CLAIMS:

1. A method for predicting future haze formation in dewaxed petroleum-derived lubricant base stocks, and products made there from, comprising the following steps: (1) preparing a test sample comprising a sample of neat base stock diluted with a solvent that facilitates the crystallization of wax components in the base stock, (2) subjecting the test sample to a temperature profile comprising a sub-ambient cooling and a subsequent heating step, (3) ~~directly or indirectly~~ monitoring ~~changes in light scattering, caused by the formation and disappearance of~~ the crystallization and melting of wax ~~crystals~~ in the test sample, including but not limited to the HDT, ~~over~~ during the course of the temperature ~~profile~~ ramp, by measuring, directly and indirectly, changes in light scattering, and (4) ~~comparing at least a portion of the~~ using a comparison of the HDT determined by light scattering ~~data obtained to one or more reference points based on~~ to a HDT reference point determined from historical test data to determine whether the base stock ~~has~~ exhibits an acceptable or unacceptable ~~haze~~ potential for forming haze over the course of a lubricant manufacture, storage and use lifecycle.

2. A method for predicting future haze formation in a dewaxed, petroleum based, lubricant base stock, and products made there from, comprising the followings steps:

(i) diluting a sample of the neat base stock in a solvent that facilitate crystallization of wax components;

(ii) subjecting the test sample to a temperature ramp that at least comprises -

(a) a cooling step whereby the test sample is cooled to a sub-ambient target temperature and held there for a period of time sufficient to crystallize high melting wax components in the base stock, and

(b) a subsequent heating step whereby the test sample is heated to a target temperature sufficiently high, and at a rate that is sufficiently slow, to accurately measure the temperature at which the crystallized wax has fully melted back into solution

(i.e., the haze disappearance temperature (HDT));

(iii) monitoring the crystallization and melting of wax in the test sample, including but not limited to the HDT, during the course of the temperature ramp, by measuring, directly or indirectly, changes in light scattering; and

(iv) using a comparison of the HDT determined by light scattering to a HDT reference point determined from historical test data to determine whether the base stock exhibits an acceptable or unacceptable potential for forming haze over the course of a lubricant manufacture, storage and use lifecycle.

3. The method of claim 2 where the base stock is a Neutral or Bright base stock manufactured to meet group I, group II or group III specifications.

4. The method of claim 2 where the base stock is a Heavy Neutral or Bright base stock manufactured to meet group I specifications.

5. The method of claim 2, where the solvent has a bulk solubility parameter that lies at least 0.1 ~~MPa1/2~~ $MPa^{1/2}$ above the solubility parameter of the base oil being tested and wax.

6. The method of claim 5, where the solvent is a blend of two or more solvent components having a solubility parameter differential no greater than 5 ~~MPa1/2~~ $MPa^{1/2}$.

7. The method of claim 6, where the solvent is a blend of two or more solvent components selected from the group consisting of ketones, toluene, ethers and acetone.

8. The method of claim 7, where the solvent is a blend of methyl iso-butyl ketone (MIBK) and methyl ethyl ketone, (MEK).

9. The method of claim 5 where the base oil has a solubility parameter that is anywhere from 02.-2.0 ~~MPa1/2~~ $MPa^{1/2}$ above the solubility parameter of the base oil.

10. The method of claim 2 where the weight ratio of base stock to solvent is 1:1-5.

11. The method of claim 2, where the weight ratio of base stock to solvent is 1:1-3.5.

12. The method of claim 2, where the temperature ramp additionally comprises a first pre-heating step, prior to the aforementioned cooling and heating steps, where the test sample is first heated for a time and to a temperature sufficient to melt any crystallized wax present in the test sample at ambient temperature.

13. The method of claim 2, where the test sample is cooled to a target temperature below ambient temperature, and held at the target temperature for a period of time, sufficient to crystallize a majority of high melting wax components in the base stock.

14. The method of claim 2 where the test sample is cooled to, and held at, a target temperature that is below ~~0oC~~ 0°C and above the base stock's cloud point for a period ranging from 5 to 60 minutes.

15. The method of claim 2 where the test sample, after the cooling step, is heated at a rate ranging from 0.1 to ~~1oC~~ 1°C per minute to temperature that is at least above ~~0oC~~ 0°C.

16. The method of claim 2 where changes in scattering of light in the ultraviolet, visible and/or infrared portion of the spectrum are monitored directly or indirectly over the course of the temperature profile.

17. The method of claim 2 where the steps are performed in two hours or less.

18. A real time method for predicting future haze formation in a group I base stock selected from Heavy Neutrals and Bright base stock, at least comprising the followings four steps:

(i) diluting a sample of the base stock in a solvent comprising a 10:90 to 90:10 blend of methyl ethyl ketone and methyl isobutyl ketone at a base stock to solvent ratio of 1:1-5;

(ii) subjecting the test sample to a temperature ramp that at least comprises at least the following steps in the following order –

(a) a pre-heating step, where the test sample is first heated for a time and to a temperature sufficient to melt crystallized wax already present in the test sample in order to obtain a light scattering measurement to serve as a baseline;

(b) a cooling step whereby the test sample is cooled to, and held at, a target temperature that is below 0°C and above the base stock's cloud point, for a period ranging from 5 to 60 minutes, in order to crystallize high melting wax components in the base stock, and

(c) a second heating step whereby the test sample heated at a rate ranging from 0.1 to 1°C per minute to temperature that is at least above 0°C, in order to measure temperature at which the crystallized wax has fully melted back into solution (i.e., the haze disappearance temperature);

(iii) monitoring the crystallization and melting of wax, during the course of the cooling and heating temperature ramp, by measuring changes in light scattering that correspond to the formation and melting of wax crystals in the test sample; and

(iv) utilizing a haze disappearance temperature as an indicator of long term haze potential, wherein a haze disappearance temperature greater than ~~0oC~~ 0°C is an indicator that the base stock has an unacceptable risk of forming long term haze.

19. The method of claim 18 where the base stock is a Heavy Neutral, where the methyl ethyl ketone to methyl isobutyl ketone weight ratio ranges from 20-80:80-20 and the weight ratio of base stock to solvent ranges from 1:2-4.

20. The method of claim 18 where the base stock is a Heavy Neutral, where the methyl ethyl ketone to methyl isobutyl ketone weight ratio is approximately 50:50 and the weight ratio of base stock to solvent is approximately 1:3.2.

21. The method of claim 18 where the base stock is a Bright base stock, where the weight ratio of methyl ethyl ketone to methyl isobutyl ketone ranges from 20-40 to 80:60 and where the weight ratio of base stock to solvent ranges from 1:1-3.

22. The method of claim 18 where the base stock is a Bright base stock, where the weight ratio of methyl ethyl ketone to methyl isobutyl ketone is approximately 30:70 and where the weight ratio of base stock to solvent is approximately 1:2.