Claims

1. Polyesters obtained from alpha-epoxides that are derived from alpha-olefins comprising 10 to 16 carbon atoms, or from diols that are derived from that alpha-epoxides, and saturated linear aliphatic dicarboxylic acids selected from the group consisting of azelaic acid (nonanedioic acid), sebacic acid (decanedioic acid), dodecanedioic acid and mixtures thereof, having a number-average molecular weight M_n in the range of 1,000 to 15,000 g/mol, determined by size exclusion chromatography (SEC) using polymethylmethacrylate standards.

2. The polyesters according to claim 1, wherein the alpha-olefin comprises 12 to 14 carbon atoms.

3. The polyesters according to ~~any one of claims 1 to 2~~claim 1 or 2, wherein 30% or less~~, preferably 20% or less, more preferably 10% or less~~ of the terminal functionalities are COOH-functions.

4. The polyesters according to claim 1 or 2, wherein 20% or less of the terminal functionalities are COOH-functions.

5. The polyesters according to claim 1 or 2, wherein 10% or less of the terminal functionalities are COOH-functions.

~~4. The polyesters according to any one of claims 1 to 3, having a number-average molecular weight M_n in the range of 1,000 to 15,000 g/mol, determined by size exclusion chromatography (SEC) using polymethylmethacrylate standards.~~

~~5~~6. The polyesters according to ~~any one of claims 1 to 4~~claim 1 or 2, ~~characterized by~~having a KV100 in the range of 40 to 2000 cSt~~, preferably in the range of 100 to 1500 cSt~~.

7. The polyesters according to claim 1 or 2, having a KV100 in the range of 100 to 1500 cSt.

~~6~~8. The polyesters according to ~~any one of claims 1 to 5~~claim 1 or 2, wherein the molar ratio of carbon to oxygen, calculated by summing up the number of carbon atoms present in the diol and in the diacid monomers and dividing the resulting numbers by four as being the number of oxygen atoms in the resulting diester unit, is in the range of 5:1 to 12:1.

~~7~~9. Use of the polyesters according to any one of claims 1 to ~~6~~8 as base oils in lubricant formulations~~, especially in gear oil formulations~~.

10. Use of the polyesters according to any one of claims 1 to 8 as base oils in gear oil formulations.

~~8~~11. Lubricating composition, comprising:

(A) 20 to 60% by weight of at least one polyester prepared from alpha-epoxides that are derived from alpha-olefins comprising 10 to 16 carbon atoms, or from diols that are derived from that alpha-epoxides, and saturated linear aliphatic diacids selected from the group consisting of azelaic acid (nonanedioic acid), sebacic acid (decanedioic acid), dodecanedioic acid and mixtures thereof, having a number-average molecular weight M_n in the range of 1,000 to 15,000 g/mol, determined by size exclusion chromatography (SEC) using polymethylmethacrylate standards;

(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.

~~9~~12. Lubricating composition according to claim ~~8~~11, wherein the alpha-olefin comprises 12 to 14 carbon atoms.

~~10~~13. Lubricating composition according to claim ~~8 or 9~~11, ~~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.

~~11~~14. Method for preparing the polyesters according to any one of claims 1 to ~~7~~8, the process comprising the steps of:

(a) epoxidizing an alpha-olefin comprising 10 to 16 carbon atoms;

(b1) reacting the alpha-epoxide retrieved under step (a) with a saturated linear aliphatic dicarboxylic acid selected from the group consisting of azelaic acid (nonanedioic acid), sebacic acid (decanedioic acid), dodecanedioic acid and mixtures thereof, or

(b2) transferring the alpha-epoxide retrieved under step (a) to the corresponding diol and reacting the diol with a saturated linear aliphatic dicarboxylic acid selected from the group consisting of azelaic acid (nonanedioic acid), sebacic acid (decanedioic acid), dodecanedioic acid and mixtures thereof; and

(c) isolating the desired polyester.