Claims

1. A method for producing a (meth)acrylic hydrogel comprising steps of

i) Providing a multiple-component composition,

ii) Mixing the constituents contained in the multiple-component composition with water such that in the thus resulting mixture, the weight ratio of the total amount of said at least one water-soluble (meth)acrylic compound to the amount of water is in the range of 0.1:1 to 5:1,

iii) Letting the mixture form (meth)acrylic hydrogel, wherein the multiple-component composition comprises constituents:

a) at least one water-soluble (meth)acrylic compound,

b) at least one free radical initiator,

c) at least one benzoate, and

d) optionally at least one catalyst for free radical formation.

2. The method for producing a (meth)acrylic hydrogel according to claim 1, wherein the content of said at least one water-soluble (meth)acrylic compound is 60.0 – 99.0% by weight, preferably 70.0 – 99.0% by weight, more preferably 75.0 – 99.0% by weight, most preferably 85.0 – 95.0% by weight, based on the total weight of the multiple-component composition excluding the amount of water that may be present.

3. The method for producing a (meth)acrylic hydrogel according to claim 1 or 2, wherein said at least one benzoate is selected from the group consisting of alkali metal, earth alkali metal, ammonium, alkanolamine, and amine salts of benzoic acid, and mixtures thereof.

4. The method for producing a (meth)acrylic hydrogel according to any one of previous claims, wherein the multiple-component composition comprises at least one benzoate selected from the group consisting of sodium benzoate, potassium benzoate, and mixtures thereof.

5. The method for producing a (meth)acrylic hydrogel according to any one of previous claims, wherein the content of said at least one benzoate is 0.05 – 15.0% by weight, preferably 0.5 – 10.0% by weight, more preferably 2.0 – 10.0% by weight, most preferably 5.0 – 10.0% by weight, said proportions being based on the total weight of the multiple-component composition excluding the amount of water that may be present.

6. The method for producing a (meth)acrylic hydrogel according to any one of previous claims, wherein the content of said at least one free radical initiator is 0.05 – 5.0% by weight, more preferably 0.1 – 4.0% by weight, even more preferably 0.1 – 3.0% by weight, most preferably 0.1 – 2.0% by weight, said proportions being based on the total weight of the multiple-component composition excluding the amount of water that may be present.

7. The method for producing a (meth)acrylic hydrogel according to any one of previous claims, wherein the multiple-component composition comprises at least one catalyst for free radical formation, wherein said at least one catalyst is selected from the group consisting of ascorbic acid, sodium formaldehyde sulfoxylates, organic sulfinic acid derivatives and salts thereof, toluidine derivatives, transition metal salts, transition metal complexes, alkylaminoalkyl(meth)acrylamides, alkylaminoalkyl(meth)acrylates, alkanolamines, ethoxylated alkanolamines, inorganic sulfur bearing salts, reducing sugars, and mixtures thereof.

8. The method for producing a (meth)acrylic hydrogel according to claim 7, wherein the content of said at least one catalyst for free radical formation is 0.05 – 7.5% by weight, more preferably 0.1 – 5.0% by weight, even more preferably 0.1 – 3.0% by weight, most preferably 0.5 – 3.0% by weight, said proportions being based on the

total weight of the multiple-component composition excluding the amount of water that may be present.

9. The method for producing a (meth)acrylic hydrogel according to any one of previous claims, wherein the multiple-component composition further comprises at least one alkanolamine selected from the group consisting of monoalkanol, dialkanol, trialkanol amines, and mixtures thereof, wherein said at least one alkanolamine is different from said at least one catalyst for free radical formation.

10. The method for producing a (meth)acrylic hydrogel according to claim 9, wherein the content of said at least one alkanolamine different from said at least one catalyst for free radical formation is 0.05 – 10.0% by weight, more preferably 0.5 – 10.0% by weight, even more preferably 1.0 – 10.0% by weight, most preferably 2.0 – 10.0% by weight, said proportions being based on the total weight of the multiple-component composition excluding the amount of water that may be present.

11. The method for producing a (meth)acrylic hydrogel according to any one of claims 1-6, wherein the multiple-component composition comprises a catalyst for free radical formation, wherein said catalyst for free radical formation is an alkanolamine and wherein the content of said alkanolamine is 0.05 – 17.5% by weight, preferably 0.1 – 12.5% by weight, more preferably 2.0 – 10.0% by weight, most preferably 2.0 – 7.5% by weight, said proportions being based on the total weight of the multiple-component composition excluding the amount of water that may be present.

12. The method for producing a (meth)acrylic hydrogel according to any one of previous claims, wherein the multiple-component composition further comprises at least one phosphate in an amount of 0.05 – 10.0% by weight, more preferably 0.1 – 7.5% by weight, even more preferably 0.1 – 5.0% by weight, most preferably 0.1 – 4.0% by

weight, said proportions being based on the total weight of the multiple-component composition excluding the amount of water that may be present.

13. A (meth)acrylic hydrogel formed from a mixture of water and a multiple-component composition comprising constituents:
    a) at least one water-soluble (meth)acrylic compound,
    b) at least one free radical initiator,
    c) at least one benzoate, and
    d) optionally at least one catalyst for free radical formation.

14. A method for sealing and/or filling of cracks, voids, flaws and cavities in a building structure, the method comprising steps of

i) Providing a multiple-component composition comprising the constituents:
    a) at least one water-soluble (meth)acrylic compound,
    b) at least one free radical initiator,
    c) at least one benzoate, and
    d) optionally at least one catalyst for free radical formation,

ii) Mixing the constituents contained in the multiple-component composition with water such that in the thus resulting mixture, the weight ratio of the total amount of said at least one water-soluble (meth)acrylic compound to the amount of water is in the range of 0.1:1 to 5:1,

iii) Applying the mixture to the site to be sealed/filled in the building structure and letting the mixture to form (meth)acrylic hydrogel.

15. Use of a multiple-component composition in producing a (meth)acrylic hydrogel, the multiple-component composition comprising constituents:
    a) at least one water-soluble (meth)acrylic compound,
    b) at least one free radical initiator,
    c) at least one benzoate, and

d) optionally at least one catalyst for free radical formation.

16. The use according to claim 15, wherein the content of said at least one water-soluble (meth)acrylic compound is 60.0 – 99.0% by weight, preferably 70.0 – 99.0% by weight, more preferably 75.0 – 99.0% by weight, most preferably 85.0 – 95.0% by weight, based on the total weight of the multiple-component composition excluding the amount of water that may be present.

17. The use according to claim 15 or 16, wherein said at least one benzoate is selected from the group consisting of alkali metal, earth alkali metal, ammonium, alkanolamine, and amine salts of benzoic acid, and mixtures thereof, optionally wherein said at least one benzoate is selected from the group consisting of sodium benzoate, potassium benzoate, and mixtures thereof, further optionally wherein the content of said at least one benzoate is 0.05 – 15.0% by weight, preferably 0.5 – 10.0% by weight, more preferably 2.0 – 10.0% by weight, most preferably 5.0 – 10.0% by weight, said proportions being based on the total weight of the multiple-component composition excluding the amount of water that may be present.

18. The use according to any one of previous claims 15-17, wherein the content of said at least one free radical initiator is 0.05 – 5.0% by weight, more preferably 0.1 – 4.0% by weight, even more preferably 0.1 – 3.0% by weight, most preferably 0.1 – 2.0% by weight, said proportions being based on the total weight of the multiple-component composition excluding the amount of water that may be present.

19. The use according to any one of previous claims 15-18, wherein the multiple-component composition comprises at least one catalyst for free radical formation, wherein said at least one catalyst is selected from the group consisting of ascorbic acid, sodium formaldehyde sulfoxylates, organic sulfinic acid derivatives and salts thereof,

toluidine derivatives, transition metal salts, transition metal complexes, alkylaminoalkyl(meth)acrylamides, alkylaminoalkyl(meth)acrylates, alkanolamines, ethoxylated alkanolamines, inorganic sulfur bearing salts, reducing sugars, and mixtures thereof, optionally wherein the content of said at least one catalyst for free radical formation is 0.05 – 7.5% by weight, more preferably 0.1 – 5.0% by weight, even more preferably 0.1 – 3.0% by weight, most preferably 0.5 – 3.0% by weight, said proportions being based on the total weight of the multiple-component composition excluding the amount of water that may be present.

20. The use according to any one of previous claims 15-19, wherein the multiple-component composition further comprises at least one alkanolamine selected from the group consisting of monoalkanol, dialkanol, trialkanol amines, and mixtures thereof, wherein said at least one alkanolamine is different from said at least one catalyst for free radical formation, optionally wherein the content of said at least one alkanolamine different from said at least one catalyst for free radical formation is 0.05 – 10.0% by weight, more preferably 0.5 – 10.0% by weight, even more preferably 1.0 – 10.0% by weight, most preferably 2.0 – 10.0% by weight, said proportions being based on the total weight of the multiple-component composition excluding the amount of water that may be present.

21. The use according to any one of previous claims 15-18, wherein the multiple-component composition comprises a catalyst for free radical formation, wherein said catalyst for free radical formation is an alkanolamine and wherein the content of said alkanolamine is 0.05 – 17.5% by weight, preferably 0.1 – 12.5% by weight, more preferably 2.0 – 10.0% by weight, most preferably 2.0 – 7.5% by weight, said proportions being based on the total weight of the multiple-component composition excluding the amount of water that may be present.

22. The use according to any one of previous claims 15-21, wherein the multiple-component composition further comprises at least one phosphate in an amount of 0.05 – 10.0% by weight, more preferably 0.1 – 7.5% by weight, even more preferably 0.1 – 5.0% by weight, most preferably 0.1 – 4.0% by weight, said proportions being based on the total weight of the multiple-component composition excluding the amount of water that may be present.