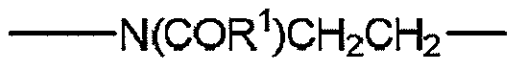
CLAIMS

1. A lubricating composition comprising an oil-soluble poly(2-oxazoline) additive having the repeat unit:



where the number of repeat units (n) is an integer between 4 and 1000, such as between 4 and 500;

where the polymer carries an inorganic or organic nucleophilic polymerisation terminating group (t), and a linear, branched or cyclic hydrocarbyl polymerisation initiator group (i); and

where R^1 comprises a single or a mixture of linear, branched or cyclic hydrocarbyl groups having 1-100 carbon atoms, some or all having 12-100 carbon atoms, or of at least one macro-monomeric hydrocarbyl group with more than 50 carbon atoms;

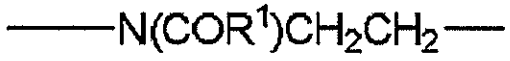
provided that when the polymer is a homopolymer and R^1 lacks any hetero atoms:

(A) (i) has a molecular weight of less than 250g/mol, and R^1 has an average number of carbon atoms of 12 to 50; or

(B) n is greater than 15;

and wherein the hydrocarbyl groups may contain one or more hetero atoms provided they do not affect the essentially hydrocarbyl nature of the group.

2. A lubricating composition comprising an oil-soluble poly(2-oxazoline) additive having the repeat unit:



where the number of repeat units (n) is an integer between 16 and 1000, such as between 16 and 500;

where the polymer carries an inorganic or organic nucleophilic polymerisation terminating group (t), and a linear, branched or cyclic hydrocarbyl polymerisation initiator group (i), provided that (i) is not a polyolefin having a molecular weight of 250g/mol or more

and wherein the hydrocarbyl groups may contain one or more hetero atoms provided they do not affect the essentially hydrocarbyl nature of the group.

3. A lubricating composition of claim 1 or claim 2 where the polymer has a block architecture, R^1 having at least some groups with 12-100 carbon atoms in at least one block, and n being an integer from 10-1000.

4. A lubricating composition according to claim 3 wherein R^1 contains 1 to 75 carbon atoms, provided that some or all of the groups R^1 have 12 to 75 carbon atoms.

5. A lubricating composition according to claim 3 or claim 4 wherein n is between 4 and 400.

6. A lubricating composition of claim 1 or claim 2 where the polymer has a star architecture with three or more arms, and a molecular weight of 10,000 – 500,000, R^1 having at least some groups of 12-100 carbon atoms in at least one arm, and n being an integer from 10-1000.

7. A lubricating composition according to any of claims 1 to 6 in the form of a concentrate of the polymer in an oil.

8. A lubricating composition according to claim 7 wherein the polymer is present in the oil in an amount of between 30 and 50 percent by weight based on the weight of the composition.

9. A lubricating composition according to any of claims 1 to 6 in the form of a lubricating oil composition comprising a major amount of an oil of lubricating oil viscosity and as an additive a minor amount of the polymer.

10. A lubricating composition according to claim 9 wherein the polymer is present in the oil of lubricating viscosity in an amount of 0.01 to 25 percent by weight, based on the weight of the composition of the polymeric material.

11. A lubricating composition according to any of claims 7 to 9 comprising one or more co-additives, different from the polymer additive, selected from one or more dispersants, detergents, anti-oxidants, anti-wear agents, friction modifiers, and viscosity modifiers.

12. A method of lubricating the crankcase of an internal combustion engine comprising operating the engine and lubricating the crankcase with a lubricating oil composition of any of claims 9 to 114.