

WHAT IS CLAIMED IS:

1. A composite comprising: (a) a cross-linked acrylic polymer and (b) an inorganic aggregate in amount of 5 to 17%, by weight of said composite.
2. The composite of claim 1, wherein said inorganic aggregate is selected from the group consisting of: quartz, quartzite, clay, calcium carbonate, aluminum tri-hydroxide, glass particles, magnesium hydroxide, or any combination thereof.
3. The composite of any one of claims 1 or 2, wherein said inorganic aggregate is present at a concentration of 82% to 95%, by total weight of said composite.
4. The composite of any one of claims 1 to 3, wherein said composite has a CIELAB color shift (ΔE) of less than 3 upon 1000 hours exposure to irradiance of 65 W/m² according to ISO 4892-2.
5. The composite of any one of claims 1 to 4, wherein said composite has a CIELAB b coordinate variation (Δb) of less than 3 upon 1000 hours exposure to irradiance of 65 W/m² according to ISO 4892-2.
6. The composite of any one of claims 1 to 5, wherein at least 80%, by weight, of said inorganic aggregate is in the form of particles having a median diameter ranging from 1 micron (μm) to 4 mm.
7. The composite of any one of claims 1 to 6, wherein 12% to 60%, by weight, of said inorganic aggregate is in the form of particles having a median diameter ranging from 1 to 50 μm .
8. The composite of any one of claims 1 to 7, wherein said acrylic polymer comprises monomeric units selected from acrylate, methacrylate or any derivative thereof.
9. The composite of claim 8, wherein said acrylate is selected from: methacrylate, methyl methacrylate (MMA), 2-ethylhexyl acrylate (2-EHA), 2-ethylhexyl methacrylate, n-butyl acrylate,

n-butyl methacrylate, isobutyl methacrylate, isobornyl acrylate, isobornyl methacrylate, acrylic acid, methacrylic acid and any derivative or combination thereof.

10. The composite of any one of claims 8 and 9, wherein at least 50% of the monomeric units comprise MMA, 2-EHA or both.

11. The composite of any one of claims 8 to 10, comprising MMA and 2-EHA at a weight ratio ranging from 6:1 to 2:1, respectively.

12. The composite of any one of claims 1 to 11, wherein said cross-linked acrylic polymer comprises a cross-linker selected from the group consisting of: triethylene glycol diacrylate, trimethylolpropane triacrylate (TMPTA), trimethylolpropane trimethacrylate (TMPTMA), pentaerythritol tetraacrylate, dipentaerithritol hexaacrylate, dendritic acrylates, and methacrylates having at least two functional groups, or any derivative or combination thereof.

13. The composite of any one of claims 1 to 12, further comprising a toughener.

14. The composite of claim 13, wherein said toughener is selected from the group consisting of: urethane mono acrylate, urethane diacrylate, urethane triacrylate, or any combination thereof.

15. The composite of any one of claims 13 or 14, wherein said toughener is present at a concentration of 0.5% to 15%, by weight of said cross-linked polymer.

16. The composite of any one of claims 1 to 15, characterized by glass-transition temperature (T_g) in the range of from 50 to 95 °C.

17. The composite of any one of claims 1 to 16, characterized by flexural strength in the range of 45 to 95 MPa.

18. The composite of any one of claims 1 to 17, characterized by flexural modulus in the range of 12,000 to 25,000 MPa.

19. The composite of any one of claims 1 to 18, characterized by heat distortion temperature (HDT) of at least 55 °C.
20. The composite of any one of claims 1 to 19, further comprising a coupling agent bounded to a backbone of the polymer.
21. The composite of claim 20, wherein said coupling agent bonds to the inorganic aggregate.
22. The composite of claim 21, wherein said coupling agent bonds to the polymeric backbone.
23. The composite of any one of claims 20 to 22, wherein said coupling agent is derived from acryloyl.
24. The composite of any one of claims 20 to 22, wherein said coupling agent comprises alkoxysilane.
25. The composite of any one of claims 20 to 24, wherein said coupling agent is present at a concentration ranging from 0.02% to 0.4%, by weight of said composite.
26. A composition comprising the composite of any one of claims 1 to 25.
27. A method for obtaining a composite comprising a cross-linked acrylic polymer and at least one inorganic aggregate, the method comprising the steps of:
 - a. mixing a plurality of acrylic monomers, at least one cross-linker, and a radical initiator, thereby obtaining a mixture of the cross-linked polymer;
 - b. adding an inorganic aggregate to said mixture, the inorganic aggregate and/or mineral being present at a concentration of 80% to 95%, by weight of said mixture, and
 - c. curing said mixture at a temperature of above 80 °C, thereby obtaining said composition.
28. The method of claim 27, wherein said step are consecutive steps.
29. The method of any one of claims 27 and 28, wherein the curing step further comprises a step of adding a radical initiator to said mixture.

30. The method of any one of claims 27 to 29, wherein said initiator is selected from the group consisting of: di-benzoyl peroxide, lauroyl peroxide, tert-butyl hydroperoxide, cyclohexanone peroxide, methylethyl peroxide, tert-butyl peroxyoctoate, tert-butyl peroxybenzoate, dicumyl peroxide, 1,1-bis(tert-butyl peroxy)3,3,5-trimethylcyclohexane, tert-butyl peroxy maleate, Azobisisobutyronitrile (AIBN), and any derivative or combination thereof.

31. The method of any one of claims 27 to 30, wherein step (a), step (b) or both, further comprise adding to said mixture one or more agents selected from: a toughener, and a polymer stabilizer.