Group II base stocks are expected to show a similar decrease in air release values after extraction with methanol.

Midas #	AR before methanol extraction	AR after methanol extraction	% Decrease in AR
07-46280	21.93	17.02	22.4
07-47857	10.92	6.82	37.5
09-30579	13.42	9.3	30.7
10-41560	21.8	14.2	34.9

[00180] While the examples have been to Group I heavy neutral base stocks and Group II base stocks, these examples are not intended to be limiting. The Group I and Group II base stocks with improved air release properties are expected to also apply to blends of Group I and Group II base stocks as well as fully formulated lubricant compositions made from these base stocks.

[00181] Applicants have attempted to disclose all embodiments and applications of the disclosed subject matter that could be reasonably foreseen. However, there may be unforeseeable, insubstantial modifications that remain as equivalents. While the present invention has been described in conjunction with specific, exemplary embodiments thereof, it is evident that many alterations, modifications, and variations will be apparent to those skilled in the art in light of the foregoing description without departing from the spirit or scope of the present disclosure. Accordingly, the present disclosure is intended to embrace all such alterations, modifications, and variations of the above detailed description.

[00182] All patents, test procedures, and other documents cited herein, including priority documents, are fully incorporated by reference to the extent such disclosure is not inconsistent with this invention and for all jurisdictions in which such incorporation is permitted.

[00183] When numerical lower limits and numerical upper limits are listed herein, ranges from any lower limit to any upper limit are contemplated.

~~CLAIMS:~~

1. A method of mitigating air release in lubricant base stocks comprising: providing a Group I base stock, a Group II base stock or a combination thereof, and adding to the base stock an effective amount of a C_7 to C_{80} paraffin, wherein the lubricant base stock provides air release according to the ASTM D3427 test of at least 20 % lower than the same base stock not including the C_7 to C_{80} paraffin.

2. The method of claim 1, wherein an effective amount of the C_7 to C_{80} paraffin ranges from 0.02 to 10 wt%.

3. The method of claims 1-2, wherein the C_7 to C_{80} paraffin is chosen from n-hexane, n-heptane, n-dodecane, nonadecane, n-hexadecane, cyclohexane, PAO, and GTL.

4. The method of claims 1-3, wherein the Group I base stock is chosen from Group I light neutral, Group I heavy neutral and bright stock.

5. A lubricant base stock with improved air release comprising: a Group I base stock, a Group II base stock or a combination thereof and an effective amount of C_7 to C_{80} paraffin, wherein the lubricant base stock provides air release according to the ASTM D3427 test of at least 20 % lower than the same base stock not including the C_7 to C_{80} paraffin.

6. The base stock of claim 5, wherein an effective amount of the C_7 to C_{80} paraffin ranges from 0.02 to 10 wt%.

7. The base stock of claims 5-6, wherein the C_7 to C_{80} paraffin is chosen from n-hexane, n-heptane, n-dodecane, nonadecane, n-hexadecane, cyclohexane, PAO, and GTL.

~~8. The base stock of claims 5-7, wherein the Group I base stock is chosen~~ from Group I light neutral, Group I heavy neutral and bright stock.

9. A method of mitigating air release in lubricating oils comprising: providing a lubricating oil composition comprising a Group I base stock, a Group II base stock or a combination thereof and adding to the lubricating oil composition an effective amount of C_7 to C_{80} paraffin, wherein the lubricant oil provides air release according to the ASTM D3427 test of at least 20% lower than the same lubricating oil not including the C_7 to C_{80} paraffin.

10. The method of claim 9, wherein the lubricating oil composition further includes at least one additive chosen from antiwear, antioxidant, defoamant, demulsifier, detergent, dispersant, metal passivator, friction reducer, rust inhibitor, and any combination thereof.

11. The method of claims 9-10, wherein the detergent is chosen from an alkaline sulfonate, an ester succinimide, and combinations thereof.

12. The method of claims 9-11 wherein an effective amount of the C_7 to C_{80} paraffin ranges from 0.02 to 10 wt%.

13. The method of claims 9-12, wherein the C_7 to C_{80} paraffin is chosen from n-hexane, n-heptane, n-dodecane, nonadecane, n-hexadecane, cyclohexane, PAO, and GTL.

14. A lubricating oil with improved air release comprising: a lubricating oil composition comprising a Group I base stock, a Group II base stock or a combination thereof and an effective amount of C_7 to C_{80} paraffin, wherein ~~the lubricating oil air release according to the ASTM D3427 test is at least~~

20 % lower than the same lubricating oil not including the C_7 to C_{80} paraffin.

15. The lubricating oil of claim 14, wherein the lubricating oil composition further includes at least one additive chosen from antiwear, antioxidant, defoamant, demulsifier, detergent, dispersant, metal passivator, friction reducer, rust inhibitor, and any combination thereof.

16. The lubricating oil of claims 14-15, wherein the detergent is chosen from an alkaline sulfonate, an ester succinimide, and combinations thereof.

17. The lubricating oil of claims 14-16, wherein an effective amount of the C_7 to C_{80} paraffin ranges from 0.02 to 10 wt.%.

18. The lubricating oil of claims 14-17, wherein the C_7 to C_{80} paraffin is chosen from n-hexane, n-heptane, n-dodecane, nonadecane, n-hexadecane, cyclohexane, PAO, and GTL.

19. A method of making a lubricant base stock with improved air release properties comprising: providing a Group I base stock, a Group II base stock or a combination thereof and extracting the base stock with a solvent chosen from methanol, ethanol, propanol, NMP, furfural, tetrahydrofuran, and DMSO, wherein the air release time to 0.2% air in the ASTM D3427 test of the lubricant base stock is at least 20% lower than the same base stock without the extraction step.

Applicants have attempted to disclose all embodiments and applications of the disclosed subject matter that could be reasonably foreseen. However, there may be unforeseeable, insubstantial modifications that remain as equivalents. While the present invention has been described in conjunction with specific, exemplary embodiments

thereof, it is evident that many alterations, modifications, and variations will be apparent to those skilled in the art in light of the foregoing description without departing from the spirit or scope of the present disclosure. Accordingly, the present disclosure is intended to embrace all such alterations, modifications, and variations of the above detailed description.

All patents, test procedures, and other documents cited herein, including priority documents, are fully incorporated by reference to the extent such disclosure is not inconsistent with this invention and for all jurisdictions in which such incorporation is permitted.

When numerical lower limits and numerical upper limits are listed herein, ranges from any lower limit to any upper limit are contemplated.

CLAIMS:

1. A method of mitigating air release in lubricant base stocks comprising:

providing a Group I base stock, a Group II base stock or a combination thereof which are substantially free of additives, and

adding to the base stock an effective amount of a C_6 to C_{80} paraffin, wherein the lubricant base stock provides air release according to the ASTM D3427 test of at least 20% lower than the same base stock not including the C_6 to C_{80} paraffin,

wherein no other additives are added to the base stock prior to or during the step of adding the C_6 to C_{80} paraffin to the base stock,

wherein the effective amount of the C_6 to C_{80} paraffin ranges from 0.02 to 8 wt %, and

wherein the C_6 to C_{80} paraffin is chosen from the group consisting of n-hexane, n-heptane, n-dodecane, nonadecane, n-hexadecane, and cyclohexane.

2. The method of claim 1, wherein the C_6 to C_{80} paraffin is n-heptane.

3. The method of claim 2, wherein the Group I base stock is chosen from the group consisting of Group I light neutral, Group I heavy neutral and bright stock.

4. A lubricant base stock with improved air release comprising:

a Group I base stock, a Group II base stock or a combination thereof and an effective amount of C_6 to C_{80} paraffin, wherein the lubricant base stock provides air release according to the ASTM D3427 test of at least 20% lower than the same base stock not including the C_6 to C_{80} paraffin, wherein the base stock and the C_6 to C_{80} paraffin are substantially free of additives,

wherein the effective amount of the C_6 to C_{80} paraffin ranges from 0.02 to 8 wt %, and

wherein the C_6 to C_{80} paraffin is chosen from the group consisting of n-hexane, n-heptane, n-dodecane, nonadecane, n-hexadecane, and cyclohexane.

5. The base stock of claim 4, wherein the C_6 to C_{80} paraffin is n-heptane.

6. The base stock of claim 5, wherein the Group I base stock is chosen from the group consisting of Group I light neutral, Group I heavy neutral and bright stock.

7. A method of making a lubricant base stock with improved air release properties comprising:

providing a Group I base stock, a Group II base stock or a combination thereof which are substantially free of additives and

adding to the base stock an effective amount of C_6 to C_{80} paraffin, wherein the lubricant base stock provides air release according to the ASTM D3427 test of at least 20% lower than the same base stock not including the C_6 to C_{80} paraffin,

wherein no other additives are added to the base stock prior to or during the step of adding the C_6 to C_{80} paraffin to the base stock,

wherein the effective amount of the C_6 to C_{80} paraffin ranges from 0.02 to 8 wt %, and

wherein the C_6 to C_{80} paraffin is chosen from the group consisting of n-hexane, n-heptane, n-dodecane, nonadecane, n-hexadecane, and cyclohexane.

8. The method of claim 7, wherein the C_6 to C_{80} paraffin is n-heptane.

9. The method of claim 8, wherein the Group I base stock is chosen from the group consisting of Group I light neutral, Group I heavy neutral and bright stock.

10. A method of mitigating air release in lubricating oils comprising:

providing a lubricant base stock with improved air release comprising a Group I base stock, a Group II base stock or a combination thereof and an effective amount of C_6 to C_{80} paraffin, wherein the lubricant base stock provides air release according to the ASTM D3427 test of at least 20% lower than the same base stock not including the C_6 to C_{80} paraffin, wherein the base stock and the C_6 to C_{80} paraffin are substantially free of additives, and

adding to the lubricant base stock at least one additive,

wherein the effective amount of the C_6 to C_{80} paraffin ranges from 0.02 to 8 wt %, and

wherein the C_6 to C_{80} paraffin is chosen from the group consisting of n-hexane, n-heptane, n-dodecane, nonadecane, n-hexadecane, and cyclohexane.

11. The method of claim 10, wherein the at least one additive is chosen from the group consisting of antiwear, antioxidant, defoamant, demulsifier, detergent, dispersant, metal passivator, friction reducer, rust inhibitor, and any combination thereof.

12. The method of claim 11, wherein the detergent is chosen from the group consisting of an alkaline sulfonate, an ester succinimide, and combinations thereof.