Claims

1. A method of obtaining aggregates and/or pulverulent mineral material from a starting material comprising hardened mineral binder and aggregates, wherein the method comprises the following steps:

   a) treating the starting material in a disintegration operation, especially under abrasive conditions, wherein the hardened mineral binder is at least partly, especially essentially completely, carbonated and removed from the surface of the aggregates, so as to give a pulverulent disintegration product,

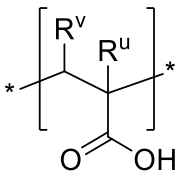
   b) separating off the treated starting material at a predefined grain size limit in order to obtain treated aggregates having a grain size of at least the predefined grain size limit and/or to obtain pulverulent mineral material having a grain size below the predefined grain size limit,

   wherein at least one process auxiliary selected from the group consisting of polycarboxylate ethers and/or esters (**PCE**), glycols, nonionic surfactants, gluconate, and water absorbents in the form of a superabsorbent polymer or in the form of a sheet silicate, is added to the starting material or is added during the disintegration operation a) and/or during the separation b).

2. The method as claimed in claim 1, wherein the at least one process auxiliary is added to the starting material before the disintegration operation a).

3. The method as claimed in at least one of claims 1 – 2, wherein the at least one process auxiliary comprises or consists essentially of at least one polycarboxylate ether and/or polycarboxylate ester (**PCE**), wherein **PCEs** are copolymers comprising

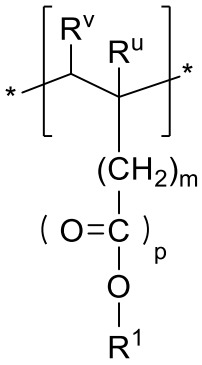
   (i) repeat units **A** of general structure (I),



(I)

   and

   (ii) repeat units **B** of general structure (II),



(II)

where

each R^u is independently hydrogen or a methyl group,

each R^v is independently hydrogen or COOM, where M is independently H, an alkali metal, or an alkaline earth metal,

m = 0, 1, 2 or 3,

p = 0 or 1,

each R^1 is independently $-(CH_2)_z-[YO]_n-R^4$ where Y is a C2- to C4-alkylene and R^4 is a H, C1- to C20-alkyl, -cyclohexyl, -alkylaryl, or a $-N(-R^i)_j-[(CH_2)_z-PO_3M]_{3-j}$, z = 0, 1, 2, 3 or 4, preferably 0 or 4, n = 2 – 350, preferably 10 – 250, more preferably 30 – 200, especially preferably 35 – 200, in particular 40 – 110, j = 0, 1 or 2, Ri is a hydrogen atom or an alkyl group having 1 – 4 carbon atoms, and M is a hydrogen atom, an alkali metal, an alkaline earth metal or an ammonium ion,

and where the repeat units **A** and **B** in the **PCE** have a molar ratio of **A**:**B** in the range of 10:90 – 90:10, preferably 20:80 - 80:20, more preferably 30:70 – 80:20, especially 35:65 – 75:25.

4. The method as claimed in at least one of claims 1-3, wherein a mixture of two or more process auxiliaries is added.

5. The method as claimed in claim 4, wherein the mixture of two or more process auxiliaries is added in the form of a premix, especially of an aqueous solution or dispersion.

6. The method as claimed in at least one of claims 1-4, wherein two or more process auxiliaries are added separately from one another.

7. The method as claimed in at least one of claims 1-6, wherein the carbonation is continued in step a) until a pH of the mixture of 7 – 10, preferably 7 – 9, is attained.

8. The use of aggregates and/or pulverulent mineral material obtained in a method as claimed in at least one of claims 1-7 for production of hydraulic compositions, preferably cement-bound building materials, especially mortar or concrete.

9. A mortar or concrete comprising at least one aggregate and/or pulverulent mineral material obtained in a method as claimed in at least one of claims 1-7.