Gear lubricant composition

The present invention relates to gear lubricant compositions. Said compositions according to the invention are biodegradable, do not bioaccumulate in organisms and do not represent toxicity to the environment, especially the aquatic environment.

Since December 2013, US regulations have been amended to require all vessels operating in US waters to use Environmentally Acceptable Lubricant (EAL) products, and since 1992 in Europe, an Ecolabel has been used to identify products that respect the environment in the field of lubricants. The components of these products may be derived from the LuSC list (Lubricant Substance Classification) and meet, in particular, the strict requirements of biodegradability, bioaccumulation and aquatic toxicity. Ecolabel lubricants are considered to be lubricants that meet the environmental specifications of EAL lubricants.

These Ecolabel or EAL lubricants are used in equipment that may have interfaces and/or contacts with a user, with air and/or with water. This applies, in particular, to gear lubricant compositions which may be in direct contact with water and/or air and/or with humans and/or any other contact requiring biodegradable non-toxic products.

In addition, gear lubricant compositions for industrial or marine use must meet very specific performance specifications, particularly in terms of tribological performance and seal compatibility.

There is therefore an interest in providing biodegradable lubricant compositions, not exhibiting bioaccumulation in organisms, exhibiting no toxicity for the environment, more particularly the aquatic environment, and satisfying to all the specific tests for gear lubricant compositions.

Summary

In one aspect, the present disclosure refers to use of a composition comprising: - 97 to 99.9% by weight of a trimethylolpropane triester, wherein the trimethylolpropane triester is a branched C14-C20 saturated or unsaturated fatty acid or saturated fatty acid ester; and - 0.1 to 3% by weight of at least one additive chosen from among anti-wear additives, extreme pressure additives, antioxidants, anticorrosive additives, metal deactivator additives, defoamers, and mixtures thereof, for the lubrication of gears or equipment comprising gears, in particular the stern tube.

In another aspect, the present disclosure refers to method of lubricating gearing or equipment comprising gearing, in particular the stern tube, comprising the implementation of the composition as disclosed herein.

CLAIMS

1. Use of a composition comprising:

- 97 to 99.9% by weight of a trimethylolpropane triester, wherein the trimethylolpropane triester is a branched C14-C20 saturated or unsaturated fatty acid or saturated fatty acid ester; and
- 0.1 to 3% by weight of at least one additive chosen from among anti-wear additives, extreme pressure additives, antioxidants, anticorrosive additives, metal deactivator additives, defoamers, and mixtures thereof,

for the lubrication of gears or equipment comprising gears, in particular the stern tube.

2. Use according to claim 1, wherein the trimethylolpropane triester is a branched C16-C20 saturated fatty acid ester, for example C18.

3. Use according to claim 2, wherein the trimethylolpropane triester is trimethylolpropane isostearate.

4. Use according to any one of claims 1 to 3, wherein the composition comprises:

- 0.1 to 1% by weight of an anti-wear additive phosphate of amine; and
- 0.1 to 1% by weight of a phenolic antioxidant additive.

5. Use according to claim 4 wherein the amine phosphate is selected from amine alkyl phosphate.

6. Use according to any one of claims 1 to 5, wherein the equipment comprising gearing is the stern tube.

7. Method of lubricating gearing or equipment comprising gearing, in particular the stern tube, comprising the implementation of the composition as described according to one of claims 1 to 5.