrotreating the dewaxed effluent under third effective hydrotreating conditions to produce a third hydrotreated effluent; and

fractionating the third hydrotreated effluent to form at least a second diesel product fraction and the base stock of claim 1.

9. The method of claim 8, wherein the feedstock has a solvent dewaxed oil feed viscosity index of about 45 to about 150.

10. The method of claim 8, wherein the effective hydrotreating conditions include a temperature of about 300° C. to about 450° C., hydrogen partial pressure of about 1500 psi to about 5000 psi (~10.3 MPa to ~34.6 MPa), a liquid hourly space velocity of about 0.2 to about 10 hr^{-1}, and a hydrogen circulation rate of about 35.6 to about 1781 m^3/m^3 (about 200 scf/bbl to about 10,000 scf/bbl).

11. The method of claim 8, wherein the effective hydrocracking conditions include a temperature of about 288° C. to about 450° C., a hydrogen partial pressure of about 1000 psig to about 5000 psig (about 6.9 MPa to about 34.6 MPa), a liquid hourly space velocity of about 0.05 h^{-1} to about 10 h^{-1}, and a hydrogen treat gas rate of about 35.6 m^3/m^3 to about 1781 m^3 /m^3 (about 200 scf/bbl to about 10,000 scf/bbl).

12. The method of claim 8, wherein the dewaxing catalyst comprises a molecular sieve having a SiO_2:Al_2O_3 ratio of about 200:1 to about 30:1 and comprises about 0.1

wt. % to about 3.33 wt. % framework Al_2O_3 content, the dewaxing catalyst including about 0.1 wt. % to about 5 wt. % platinum.

13. The method of claim 12, wherein the molecular sieve is EU-1, ZSM-35, ZSM-11, ZSM-57, NU-87, ZSM-22, EU-2, EU-11, ZBM-30, ZSM-48, ZSM-23, or a combination thereof.

14. The method of claim 13, wherein the molecular sieve is ZSM-48, ZSM-23, or a combination thereof.

15. The method of claim 9, wherein the dewaxing catalyst comprises at least one metal oxide, refractory binder, the binder being silica, alumina, titania, zirconia, or silica-alumina.

16. The method of claim 15, wherein the metal oxide, refractory binder further comprises a second metal oxide, refractory binder different from the first metal oxide, refractory binder.

17. The method of claim 16, wherein the dewaxing catalyst comprises a micropore surface area to total surface area ratio of greater than or equal to about 25%, wherein the total surface area equals the surface area of the external zeolite plus the surface area of the binder, the surface area of the binder being about 100 m^2/g or less.

18. The method of claim 17, wherein the hydrocracking catalyst is a zeolite Y based catalyst.

19. The method of claim 18, wherein the effective dewaxing conditions include a temperature of about 200° C. to about 450° C., a hydrogen partial pressure of about 250 to about 5000 psi (about 1.8 MPa to about 34.6 MPa), a liquid hourly space velocity of about 0.2 to about 10 hr^{-1}, and a hydrogen circulation rate of about 35.6 m^3/m^3 to about 1781 m^3/m^3 (about 200 scf/bbl to about 10,000 scf/bbl).

20. The method of claim 8, wherein the total conversion of the hydrocracked, dewaxed bottoms relative to the feedstock is about 30% to about 90%.

21. The method of claim 8, wherein the feed stock is a solvent dewaxed oil.

22. A Group III base stock comprising:

at least about 30 wt. % of naphthenes;

about 30 wt. % to about 70 wt. % paraffins;

wherein the Group III base stock has:

a viscosity index of 120 to 145;

a kinematic viscosity at 40° C. (KV40) of about 18.07 cSt to about 19.89 cSt; and,

a ratio of molecules with multi-ring naphthenes to single ring naphthenes, 2R+N/1RN, of less than about 0.46.

23. The base stock of claim 22, wherein the base stock has a pour point of about -10° C. to about -30° C., a Noack volatility of about 0.5 wt. % to about 20 wt. %, and a cold crank simulator (CCS) value at -35° C. of about 100 cP up to about 70,000 cP.

24. A Group III base stock comprising:

at least about 30 wt. % of naphthenes; and

about 30 wt. % to about 70 wt. % paraffins;

wherein the Group III base stock has:

a viscosity index of about 120 to about 145;

a ratio of molecules with multi-ring naphthenes to single ring naphthenes, 2R+N/1RN, of less than about 0.46.

a kinematic viscosity at 100° C. (KV100) of about 8 cSt to about 12 cSt;

a kinematic viscosity at 40° C. (KV40) of about 53.35 cSt to about 59.7 cSt; and

a cold crank simulator (CCS) value at -35° C. of about 10,000 cP up to about 70,000 cP.

25. The base stock of claim 24, wherein the base stock has a pour point of about -10° C. to about -30° C. and a Noack volatility is about 0.5 wt. % to about 20 wt. %.

26. The base stock of claim 1, wherein the base stock has a KV40 of about 18.07 cSt to about 19 cSt.

27. The base stock of claim 1, wherein the base stock has a KV40 of about 19 cSt to about 19.89 cSt.

28. The base stock of claim 24, wherein the base stock has a weight ratio of molecules with multi-ring naphthenes to single ring naphthenes, 2R+N/1RN, of about 0.36 to about 0.4.