CLAIMS

1. A trunk piston marine engine lubricating oil composition of TBN in the range of 20 to 60, such as, 30 to 55, for improving asphaltene handling in use thereof, in operation of the engine when fuelled by a heavy fuel oil, which composition comprises or is made by admixing an oil of lubricating viscosity, in a major amount, containing 50 mass % or more of a Group 1 basestock, and, in respective minor amounts:

   (A) an overbased calcium alkyl salicylate detergent providing 40 to 90, such as, 50 to 85, mmol of calcium alkyl salicylate per kg of the composition, as determined by titration; and

   (B) 0.1 to 10, such as 0.1 to less than 2.0, for example 0.1 to 1.5, mass % active ingredient, based on the mass of the composition, of an oil-soluble linear (straight chain) alkyl-substituted phenol.

2. The composition as claimed in claim 1 wherein (A) provides 50 to 80, such as 50 to 70, mmol of calcium alkyl salicylate per kg of the composition.

3. The composition as claimed in claim 1 or 2 wherein the alkyl substitution in (B) is monosubstitution by way of a straight chain alkyl group having 9 to 30 carbon atoms.

4. The composition as claimed in any of claims 1 to 3 wherein (B) is an alkylbenzenol.

5. The composition as claimed in claim 4 wherein alkyl-substitution in the benzenol is in the 2-position or in the 4-position.

6. The composition as claimed in any of claims 1 to 5 wherein (B) is present in the range of 0.1, or of 0.25, to less than 0.5 mass % of the mass of the composition.

7. The composition as claimed in any of claims 1 to 5 wherein (B) is present in the range of 0.2, or of 0.25, to 5, or to 10, mass % of the mass of the composition.

8. The composition as claimed in any of claims 1 to 7 wherein (A) is C_9 to C_{30} alkyl-substitued.

9. The composition as claimed in any of claims 1 to 8 having a TBN in the range of 40 to 55, or 35 to 50.

10. The composition as claimed in any of claims 1 to 9 having a TBN of 45 to 55 when (A) provides up to 80 mmol of calcium alkyl salicylate per kg of the composition.

11. The composition as claimed in any of claims 1 to 9 having a TBN from 30 to less than 45 when (A) provides up to 70 mmol of calcium alkyl salicylate per kg of the composition.

12. The composition as claimed in any of claims 1 to 11 with a heavy fuel oil content.

13. A method of operating a trunk piston medium-speed compression-ignited marine engine comprising

(i) fueling the engine with a heavy fuel oil; and

(ii) lubricating the crankcase of the engine with a composition as defined in any of claims 1 to 12.

14. A method of dispersing asphaltenes in a trunk piston marine lubricating oil composition during its lubrication of surfaces of the combustion chamber of a medium-speed compression-ignited marine engine and operation of the engine, which method comprises

(i) providing a composition as defined in any of claims 1 to 12:

(ii) providing the composition in the combustion chamber;

(iii) providing heavy fuel oil in the combustion chamber; and

(v) combusting the heavy fuel oil in the combustion chamber.

15. The use of detergent(s) (A) in combination with component (B) as defined in and in the amounts stated in any of claims 1 to 12 in a trunk piston marine lubricating oil composition of TBN in the range of 20 to 60, such as, 30 to 55, for a medium-speed compression-ignited marine engine, which composition comprises an oil of lubricating viscosity in a major amount and contains 50 mass % or more of a Group 1 basestock, to improve asphaltene handling during operation of the engine, fueled by a heavy fuel oil, and its lubrication by the composition.

CLAIMS

1. A trunk piston marine engine lubricating oil composition of TBN in the range of 20 to 60, such as, 30 to 55, for improving asphaltene handling in use thereof, in operation of the engine when fuelled by a heavy fuel oil, which composition comprises or is made by admixing an oil of lubricating viscosity, in a major amount, containing 50 mass % or more of a Group 1 basestock, and, in respective minor amounts:

   (A) an overbased calcium alkyl salicylate detergent providing 40 to 70 mmol of calcium alkyl salicylate per kg of the composition, as determined by titration; and

   (B) 0.1 to 5 mass % active ingredient based on the mass of the composition, of an oil-soluble linear (straight chain) alkyl-substituted phenol.

2. The composition as claimed in claim 1 wherein (A) provides 50 to 80, such as 50 to 70, mmol of calcium alkyl salicylate per kg of the composition.

3. The composition as claimed in claim 1 or 2 wherein the alkyl substitution in (B) is monosubstitution by way of a straight chain alkyl group having 9 to 30 carbon atoms.

4. The composition as claimed in any of claims 1 to 3 wherein (B) is an alkylbenzenol.

5. The composition as claimed in claim 4 wherein alkyl-substitution in the benzenol is in the 2-position or in the 4-position.

6. The composition as claimed in any of claims 1 to 5 wherein (B) is present in the range of 0.1, or of 0.25, to less than 0.5 mass % of the mass of the composition.

7. The composition as claimed in any of claims 1 to 5 wherein (B) is present in the range of 0.2, or of 0.25, to 5, or to 10, mass % of the mass of the composition.

8. The composition as claimed in any of claims 1 to 7 wherein (A) is C_9 to C_{30} alkyl-substitued.

9. The composition as claimed in any of claims 1 to 8 having a TBN in the range of 40 to 55, or 35 to 50.

10. The composition as claimed in any of claims 1 to 9 having a TBN of 45 to 55 when (A) provides up to 80 mmol of calcium alkyl salicylate per kg of the composition.

11. The composition as claimed in any of claims 1 to 9 having a TBN from 30 to less than 45 when (A) provides up to 70 mmol of calcium alkyl salicylate per kg of the composition.

12. The composition as claimed in any of claims 1 to 11 with a heavy fuel oil content.

13. A method of operating a trunk piston medium-speed compression-ignited marine engine comprising

(i) fueling the engine with a heavy fuel oil; and

(ii) lubricating the crankcase of the engine with a composition as defined in any of claims 1 to 12.

14. A method of dispersing asphaltenes in a trunk piston marine lubricating oil composition during its lubrication of surfaces of the combustion chamber of a medium-speed compression-ignited marine engine and operation of the engine, which method comprises

(i) providing a composition as defined in any of claims 1 to 12:

(ii) providing the composition in the combustion chamber;

(iii) providing heavy fuel oil in the combustion chamber; and

(v) combusting the heavy fuel oil in the combustion chamber.

15. The use of detergent(s) (A) in combination with component (B) as defined in and in the amounts stated in any of claims 1 to 12 in a trunk piston marine lubricating oil composition of TBN in the range of 20 to 60, such as, 30 to 55, for a medium-speed compression-ignited marine engine, which composition comprises an oil of lubricating viscosity in a major amount and contains 50 mass % or more of a Group 1 basestock, to improve asphaltene handling during operation of the engine, fueled by a heavy fuel oil, and its lubrication by the composition.