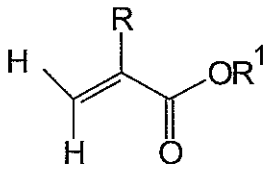
The present disclosure accordingly provides a polyalkyl(meth)acrylate for improvement of lubricant oil properties, comprising repeat units derived from (meth)acrylates having 6 to 22 carbon atoms in the alcohol radical, characterized in that the polyalkyl(meth)acrylate comprises repeat units derived from amine derivatives of a polar ethylenically unsaturated monomer.

In an aspect, there is provided a polyalkyl(meth)acrylate being a graft copolymer, wherein:

a graft base of the graft copolymer comprises:

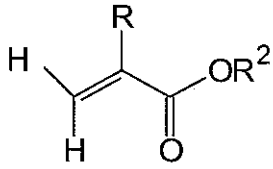
a) from 0 to 40% by weight of a repeat unit derived from a (meth)acrylate of formula (I)



(I)

,

b) from 20 to 99.9% by weight of a repeat unit derived from a (meth)acrylate of formula (II)

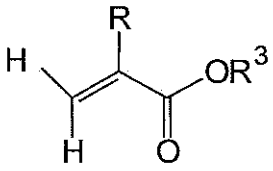


(II)

,

and

c) from 0 to 20% by weight of a repeat unit derived from a (meth)acrylate of formula (III)



(III)

,

wherein each R is independently hydrogen or methyl,

R^1 is an alkyl radical having from 1 to 5 carbon atoms,

R^2 is an alkyl radical having from 6 to 22 carbon atoms, and

R^3 is an alkyl radical having from 23 to 4000 carbon atoms, and

a graft of the graft copolymer comprises

d) from 0.1 to 10% by weight of a repeat unit derived from an amine derivative of a polar ethylenically unsaturated monomer,

wherein the polar ethylenically unsaturated monomer is maleic acid anhydride and the amine derivative is derived from N-phenyl-1,4-phenylenediamine.

In another aspect, there is provided a process for preparing the polyalkyl(meth)acrylate as defined above, the process comprising:

preparing the graft base; subsequently

grafting the polar ethylenically unsaturated monomer onto the graft base, and then reacting the resulting polymer with an amine.

In another aspect, there is provided a lubricant composition comprising the polyalkyl(meth)acrylate as defined above.

In another aspect, there is provided the use of a polyalkyl(meth)acrylate as defined above for reducing friction.

It is thus possible in an unforeseeable manner to provide a polyalkyl(meth)acrylate and a lubricant with an improved profile of properties.

For instance, a lubricant comprising the inventive polyalkyl(meth)acrylates exhibits an improved coefficient of friction. At the same time, the additive has increased

compatibility with conventional additives, especially PIB succinimides, such that the coefficient of friction is not excessively impaired even when these additives are added. In addition, the additive leads to an enhancement of dispersancy, particularly of soot dispersion.

Moreover, the lubricant has an enhanced viscosity index, without any resultant unacceptable impairment of other properties. Relatively small amounts of the present additives, which have a high thickening action, are adequate for a significant rise in the viscosity index.

Furthermore, a reduction in the formation of gray staining (surface fatigue, micro-pitting) or craters (sub-surface fatigue, pitting) can be achieved. A distinction is typically drawn between two groups of faults at metallic