CLAIMS:

1. An automotive lubricating oil composition for an internal combustion engine comprising, or made by admixing:

(A) an oil of lubricating viscosity in a major amount; and

(B) as an additive component in a minor amount, one or more oil-soluble zinc dithiocarbamates, in the or each of which, each amino group is substituted with an aryl group, and with another aryl group, an aliphatic group or a hydrogen atom,

the composition having not greater than 1600, such as not greater than 1200, such as not greater than 800, such as not greater than 500, ppm by mass of phosphorus, expressed as phosphorus atoms.

2. A composition as claimed in claim 1 where the or each zinc dithiocarbamate is represented by the formula

$$R^1R^2N\text{-}CS\text{-}S\text{-}Zn\text{-}S\text{-}CS\text{-}NR^3R^4$$

where, independently, R^1 and R^3 each represents an aryl group and R^2 and R^4 each represents an aryl group or an alkyl group or a hydrogen atom.

3. A composition as claimed in claim 1 or claim 2 wherein each aryl group is an unsubstituted phenyl group or an alkyl-substituted phenyl group.

4. A composition as claimed in claim 2 wherein each alkyl group, when present, is branched or unbranched and has from 1 to 30 carbon atoms, preferably 3 to 18 carbon atoms.

5. A composition as claimed in any of claims 1 to 3 wherein each hydrocarbyl group, or each R^1, R^2, R^3 and R^4 group, is an aryl group.

6. A composition as claimed in any of claims 1 to 5 wherein the composition has a sulfated ash value of up to 1.0 and a sulfur content of up to 0.4 mass %.

7. A composition as claimed in any of claims 1 to 6 wherein the composition contains other additive components, different from (B), selected from one or more ashless dispersants, metal detergents, corrosion inhibitors, antioxidants, zinc dihydrocarbyl dithiophosphates, pour point depressants, other antiwear agents, friction modifiers, demulsifiers, anti-foam agents and friction modifiers.

8. A method of improving the antiwear properties of a lubricating oil composition without adversely affecting its fluoroelastomer compatibility properties comprising incorporating into the composition, in respective minor amounts, one or more additives (B) as defined in any of claims 1 to 5.

9. A method of lubricating surfaces of the combustion chamber of an internal combustion engine during its operation comprising:

(i) providing in respective minor amounts, one or more additives (B) as defined in any of claims 1 to 5 in a major amount of an oil of lubricating viscosity to make a lubricating oil composition having antiwear properties without adverse fluorelastomer compatibility properties;

(ii) providing the lubricating oil composition in the combustion chamber;

(iii) providing a hydrocarbon fuel in the combustion chamber; and

(iv) combusting the fuel in the combustion chamber.

10. The use of additive (B) as defined in any of claims 1 to 4 to improve the antiwear properties of a lubricating oil composition without adversely affecting its fluoroelastomer compatibility properties.

CLAIMS:

1. An automotive lubricating oil composition for an internal combustion engine comprising, or made by admixing:

(A) an oil of lubricating viscosity in a major amount; and

(B) as an additive component in a minor amount, one or more oil-soluble zinc dithiocarbamates represented by the formula

$$R'R^2N\text{-}CS\text{-}S\text{-}Zn\text{-}S\text{-}CS\text{-}NR^3R^4$$

where, independently, R^1 and R^3 each represents an aryl group and R^2 and R^4 each represents an aryl group or an alkyl group or a hydrogen atom; wherein each alkyl group, when present, is branched or unbranched and has from 1 to 30 carbon atoms, preferably 3 to 18 carbon atoms;

the composition having not greater than 1600, such as not greater than 1200, such as not greater than 800, such as not greater than 500, ppm by mass of phosphorus, expressed as phosphorus atoms.

2. A composition as claimed in claim 1, wherein each aryl group is an unsubstituted phenyl group or an alkyl-substituted phenyl group.

3. A composition as claimed in claim 1 or 2, wherein each hydrocarbyl group, or each R^1, R^2, R^3 and R^4 group, is an aryl group.

4. A composition as claimed in any of claims 1 to 3, wherein the composition has a sulfated ash value of up to 1.0 and a sulfur content of up to 0.4 mass %.

5. A composition as claimed in any of claims 1 to 4, wherein the composition contains other additive components, different from (B), selected from one or more ashless dispersants, metal detergents, corrosion inhibitors, antioxidants, zinc dihydrocarbyl dithiophosphates, pour point depressants, other antiwear

agents, friction modifiers, demulsifiers, anti-foam agents and friction modifiers.

6. A method of improving the antiwear properties of a lubricating oil composition without adversely affecting its fluoroelastomer compatibility properties comprising incorporating into the composition, in respective minor amounts, one or more additives (B) as defined in any of claims 1 to 3.

7. A method of lubricating surfaces of the combustion chamber of an internal combustion engine during its operation comprising:

(i) providing in respective minor amounts, one or more additives (B) as defined in any of claims 1 to 3 in a major amount of an oil of lubricating viscosity to make a lubricating oil composition having antiwear properties without adverse fluorelastomer compatibility properties;

(ii) providing the lubricating oil composition in the combustion chamber;

(iii) providing a hydrocarbon fuel in the combustion chamber; and

(iv) combusting the fuel in the combustion chamber.

8. The use of additive (B) as defined in any of claims 1 to 3 to improve the antiwear properties of a lubricating oil composition without adversely affecting its fluoroelastomer compatibility properties.