What is claimed is:

1. A process to prepare a detergent comprising:

(a) reacting, in the presence of a solvent (typically an oil medium, or a hydrocarbon solvent such as an alkane (typically hexane), or toluene), a mixture of

(i) an acidic detergent substrate, and

(iii) a basic metal compound, and optionally further in the presence of an alcohol;

(b) optionally reacting the product of (a) with carbon dioxide to form an overbased detergent; and

(c) optionally, removing volatiles (typically solvent, water or alcohol) from the product of (a) or (b),

wherein a hydroxycarboxylic acid, or a reactive equivalent thereof, is added to at least one of any required step selected from the group consisting of (a), (b), (c), and mixtures of steps (a) to (c).

2. A process to prepare a detergent comprising:

(a) reacting in the presence of a solvent (typically an oil medium, or a hydrocarbon solvent such as an alkane (typically hexane), or toluene), a mixture of

(i) an acidic detergent substrate, and

(ii) a basic metal compound, and optionally further in the presence of an alcohol;

(b) reacting the product of (a) with carbon dioxide to form an overbased detergent; and

(c) optionally, removing volatiles (typically solvent, water or alcohol) from the product of (a) or (b),

wherein a hydroxycarboxylic acid, or reactive equivalent thereof is added to at least one of step (a), (b), or mixtures thereof of step (a) or (b).

3. A process to prepare a detergent comprising:

(a) reacting in the presence of a solvent (typically an oil medium, or a hydrocarbon solvent such as an alkane (typically hexane), or toluene), a mixture of

(i) an acidic detergent substrate, and

(ii) a basic metal compound, and optionally further in the presence of an alcohol;

(b) reacting the product of (a) with a hydroxy-carboxylic acid, or reactive equivalent thereof, and carbon dioxide to form an overbased detergent; and

(c) optionally, removing volatiles (typically solvent, water or alcohol) from the product of (a) or (b).

4. A process to prepare a detergent comprising:

(a) reacting in the presence of a solvent (typically an oil medium, or a hydrocarbon solvent such as an alkane (typically hexane), or toluene), and optionally further in the presence of an alcohol, a mixture of

(i) a hydroxy-carboxylic acid,

(ii) an acidic detergent substrate, and

(iii) a basic metal compound;

(b) reacting the product of (a) with carbon dioxide to form an overbased detergent; and

(c) optionally, removing volatiles (typically solvent, water or alcohol) from the product of (b).

5. The process of any one of the preceding claims ~~1~~, wherein step (b) is required, resulting in the process preparing an overbased detergent, and wherein the detergent has a TBN of 200 to 600, or 300 to 550, or 350 to 500 mg KOH/g.

~~6. The process of claim 1 where step (b) is not performed, resulting in the process preparing a non-overbased detergent.~~

~~7.~~6. The process of anyone of the preceding claims, wherein the basic metal compoundcomprises a metal that is monovalent, divalent or trivalent andis a hydroxide or oxide of the metal.

~~8. The process of any preceding claim, wherein the basic metal compound comprises a metal that is monovalent, divalent, or trivalent.~~

~~9.~~7. The process of ~~claim 8~~ any one of the preceding claims, wherein the ~~metal~~ basic metal compound comprises a metal that is an alkali metal or alkaline earth metal.

~~10.~~8. The process of ~~any~~ claim ~~8 or 9~~ 7, wherein the metal is lithium, sodium, potassium, magnesium, calcium, barium, or mixtures thereof,

~~11. The process of any claim 8 or 9, wherein the metal is calcium or magnesium.~~

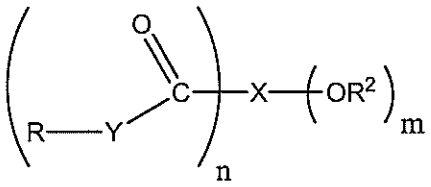
~~12.~~9. The process of any one of the preceding claims, wherein the acidic detergent substrate is a hydrocarbyl-substituted sulphonic acid, a hydrocarbyl-substituted hydroxy-aromatic acid, or mixtures thereof.

~~13. The process of any preceding claim, wherein the acidic detergent substrate is a hydrocarbyl-substituted sulphonic acid or mixtures thereof.~~

~~14.~~10. The process of any one of the preceding claims, wherein the acidic detergent substrate is a hydrocarbyl-substituted organic acid or a hydrocarbyl-substituted phenol.

~~15.~~11. The process of any one of the preceding claims, wherein the hydroxy-carboxylic acid is non-aromatic.

~~16.~~12. The process of any one of the preceding claims, wherein the hydroxy-carboxylic acid is represented by the formula:



wherein

n and m are independently integers of 1 to 5;

X is an aliphatic or alicyclic group, or an aliphatic or alicyclic group containing an oxygen atom in the carbon chain, or a substituted group of the foregoing types, said group containing up to 6 carbon atoms and having n+m available points of attachment;

each Y is independently –O–, >NH, or >NR^1 or two Ys together representing the nitrogen of an imide structure R-N< formed between two carbonyl groups; and

each R and R^1 is independently hydrogen or a hydrocarbyl group,

each R^2 is independently hydrogen, a hydrocarbyl group or an acyl group, further provided that at least one -OR^2 group is located on a carbon atom within X that is α or β to at least one of the -C(O)-Y-R groups, with the proviso that at least one of R and R^2 is hydrogen (typically all R and R^2s are hydrogen).

~~17.~~13. The process of any one of the preceding claims, wherein the hydroxy-carboxylic acid is tartaric acid, malic acid, citric acid, glycolic acid, or mixtures thereof.

~~18. The process of any preceding claim, wherein the hydroxy-carboxylic acid is tartaric acid, citric acid, or mixtures thereof (typically tartaric acid).~~

~~19.~~14. The process of any ~~preceding~~ one ofclaims 1 to~~15~~ 11, wherein the hydroxy-carboxylic acid is lactic acid, malic acid, or mixtures thereof.

~~20.~~15. The process of any one of the preceding claims, wherein the acidic detergent substrate and the hydroxy-carboxylic acid are present as reactants with a mole ratio of the acidic detergent substrate to the hydroxy-carboxylic acid in the range of 20:1 to 1:2, or 20:1 to 1:1, or 18:1 to 1:1.

~~21.~~16. A product obtained~~/obtainable~~ by the process of any one of the preceding claims~~. 1 to 20.~~

~~22.~~17. A lubricating composition comprising an oil of lubricating viscosity and the product of claim ~~21~~ 16.

~~23.~~18. The lubricating composition of claim ~~22~~ 17, wherein the product is present in the range of 0.01 wt % to 8 wt %, or 0.1 wt % to 6 wt %, or 0.15 wt % to 5 wt %, or 0.2 wt % to 3 wt % of the lubricating composition.

~~24.~~19.A method of lubricating an internal combustion engine comprising supplying to the internal combustion engine a lubricating composition of ~~any preceding~~ claim ~~22~~17~~to 23~~or 18.

~~25.~~20. The method of claim ~~24~~19, wherein theinternal combustion engine has a steel surface on a cylinder bore, cylinder block, or piston ring.

~~26.~~21. The method of claim ~~24~~19, wherein the internal combustion engine has a surface of steel, or an aluminium alloy, or an aluminium composite.

~~27.~~22. Amethod of lubricating a driveline device comprising supplying to the driveline device a lubricating composition of ~~any preceding~~ claim ~~22 to 23~~ 17 or 18.

~~28.~~23. The method of claim ~~27~~22, wherein the driveline device includes a manual transmission that may or may not contain a synchronizer system, or an axle.