Claims

1. An oil-in-water emulsion for use as a fuel comprising an oil phase and an aqueous phase; at least one primary surfactant selected from one or more from the group consisting of fatty alkyl amines, ethoxylated fatty alkylamines, ethoxylated fatty alkyl monoamines, methylated fatty alkyl monoamines, methylated fatty alkyl amines, and quaternary fatty alkyl amines; greater than 0.3 and up to 2.0 wt% of secondary surfactant which secondary surfactant is selected from one or more lignin amines; and an acid; wherein the oil phase is dispersed in the aqueous phase, and wherein the oil-in-water emulsion has the following characteristics:
   - an average droplet size (D[4,3]) in the range of from 3 to 15 µm, wherein the average droplet size is expressed as the Volume Moment Mean and is measured using light scattering techniques;
   - less than 3wt% of the droplets have a particle size of greater than 125 µm, wherein droplet size is measured using light scattering techniques; and
   - a viscosity of greater than 100 and up to 700 mPas at 50 °C ±10% and 20 s^{-1} ±10%, wherein viscosity is measured as disclosed in the description.

2. The oil-in-water emulsion according to claim 1, comprising from 0.05 to 0.6 wt% primary surfactant.

3. The oil-in-water emulsion according to any preceding claim, comprising in the range of from greater than 0.3 and up to 0.7 wt% secondary surfactant.

4. The oil-in-water emulsion according to any preceding claim, in which the oil of the oil-phase is a hydrocarbon-containing oil having a viscosity of up to 300 000 cSt at 100 °C.

5. The oil-in-water emulsion according to any preceding claim, in which the oil of the oil-phase is a hydrocarbon-containing oil having a viscosity of at least 200 cSt at 100°C.

6. The oil-in-water emulsion according to any preceding claim, in which the oil of the oil-phase is a hydrocarbon residue derived from one or more of; processed heavy crude oil or natural bitumen; refinery atmospheric distillation; refinery vacuum distillation; refinery visbreaking, thermal cracking or steam cracking; refinery cat-cracking; refinery hydro-processing and hydrocracking; and de-asphalting processes.

7. The oil-in-water emulsion according to any preceding claim, in which the hydrocarbon is a hydrocarbon residue selected from those having Chemical Abstracts Service (CAS) Registry Numbers 8052-42-4, 64741-45-3, 64741-56-6, 64741-67-9, 64741-75-9, 64741-80-6, 64742-07-0, 64742-78-5, 64742-85-4, 68748-13-7, 68783-13-1, 70913-85-8, 91995-23-2 or 92062-05-0.

8. The oil-in-water emulsion according to any of claims 1 to 7, additionally comprising one or more polymeric stabilisers, at least one of which is selected from the group consisting of alkyl hydroxyalkyl cellulose ethers, guar gum, starch and starch derivatives, hydroxyethyl cellulose and ethyl hydroxyl ethyl cellulose.

9. The oil-in-water emulsion according to claim 8, comprising up to 0.25wt% polymeric stabiliser; or comprising 0.03 to 0.08wt% polymeric stabiliser.

10. The oil-in-water emulsion according to any preceding claim, comprising one or more organic acids.

11. The oil-in-water emulsion according to claim 10, in which at least one organic acid is selected from methanesulfonic acid and formic acid.

12. A marine fuel composition comprising or consisting of the oil-in-water emulsion of any preceding claim.

13. A process for preparing an oil-in-water emulsion as defined in any one of claims 1 to 11, comprising preparing an aqueous phase comprising a primary surfactant, heating a hydrocarbon-containing oil-phase, blending the hydrocarbon-containing oil and the aqueous phase under conditions sufficient to form an oil-in-water emulsion.