[0009] U.S. Patent No. 6,124,247 ("the '247 patent") discloses that dispersants of mono-succinimides or bis-succinimides are even more effective if their relative basic nitrogen content is high, i.e., insofar as the number of nitrogen atoms of the polyamine is larger than the number of succinic anhydride groups substituted by a polyisobutenyl group. However, the higher the basic nitrogen content of these dispersants, the more they favor the attack of the fluoroelastomer seal used in modern engines, because the basic nitrogen tends to reach with the acidic hydrogen atoms of this type of seal, and this attack results in the formation of cracks in the elastomer surface and the loss of other physical properties sought in this type of material. The '247 patent further discloses that by using lubricating oil compositions containing a dispersant of mono-succinimide or bis-succinimide type, post-treated or not, in combination with a borated glycerol ester, one obtains a composition compatible with fluorocarbon elastomers

[0010] Accordingly, it would be desirable to develop lubricating oil compositions which exhibit improved fluorocarbon elastomer seal compatibility.

SUMMARY OF THE DISCLOSURE~~INVENTION~~

[0011] In accordance with one embodiment of the present disclosure~~invention~~, there is provided a method for improving compatibility of a fluorocarbon elastomer seal with a lubricating oil composition comprising (a) a major amount of a base oil of lubricating viscosity; and (b) one or more dispersants containing one or more basic nitrogen atoms, the method comprising adding to the lubricating oil composition an effective amount of one or more fluorocarbon elastomer compatibility improving agents of the general formula $Si\text{-}X_4$ or a hydrolysis product thereof, wherein each X is independently a hydroxyl-

containing group, hydrocarbyloxy-containing group, acyloxy-containing group, amino-containing group, monoalkyl amino-containing group or dialkyl amino-containing group.

[0012] In accordance with a second embodiment of the present disclosure~~invention~~, there is provided a method for maintaining or improving compatibility of a fluorocarbon elastomer seal with a lubricating oil composition in an internal combustion engine which comprises operating the engine with a lubricating oil composition comprising (a) a major amount of a base oil of lubricating viscosity; (b) one or more dispersants containing one or more basic nitrogen atoms; and (c) an effective amount of one or more fluorocarbon elastomer compatibility improving agents of the general formula $Si\text{-}X_4$ or a hydrolysis product thereof, wherein each X is independently a hydroxyl-containing group, hydrocarbyloxy-containing group, acyloxy-containing group, amino-containing group, monoalkyl amino-containing group or dialkyl amino-containing group.

[0013] The method of the present disclosure~~invention~~ advantageously improves compatibility of a fluorocarbon elastomer seal with a lubricating oil composition comprising (a) a major amount of a base oil of lubricating viscosity; and (b) one or more dispersants containing one or more basic nitrogen atoms, by adding to the lubricating oil composition an effective amount of one or more fluorocarbon elastomer compatibility improving agents of the general formula $Si\text{-}X_4$ or a hydrolysis product thereof, wherein each X is independently a hydroxyl-containing group, hydrocarbyloxy-containing group, acyloxy-containing group, amino-containing group, monoalkyl amino-containing group or dialkyl amino-containing group.

[0013a] In one aspect, there is provided the use of one or more fluorocarbon elastomer compatibility improving agents of the general formula $Si\text{-}X_4$ or a hydrolysis product thereof, wherein each X is independently a hydroxyl-containing group, hydrocarbyloxy-containing group, acyloxy-containing group, amino-containing group, monoalkyl amino-containing group or dialkyl amino-containing group in a lubricating oil composition comprising (a) a major amount of a base oil of lubricating viscosity; and (b) one or more dispersants containing one or more basic nitrogen atoms, for the purpose of maintaining or improving compatibility of a fluorocarbon elastomer seal with the lubricating oil composition in an internal combustion engine.