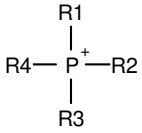
CLAIMS

1. Phosphonium-based ionic liquid compound of formula (I)

$$[CAT^+]\ [X^-] \quad (I)$$

wherein

$[CAT^+]$ is selected from cations of formula (IA):

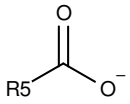


(IA)

wherein:

- R1, R2, R3 and R4 are linear or branched, saturated or unsaturated hydrocarbyl groups comprising from 1 to 12 carbon atoms,
- at least one of R1, R2, R3, R4 is selected from a C1-C3 linear or branched alkyl or alkenyl group, and
- at least two of R1, R2, R3, R4 are independently selected from C8-C12 linear or branched alkyl or alkenyl groups; and

$[X^-]$ represents a counterion selected from compounds of formula (IB):



(IB)

wherein R5 is selected from linear or branched alkyl and alkenyl groups comprising from 5 to 7 atoms of carbon.

2. The phosphonium-based ionic liquid according to claim 1, wherein in formula (IA)

- R1 is selected from a C1-C3 linear or branched alkyl or alkenyl group, ~~preferably alkyl group~~, and
- R2, R3, R4 are independently selected from C8-C12 linear or branched alkyl or alkenyl groups~~, preferably alkyl groups~~.

3. The phosphonium-based ionic liquid according to claim 2, wherein in formula (IA) R1 = -CH_3; and R2 = R3 = R4 = CH_3–$(CH_2)_p$-, with p = 6-8.

4. The phosphonium-based ionic liquid according to anyone of claims 1 to 3, wherein [X^-] represents 2-ethylhexanoate.

5. The phosphonium-based ionic liquid according to anyone of claims 1 to 4 wherein [CAT^+] is tri-n-octyl methylphosphonium and [X^-] is 2-ethylhexanoate.

6. A lubricant composition comprising:

- from 30.0 to 99.95 % of at least one base oil,
- from 0.05 to 15.0 % of at least one phosphonium-based ionic liquid as defined in claims 1 to 5,

the percentages being defined by weight of component as compared to the total weight of the composition.

7. The lubricant composition of claim 6, wherein it comprises at least one detergent selected from neutral and overbased detergents, other than the ionic liquid, having a Total Base Number according to ASTM D2896 of from 20 to 450 mg KOH/g.

8. The lubricant composition of claim 7, wherein it comprises from 1 to 35% by weight of neutral and overbased detergents, other than the ionic liquid, with regards to the total weight of the lubricant composition.

9. The lubricant composition according to any one of claim 6 to claim 8, wherein the percentage by weight of phosphonium-based ionic liquid relative to the total weight of lubricant composition is chosen such that the BN provided by the phosphonium-based ionic liquid represents at least 3% of the total BN of said lubricant composition.

10. The lubricant composition according to any one of claim 6 to claim 9, which has a Total Base Number (TBN) value according to ASTM D2896 of above 5 mg KOH/g.

11. The lubricant composition according to any one of claim 6 to claim 10, which has a kinematic viscosity at 100°C superior or equal to 5.6 mm^2/s and inferior or equal to 21.9 mm^2/s.

12. Use of the phosphonium-based ionic liquid defined in claims 1 to 5 as detergent in a lubricant composition, notably a marine lubricant, to reduce and/or limit and/or prevent and/or delay the formation of deposits or to reduce the deposits already present in the internal parts of a combustion engine.

13. Use of the phosphonium-based ionic liquid according defined in claims 1 to 5 as anti-corrosion additive in a lubricant composition, notably a marine lubricant, to reduce and/or eliminate and or delay the corrosion in the internal parts of a combustion engine.

14. Method for lubricating a two-stroke marine engine and four-stroke marine engines, ~~preferably two-stroke marine engine,~~ said method comprising application to said marine engine the phosphonium-based ionic liquid as defined in claims 1 to 5 or the lubricant composition as defined in claims 6 to 11.

15. Method according to claim 14 wherein the marine engine is a two-stroke marine engine.

~~15~~16. Method to reduce and/or limit and/or prevent and/or delay the formation of deposits and/or to reduce the deposits already present in the internal parts of a combustion engine, wherein said method comprises at least a step of application to said engine of a phosphonium-based ionic liquid as defined in claims 1 to 5 or of a lubricant composition as defined in claims 6 to 11.