WHAT IS CLAIMED IS:

~~1. A method of evaluating a feedstock comprising: obtaining an isoparaffin content~~ of a first distillate fraction from a first portion of a feedstock; determining that the isoparaffin content of the first distillate fraction is greater than a threshold level for isoparaffin content, the threshold level for isoparaffin content corresponding to an isoparaffin content of at least 12 wt%; determining that at least one of a naphthene content and an aromatics content of the first distillate fraction is within threshold levels; and solvent dewaxing at least a portion of a second distillate fraction from a second portion of the feedstock to form a lubricant base oil.

2. A method of evaluating a feedstock comprising: obtaining an isoparaffin content of a first distillate fraction from a first portion of a feedstock; determining that the isoparaffin content of the first distillate fraction is less than a threshold level for isoparaffin content, the threshold level for isoparaffin content corresponding to an isoparaffin content of at least 12 wt%; separating at least a portion of a second distillate fraction from a second portion of the feedstock to form a separated distillate fraction having a kinematic viscosity between 3.5 cSt and 16.5 cSt; solvent dewaxing at least a portion of the separated distillate fraction to a pour point target temperature to form a solvent dewaxed fraction; measuring the viscosity index of the solvent dewaxed fraction; determining that the viscosity index of the solvent dewaxed fraction is greater than a threshold viscosity index value; solvent dewaxing at least a portion of a third distillate fraction from a third portion of the feedstock to form a lubricant base oil.

3. The method of Claim 2, wherein separating at least a portion of a second distillate fraction from a second portion of the feedstock to form a separated distillate fraction having a kinematic viscosity between 3.5 cSt and 16.5 cSt comprises cutting the separated distillate fraction to a kinematic viscosity at 100°C of between 3.8 to 4.2 cSt for a 100N visgrade base oil, a kinematic viscosity at 100°C of between 5.1 to 5.8 cSt for a 150N visgrade base oil, or a kinematic viscosity at 100°C of between 13.8 to 16.2 cSt for a 600N visgrade base oil.

4. The method of Claims 2 or 3, wherein the at least a portion of the separated ~~distillate fraction is solvent dewaxed to a pour point target temperature of -9°C.~~

~~5. The method of any of Claims 2 – 4, wherein the threshold viscosity index value is 0.~~

6. The method of any of the above claims, further comprising: obtaining at least one of a naphthene content and an aromatics content of a distillate fraction from a portion of the feedstock; comparing the at least one of a naphthene content and an aromatics content to one or more threshold levels for naphthene content or aromatics content; and determining that the at least one of a naphthene content and an aromatics content satisfies the one or more threshold levels for naphthene content or aromatics content.

7. The method of Claim 6, wherein the threshold levels for isoparaffin content, naphthene content, and aromatics content are based on a database of crude oils for lube products.

8. The method of any of the above claims, wherein obtaining the isoparaffin content, the naphthene content, the aromatics content, or a combination thereof for a distillate fraction of a feedstock comprises: distilling a sample of the feedstock to obtain a sample distillate fraction; and measuring the isoparaffin content, naphthene content, aromatics content, or a combination thereof of the sample distillate fraction.

9. The method of Claim 8, wherein the isoparaffin content, the naphthene content, the aromatics content, or a combination thereof of the sample distillate fraction is measured by NMR or gas chromatography.

10. The method of any of Claims 1 – 7, wherein obtaining the isoparaffin content, the naphthene content, the aromatics content, or a combination thereof for a distillate fraction of a feedstock comprises using high pressure liquid chromatography and gas chromatography time-of-flight mass spectrometry to determine directly the isoparaffin content, naphthene content, aromatics content, or a combination thereof for the distillate fraction without distilling the feedstock to separate out the distillate.

11. The method of any of the above claims, wherein a first threshold level for the naphthene content is at least 20 wt% and a second threshold level for the naphthene content is 80 wt% or less.

12. The method of any of the above claims, wherein a first threshold level for the aromatics content is at least 15 wt% and a second threshold level for the aromatics content is 80 wt% or less.

13. The method of any of the above claims, wherein the first distillate fraction, the second distillate fraction, the third distillate fraction, or a combination thereof have a boiling point range of 700°F (371°C) to 1100°F (593°C).

14. The method of any of the above claims, wherein the solvent dewaxing solvent is ketone, propane, or a combination thereof.

15. The method of any of the above claims, further comprising the steps of: evaluating a performance of a lubricant base oil formed from a second distillate fraction or a third distillate fraction based; incorporating the evaluated performance of the lubricant base oil along with at least one of an isoparaffin content, a naphthene content, an aromatics content, or viscosity index of a dewaxed distillate fraction for the second distillate fraction or the third distillate fraction into the database of crude oils; and modifying at least one of a threshold level or a target pour point.

16. The method of any of the above claims, wherein the feedstock is a crude oil, a crude oil fraction, a mixture of crude oils, or a combination thereof.

WHAT IS CLAIMED IS:

1. A method of evaluating a feedstock comprising:

obtaining an isoparaffin content of a first distillate fraction from a first portion of a feedstock;

determining that the isoparaffin content of the first distillate fraction is greater than a threshold level for isoparaffin content, the threshold level for isoparaffin content corresponding to an isoparaffin content of at least 12 wt %;

determining that at least one of a naphthene content and an aromatics content of the first distillate fraction is within threshold levels; and

solvent dewaxing at least a portion of a second distillate fraction from a second portion of the feedstock to form a lubricant base oil.

2. The method of claim 1, wherein the threshold levels for isoparaffin content, naphthene content, and aromatics content are based on a database of crude oils for lube products.

3. The method of claim 1, wherein obtaining the iosparaffin content, the naphthene content, the aromatics content, or a combination thereof for a distillate fraction of a feedstock comprises:

distilling a sample of a crude oil to obtain a first distillate fraction; and

measuring the isoparaffin content, naphthene content, aromatics content, or a combination thereof of the first distillate fraction.

4. The method of claim 3, wherein the isoparaffin content, the naphthene content, the aromatics content, or a combination thereof of the first distillate fraction are measured by NMR or gas chromatography.

5. The method of claim 1, wherein obtaining the isoparaffin content, the naphthene content, the aromatics content, or a combination thereof for the first distillate fraction of a feedstock comprises using high pressure liquid chromatography and gas chromatography time-of-flight mass spectrometry to determine directly the isoparaffin content, naphthene content, aromatics content, or a combination thereof

for the first distillate fraction without distilling the feedstock to separate out the distillate.

6. The method of claim 1, wherein a first threshold level for the naphthene content is at least 20 wt % and a second threshold level for the naphthene content is 80 wt % or less.

7. The method of claim 1, wherein a first threshold level for the aromatics content is at least 15 wt % and a second threshold level for the aromatics content is 80 wt % or less.

8. The method of claim 1, wherein the first distillate fraction, the second distillate fraction, or a combination thereof have a boiling point range of 700°F (371°C) to 1100°F (593°C).

9. The method of claim 1, wherein the feedstock is a crude oil, a crude oil fraction, a mixture of crude oils, or a combination thereof.

10. A method of evaluating a feedstock comprising:

obtaining an isoparaffin content of a first distillate fraction from a first portion of a feedstock;

determining that the isoparaffin content of the first distillate fraction is less than a threshold level for isoparaffin content, the threshold level for isoparaffin content corresponding to an isoparaffin content of at least 12 wt %;

separating at least a portion of a second distillate fraction from a second portion of the feedstock to form a separated distillate fraction having a kinematic viscosity between 3.5 cSt and 16.5 cSt;

solvent dewaxing at least a portion of the separated distillate fraction to a pour point target temperature to form a solvent dewaxed fraction;

measuring the viscosity index of the solvent dewaxed fraction;

determining that the viscosity index of the solvent dewaxed fraction is greater than a threshold viscosity index value;

solvent dewaxing at least a portion of a third distillate fraction from a third portion of the feedstock to form a lubricant base oil.

11. The method of claim 10, wherein separating at least a portion of a second distillate fraction from a second portion of the feedstock to form a separated distillate fraction having a kinematic viscosity between 3.5 cSt and 16.5 cSt comprises cutting the separated distillate fraction to a kinematic viscosity at 100°C of between 3.8 to 4.2 cSt for a 100N visgrade base oil, a kinematic viscosity at 100°C of between 5.1 to 5.8 cSt for a 150N visgrade base oil, or a kinematic viscosity at 100°C of between 13.8 to 16.2 cSt for a 600N visgrade base oil.

12. The method of claim 10, wherein the at least a portion of the separated distillate fraction is solvent dewaxed to a pour point target temperature of -9°C.

13. The method of claim 10, wherein the threshold viscosity index value is 0.

14. The method of claim 10, wherein the first distillate fraction, the second distillate fraction, the third distillate fraction, or a combination thereof have a boiling point range of 700°F (371°C) to 1100°F (593°C).

15. The method of claim 10, wherein the solvent dewaxing solvent is ketone, propane, or a combination thereof.

16. The method of claim 10, further comprising the steps of:

evaluating a performance of a lubricant base oil formed from a second distillate fraction or a third distillate fraction based;

incorporating the evaluated performance of the lubricant base oil along with at least one of an isoparaffin content, a naphthene content, an aromatics content, or viscosity index of a dewaxed distillate fraction for the second distillate fraction or the third distillate fraction into the database of crude oils; and

modifying at least one of a threshold level or a target pour point.

17. The method of claim 10, wherein the feedstock is a crude oil, a crude oil fraction, a mixture of crude oils, or a combination thereof.