Claims

1. A method of demulsifying a hydrocarbon emulsion, the method comprising adding an additive composition to the hydrocarbon emulsion, wherein the additive composition comprises (i) one or more alkoxylated amine compounds and (ii) one or more non-alkoxylated aldehyde-alkylphenol copolymers.

2. The use of an additive composition to demulsify a hydrocarbon emulsion, wherein the additive composition comprises (i) one or more alkoxylated amine compounds and (ii) one or more non-alkoxylated aldehyde-alkylphenol copolymers.

3. A method of improving the demulsification of a hydrocarbon emulsion, the method comprising adding an additive composition to the hydrocarbon emulsion, wherein the additive composition comprises (i) one or more alkoxylated amine compounds and (ii) one or more non-alkoxylated aldehyde-alkylphenol copolymers.

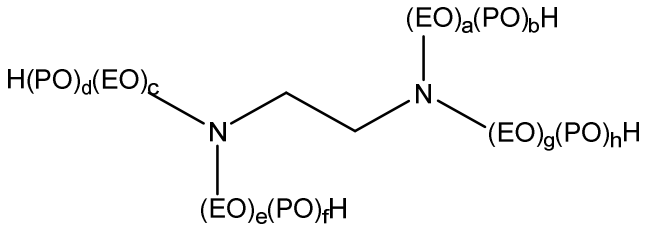
4. The use of an additive composition to improve the demulsification of a hydrocarbon emulsion, wherein the additive composition comprises (i) one or more alkoxylated amine compounds and (ii) one or more non-alkoxylated aldehyde-alkylphenol copolymers.

5. A method of improving the demulsification action of one or more alkoxylated amine compounds in a hydrocarbon emulsion, the method comprising admixing the one or more alkoxylated amine compounds with one or more non-alkoxylated aldehyde-alkylphenol copolymers to provide an additive composition, and adding the additive composition to the hydrocarbon emulsion.

6. The use of one or more non-alkoxylated aldehyde-alkylphenol copolymers to improve the demulsification action of one or more alkoxylated amine compounds in a hydrocarbon emulsion.

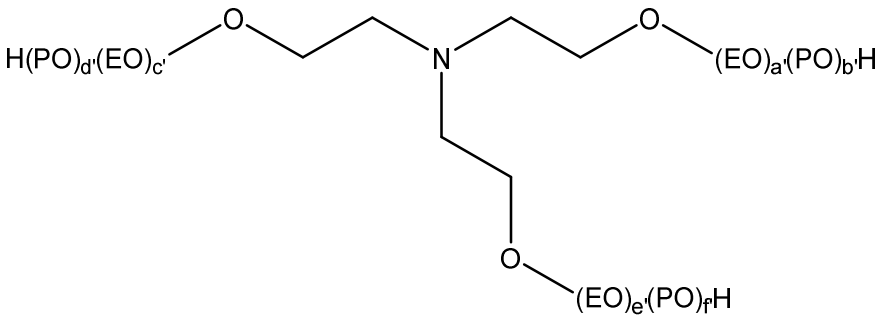
7. A method or use according to any preceding claim, wherein the one or more alkoxylated amine compounds are independently selected from one or more of an alkoxylated monoamine and one or more of an alkoxylated polyamine, and/or wherein the one or more alkoxylated amine compounds each comprise one or more alkylene oxide residues independently selected from ethylene oxide residues, propylene oxide residues and butylene oxide residues.

8. A method or use according to any preceding claim, wherein the one or more alkoxylated amine compounds are selected from one or more compounds of formula (IA):



(IA)

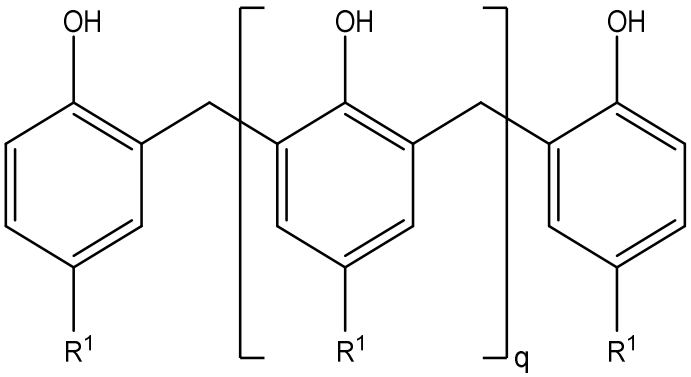
wherein EO represents an ethylene oxide residue, PO represents a propylene oxide residue and at least one of a, b, c, d, e, f, g and h is not 0, and/or wherein the one or more alkoxylated amine compounds are selected from one or more compounds of formula (IB):



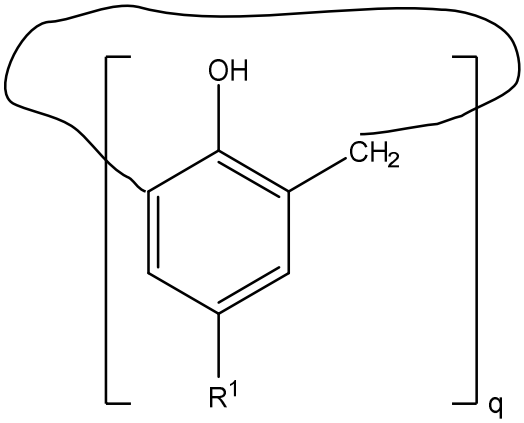
(IB)

wherein EO represents an ethylene oxide residue, PO represents a propylene oxide residue and at least one of a', b', c', d', e', and f' is not 0.

9. A method or use according to any preceding claim, wherein the one or more non-alkoxylated aldehyde-alkylphenol copolymers are selected from one or more copolymers of formaldehyde and an alkylphenol, and/or wherein the one or more non-alkoxylated aldehyde-alkylphenol copolymers are selected from one or more compounds of formula (II) or (III):



(II)



(III)

wherein each R^1 independently represents hydrogen or a hydrocarbyl group and q is at least 2.

10. A method or use according to any of claims 1 to 5 and 7 to 9, wherein the additive composition further comprises a solvent, for example one or more solvents selected from an aromatic hydrocarbon, a light or heavy aromatic naphtha, an aliphatic hydrocarbon, a long-chain paraffin, a heterocyclic compound with high boiling point and combinations thereof.

11. A method or use according to any of claims 1 to 5 and 7 to 10, wherein the additive composition further comprises an additional additive selected from one or more of a conductivity improver, a combustion improver, an asphaltene dispersant, a fuel antioxidant, a cold flow improver, a wax anti-setting agent, a biofuel instability inhibitor, a blended fuel separation inhibitor, a detergent, a dispersant and combinations thereof.

12. A method or use according to any of claims 1 to 5 and 7 to 11, wherein the additive composition comprises from 5 to 45 wt% of the one or more alkoxylated amine compounds and from 5 to 45 wt% of the one or more non-alkoxylated aldehyde-alkylphenol copolymers.

13. A method or use according to any of claims 1 to 5 and 7 to 12, wherein the additive composition is added to the hydrocarbon emulsion at a concentration of from 0.1 ppm to 10000 ppm, for example from 1 ppm to 5000 ppm, or from 10 ppm to 1000 ppm.

14. A method or use according to any preceding claim, wherein the hydrocarbon is selected from a residual fuel oil, a distillate fuel oil, a bio-derived fuel oil, a cracked process stream, a synthetic fuel, a gas oil and a plastic pyrolysis oil.

15. A method or use according to any preceding claim, wherein the hydrocarbon emulsion comprises an aqueous component; wherein the aqueous component is present at less than

80 vol%, for example less than 60 vol%, or less than 40 vol%, suitably less than 30%, or less than 20 vol%, preferably wherein the aqueous component is selected from one or more of fresh water, waste-water, sour-water, brine, and saline solution.