Claims

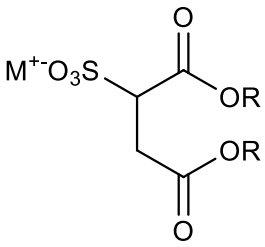
1. A method of reducing the viscosity of a crude oil having a basic sediment and water (BS&W) content of less than 10% by volume, the method comprising adding to the crude oil (i) a surfactant compound including at least two hydrophobic groups wherein the resultant mixture has a water content of less than 10 vol%.

2. A method according to claim 1 wherein the crude oil is a heavy crude oil.

3. A method according to claims 1 and 2 wherein the crude oil has an API gravity of less than 20 and a BS&W of less than 2%.

4. A method according to any preceding claim wherein component (i) is selected from sulfonated and/or carboxylated di and/or triesters of polycarboxylic acids; and dialkyl and/or trialkyl ammonium salts.

5. A method according to any preceding claim wherein the surfactant compound is a sulfosuccinate ester of formula (I):



(I)

wherein each R is an optionally substituted hydrocarbyl group and M^+ is a hydrogen ion, an ammonium ion or a metal ion, preferably an ammonium ion or a metal ion.

6. A method according to claim 5 wherein M^+ is sodium and each R is 2-ethylhexyl.

7. A method according to any preceding claim which includes adding one or more further components selected from:
   (ii) oxyalkylated phenolic resins;
   (iii) polyoxyalkylene ethers;
   (iv) aryl sulfonic acid compounds;
   (v) alkoxylated amines;
   (vi) polyol esters;
   (vii) polysulfones; and
   (viii) conductivity improvers.

8. A method according to claim 7 wherein component (ii) and component (iii) are added.

9. A crude oil composition comprising:

(i) a sulfosuccinate ester; and

optionally one or more further components selected from

(ii) oxyalkylated phenolic resins;

(iii) polyoxyalkylene ethers;

(iv) aryl sulfonic acid compounds;

(v) alkoxylated amines;

(vi) polyol esters;

(vii) polysulfones; and

(viii) conductivity improvers

wherein the composition has a water content of less than 10 vol%.

10. A composition according to claim 9 obtained by the method of any of claims 1 to 8.

11. A composition according to claim 9 or claim 10 which comprises:

from 10 to 200 ppm of (i) a sulfosuccinate ester;

from 5 to 100 ppm of (ii) an oxyalkylated phenolic resin; and

from 5 to 100 ppm of (iii) a polyoxyalkylene ether;

wherein the composition comprises less than 2 vol% water.

12. The use of a surfactant compound including at least two hydrophobic groups to reduce the viscosity of a crude oil composition having a basic sediment and water (BS&W) content of less than 10% by volume.

13. A method, composition or use according to any of claims 1 to 12 wherein the viscosity of the additised fuel is less than 90% of the viscosity of the unadditised fuel.

14. A method, composition or use according to any of claims 1 to 13 wherein one or more further additional components selected from: biocides, scale inhibitors, corrosion inhibitors, oxygen scavengers, hydrogen sulfide scavengers are added to the crude oil and/or additive composition.