Claims

1. An emulsifier comprising:

    60-90wt% of at least one C8 to C18 fatty acid diethanolamide;

    2-10wt% of at least one C12 to C24 fatty acid; and

    5-20wt% of at least one C6 to C18 alcohol ethoxylate;

wherein said emulsifier does not comprise naphtha.

2. An emulsion comprising:

    a fuel comprising at least one of diesel, low sulphur diesel, biodiesel and heavy fuel oil;

    less than or equal to 30wt% water; and

    from 0.5 to 15wt% of the emulsifier of Claim 1.

3. A nanoemulsion comprising:

    a fuel comprising at least one of diesel, low sulphur diesel and heavy fuel oil, wherein the fuel does not contain any bio-components;

    less than or equal to 20wt% water; and

    the emulsifier as claimed in Claim 1, wherein the emulsifier:water volume ratio is from 1.5:1 to 1:2.9.

4. The emulsifier of claim 1 further comprising 10-40wt% of at least one sorbitan ester.

5. The emulsifier of claim 4 comprising:

    50-75 wt% of at least one C_8 to C_{18} fatty acid diethanolamide;

    2-10 wt% of at least one C_{12} to C_{24} fatty acid;

    5-20 wt% of at least one C_6 to C_{18} alcohol ethoxylate; and

    10-40 wt% of at least one sorbitan ester;

    wherein said emulsifier does not comprise naphtha.

6. A nanoemulsion comprising:

a fuel comprising at least one of diesel, low sulphur diesel, biodiesel and heavy fuel oil, wherein the fuel comprises bio-components;

less than or equal to 20wt% water; and

the emulsifier as claimed in Claim 4 or claim 5.

7. The nanoemulsion of claim 6 wherein the emulsifier:water volume ratio is from 1.5:1 to 1:2.9.

8. A scavenger solution comprising

i. 10-40% emulsifier of any one of claims 1, 4 or 5; and

ii. 60-90% alkylene glycol monoalkyl ether.

9. The scavenger solution of claim 8 comprising:

10-25wt% of at least one C_8 to C_{18} fatty acid diethanolamide;

0.2-3wt% of at least one C_{12} to C_{24} fatty acid;

1-4wt% of at least one C_6 to C_{18} alcohol ethoxylate; and

60-90wt% alkylene glycol monoalkyl ether.

10. A formulation comprising:

a fuel comprising at least one of diesel, low sulphur diesel, biodiesel and heavy fuel oil; and

the scavenger solution of Claims 8 or 9 in an amount of 0.03 to 0.2% by volume.

11. An emulsifier as claimed in any one of claims 1, 4 or 5 or the scavenger solution as claimed in claims 8 or 9 wherein the fatty acid ethanolamide is derived from a natural source.

12. An emulsifier as claimed in any one of claims 1, 4, 5 or 11 or the scavenger solution as claimed in claims 8, 9 or 11, wherein the fatty acid is a monounsaturated fatty acid and preferably a C_{14-20} monounsaturated fatty acid.

13. An emulsifier as claimed in any one of claims 1, 4, 5, 12 or 13 or the scavenger solution as claimed in claims 8, 9, 11 or 12, wherein the alcohol ethoxylate has a HLB in the range of from 9 to 12.

14. A method of making a nanoemulsion according to claims 3, 6 or 7; or a formulation according to claim 10, comprising emulsifying a mixture of the fuel, water and the emulsifier using ultrasonic emulsification.