

CLAIMS:

1. A base stock comprising: at least 90 wt. % saturates; an amount and distribution of aromatics, as determined by ultra violet (UV) spectroscopy, comprising an absorptivity between 280 and 320 nm of less than 0.015 l/gm-cm; a viscosity index (VI) from 80 to 120, and having a cycloparaffin performance ratio greater than 1.05 and a kinematic viscosity at 100°C between 4 and 6 cSt.
2. The base stock of claim 1 having an amount and distribution of aromatics, as determined by ultra violet (UV) spectroscopy, comprising:
 - absorptivity @ 226 nm of less than 0.15 l/g-cm;
 - absorptivity @ 275 nm of less than 0.013 l/g-cm;
 - absorptivity @ 302 nm of less than 0.005 l/g-cm;
 - absorptivity @ 310 nm of less than 0.006 l/g-cm; and
 - absorptivity @ 325 nm of less than 0.0017 l/g-cm.
3. The base stock of claim 1 having an amount and distribution of aromatics, as determined by ultra violet (UV) spectroscopy, comprising:
 - absorptivity @ 226 nm of less than 0.15 l/g-cm;
 - absorptivity @ 254 nm of less than 0.007 l/g-cm;
 - absorptivity @ 275 nm of less than 0.013 l/g-cm;
 - absorptivity @ 302 nm of less than 0.005 l/g-cm;
 - absorptivity @ 310 nm of less than 0.006 l/g-cm;
 - absorptivity @ 325 nm of less than 0.0017 l/g-cm;
 - absorptivity @ 339 nm of less than 0.0013 l/g-cm; and
 - absorptivity @ 400 nm of less than 0.00014 l/g-cm.
4. The base stock of claims 1-3 having a cycloparaffin performance ratio is greater than 1.2.
5. The base stock of claims 1-4 wherein the saturates comprise monocycloparaffinic species of 0 X-class, and wherein the monocycloparaffinic species are greater than 41 wt. %, based on the total wt. % of all saturates and aromatics.
6. The base stock of claims 1-4 wherein the saturates comprise cycloparaffinic species and the aromatics comprise naphthenoaromatic species of -2 X-class, and wherein the 2+ ring species of the cycloparaffinic species and the naphthenoaromatic species are less than 35.7 wt. %, based on the total wt. % of all saturates and aromatics.

7. The base stock of claims 1-4 wherein the saturates comprise cycloparaffinic species and the aromatics comprise naphthenoaromatic species of -4 X-class, and wherein the 3+ ring species of the cycloparaffinic species and the naphthenoaromatic species are less than 11 wt. %, based on the total wt. % of all saturates and aromatics.
8. The base stock of claims 1-4 wherein the saturates comprise cycloparaffinic species and the aromatics comprise naphthenoaromatic species of -6 X-class, and wherein the 4+ ring species of the cycloparaffinic species and the naphthenoaromatic species are less than 3.7 wt. %, based on the total wt. % of all saturates and aromatics.
9. A base stock comprising: at least 90 wt. % saturates; an amount and distribution of aromatics, as determined by ultra violet (UV) spectroscopy, comprising an absorptivity between 280 and 320 nm of less than 0.020 l/gm-cm; a viscosity index (VI) from 80 to 120, and having a cycloparaffin performance ratio greater than 1.05 and a kinematic viscosity at 100°C between 10 and 14 cSt.
10. The base stock of claim 9 having an amount and distribution of aromatics, as determined by ultra violet (UV) spectroscopy, comprising:
- absorptivity @ 226 nm of less than 0.11 l/g-cm;
 - absorptivity @ 275 nm of less than 0.011 l/g-cm;
 - absorptivity @ 302 nm of less than 0.013 l/g-cm;
 - absorptivity @ 310 nm of less than 0.017 l/g-cm; and
 - absorptivity @ 325 nm of less than 0.008 l/g-cm.
11. The base stock of claim 9 having an amount and distribution of aromatics, as determined by ultra violet (UV) spectroscopy, comprising:
- absorptivity @ 226 nm of less than 0.11 l/g-cm;
 - absorptivity @ 254 nm of less than 0.008 l/g-cm;
 - absorptivity @ 275 nm of less than 0.011 l/g-cm;
 - absorptivity @ 302 nm of less than 0.013 l/g-cm;
 - absorptivity @ 310 nm of less than 0.017 l/g-cm;
 - absorptivity @ 325 nm of less than 0.008 l/g-cm;
 - absorptivity @ 339 nm of less than 0.006 l/g-cm; and
 - absorptivity @ 400 nm of less than 0.0007 l/g-cm.
12. The base stock of claims 9-11 wherein the cycloparaffin performance ratio is greater than 1.4.

13. The base stock of claims 9-12 wherein the saturates comprise monocycloparaffinic species of 0 X-class, and wherein the monocycloparaffinic species are greater than 39 wt. %, based on the total wt. % of all saturates and aromatics.
14. The base stock of claims 9-12 wherein the saturates comprise cycloparaffinic species and the aromatics comprise naphthenoaromatic species, and wherein the cycloparaffinic species and the naphthenoaromatic species are less than 75 wt. %, based on the total wt. % of all saturates and aromatics.
15. The base stock of claims 9-12 wherein the saturates comprise cycloparaffinic species and the aromatics comprise naphthenoaromatic species of -2 X-class, and wherein the 2+ ring species of the cycloparaffinic species and the naphthenoaromatic species are less than 39 wt. %, based on the total wt. % of all saturates and aromatics.
16. The base stock of claims 9-12 wherein the saturates comprise cycloparaffinic species and the aromatics comprise naphthenoaromatic species of -4 X-class, and wherein the 3+ ring species of the cycloparaffinic species and the naphthenoaromatic species are less than 10.8 wt. %, based on the total wt. % of all saturates and aromatics.
17. The base stock of claims 9-12 wherein the saturates comprise cycloparaffinic species and the aromatics comprise naphthenoaromatic species of -6 X-class, and wherein the 4+ ring species of the cycloparaffinic species and the naphthenoaromatic species are less than 3.2 wt. %, based on the total wt. % of all saturates and aromatics.
18. A lubricating oil having a composition comprising a base stock of claims 1-8 as a major component; and one or more additives as a minor component.
19. A lubricating oil having a composition comprising a base stock of claims 9-17 as a major component; and one or more additives as a minor component.
20. A method for improving oxidation performance of a lubricating oil as measured by a rotating pressure vessel oxidation test (RPVOT) by ASTM D2272, said lubricating oil comprising a base stock of claims 1-8 as a major component; and one or more additives as a minor component; wherein said method comprises controlling the cycloparaffin performance ratio to achieve a ratio greater than 1.05.
21. A method for improving oxidation performance of a lubricating oil as measured by a rotating pressure vessel oxidation test (RPVOT) by ASTM D2272, said lubricating oil comprising a base stock of claims 9-17 as a major component; and one or more additives as a minor component; wherein said method comprises controlling the cycloparaffin performance ratio to achieve a ratio greater than 1.05.

22. A method for improving low temperature performance of a lubricating oil as measured by a mini-rotary viscometer (MRV) by ASTM D4684, said lubricating oil comprising a base stock of claims 1-8 as a major component; and one or more additives as a minor component; wherein said method comprises controlling the cycloparaffin performance ratio to achieve a ratio greater than 1.05; controlling monocycloparaffinic species greater than 44 wt. %, based on the total wt. % of all saturates and aromatics; and/or controlling iso-paraffinic species greater than 21 wt. %, based on the total wt. % of all saturates and aromatics.

23. A method for improving low temperature performance of a lubricating oil as measured by a mini-rotary viscometer (MRV) by ASTM D4684, said lubricating oil comprising a base stock of claims 9-17 as a major component; and one or more additives as a minor component; wherein said method comprises controlling the cycloparaffin performance ratio to achieve a ratio greater than 1.05; controlling monocycloparaffinic species greater than 39 wt. %, based on the total wt. % of all saturates and aromatics; and/or controlling iso-paraffinic species greater than 25 wt. %, based on the total wt. % of all saturates and aromatics.

24. A base stock blend comprising from 5 to 95 wt.% of a first base stock of claims 1-8 and from 5 to 95 wt.% of a second base stock of claims 9-17.