Claims

1. Use of polyalkyl acrylates, comprising:
   (a) 95 to 100% by weight of branched C_{8-10}-alkyl acrylates; and
   (b) 0 to 5% by weight of C_{1-20}-alkyl (meth)acrylates,
   ~~characterized in that~~wherein the weight-average molecular weight is in the range of 7,000 to 25,000 g/mol and the residual monomer content is 0.1% or lower,
   as base oils in lubricant formulations, especially in industrial gear oil formulations.

2. The use according to claim 1, ~~characterized in that~~wherein the polyalkyl acrylates consist of 100% by weight of branched C_{8-10}-alkyl acrylates.

3. The use according to claim 1 or 2, ~~characterized in that~~wherein the C_{8-10}-alkyl acrylate is selected from the group consisting of 2-ethylhexyl acrylate and 2-propylheptyl acrylate.

4. Base oil composition, comprising:
   (A) 70 to 95% by weight of at least one polyalkyl acrylate, comprising:
      (a) 95 to 100% by weight of branched C_{8-10}-alkyl acrylates; and
      (b) 0 to 5% by weight of C_{1-20}-alkyl (meth)acrylates,
      ~~characterized in that~~wherein the weight-average molecular weight is in the range of 7,000 to 25,000 g/mol and the residual monomer content is 0.1% or lower; and
   (B) 5 to 30% by weight of a base oil selected from the group consisting of API Group II oils, API Group III oils, API Group IV oils, and mixtures thereof,
   based on the total weight of the base oil composition.

5. Base oil composition according to claim 4, ~~characterized in that~~wherein the polyalkyl acrylate (A) consists of 100% by weight of branched C_{8-10}-alkyl acrylates.

6. Base oil composition according to claim 4 or 5, ~~characterized in that~~wherein the C_{8-10}-alkyl acrylate is selected from the group consisting of 2-ethylhexyl acrylate and 2-propylheptyl acrylate.

7. Base oil composition according to claim 4 or 5, ~~characterized in that~~wherein the C_{8-10}-alkyl acrylate is ethylhexyl acrylate.

8. Use of a base oil composition according to any one of ~~the preceding~~ claims 4 to 7 as industrial gear oil.

9. Polyalkyl acrylates, comprising:
   (a) 95 to 100% by weight of branched C_{8-10}-alkyl acrylates; and
   (b) 0 to 5% by weight of C_{1-20}-alkyl (meth)acrylates,

~~characterized in that~~wherein the weight-average molecular weight is in the range of 7,000 to 25,000 g/mol and the residual monomer content is 0.1% by weight or lower.

10. Polyalkyl acrylates according to claim 9, consisting of 100% by weight of branched C_{8-10}-alkyl acrylates.

11. Polyalkyl acrylates according to claim 9 or 10, ~~characterized in that~~wherein the C_{8-10}-alkyl acrylate is selected from the group consisting of 2-ethylhexyl acrylate and 2-propylheptyl acrylate.

12. Polyalkyl acrylates according to claim 9 or 10, ~~characterized in that~~wherein the C_{8-10}-alkyl acrylate is ethylhexyl acrylate.

13. Lubricating composition, comprising:

(A) 20 to 60% by weight of at least one polyalkyl acrylate, comprising:

(a) 95 to 100% by weight of branched C_{8-10}-alkyl acrylates; and

(b) 0 to 5% by weight of C_{1-20}-alkyl (meth)acrylates,

based on the total weight of the polyalkyl acrylate,

~~characterized in that~~wherein the weight-average molecular weight is in the range of 7,000 to 25,000 g/mol and the residual monomer content is 0.1% by weight or lower;

(B) 40 to 80% by weight of a base oil selected from the group consisting of API Group II oils, API Group III oils, API Group IV oils, and mixtures thereof; and

(C) 0 to 5% by weight of one or more additives,

based on the total weight of the lubricating composition.

14. Lubricating composition according to claim ~~8~~13, ~~characterized in that~~wherein the one or more further additives (C) are selected from the group consisting of pour point depressants, dispersants, defoamers, detergents, demulsifiers, antioxidants, antiwear additives, extreme pressure additives, friction modifiers, anticorrosion additives, dyes and mixtures thereof.

15. Process for preparing polyalkyl acrylates, comprising:

(a) 95 to 100% by weight of branched C_{8-10}-alkyl acrylates; and

(b) 0 to 5% by weight of C_{1-20}-alkyl (meth)acrylates,

~~characterized in that~~wherein the weight-average molecular weight is in the range of 7,000 to 25,000 g/mol and the residual monomer content is 0.1% by weight or lower, the process comprising the steps of:

(i) charging a reaction vessel with a base oil;

(ii) heating the base oil of step (i) to a reaction temperature of 130°C to 170°C;

(iii) constantly feeding a mixture of branched C_{8-10}-alkyl acrylates and 0.1 to 1.2% of an initiator, based on the amount of branched C_{8-10}-alkyl acrylates, to the reaction vessel over a time of 120 to 240 minutes;

(iv) optionally stirring the reaction mixture obtained under step (iii) for another 50 to 90 minutes; and

(vi) cooling the reaction mixture obtained under step (iv) to an ambient temperature and obtaining the desired polyalkyl acrylate.

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