

19. An article of manufacture comprising in combination:

- (a) a first closed compartment containing a composition comprising at least one acidic salt containing a polyvalent cation which is capable of changing valence by unit steps and which can bind to dentin or enamel surface sites, and at least one anion which forms a relatively water-insoluble precipitate or precipitates with calcium and which contains at least one carboxyl group;
- (b) a second closed compartment containing a composition comprising N-phenylglycine; and
- (c) a third closed compartment containing a composition comprising at least one compound selected from the group consisting of (1) the addition reaction product of pyromellitic acid dianhydride and 2-hydroxyethyl methacrylate, (2) the addition reaction product of 3,3',4,4'-benzophenonetetracarboxylic dianhydride and 2-hydroxyethyl methacrylate, and (3) 4-methacryloxyethyltrimellitic anhydride.

20. An article of manufacture as in claim 19 wherein the first, second and third closed compartments are impervious to ultraviolet and visible light.

21. An article of manufacture as in claim 19 wherein the contents of the first, second and third closed compartments are in solutions.

22. An article of manufacture comprising in combination:

- (a) a first closed compartment, which is impervious to ultraviolet and visible light, containing a composition comprising ferric oxalate;
- (b) a second closed compartment, which is impervious to ultraviolet and visible light, containing a composition comprising N-phenylglycine; and
- (c) a third closed compartment, which is impervious to ultraviolet and visible light, containing a composition comprising the addition reaction product of pyromellitic acid dianhydride and 2-hydroxyethyl methacrylate.

23. A structure comprising a composite material or resin bonded to a dentin or enamel surface which has been prepared by the method of claim 1.

24. A structure comprising a composite material or resin bonded to a dentin or enamel surface which has been prepared by the method of claim 4.

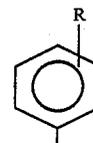
25. A structure comprising a composite material or resin bonded to a dentin or enamel surface which has been prepared by the method of claim 11.

26. A structure comprising a composite material or resin bonded to a dentin or enamel surface which has been prepared by the method of claim 12.

27. A method for preparing the surface of dentin, enamel or industrial substrates for adhesion of composite materials or resins, which method comprises:

- (a) contacting with the surface of the dentin, enamel or industrial substrate an aqueous solution comprising at least one acidic salt containing a polyvalent cation which is capable of changing valence by unit steps and which can bind to dentin, enamel, or industrial substrate surface sites, and at least one anion which forms a relatively water-insoluble precipitate or precipitates with cations of the substrate surface and which contains at least one carboxyl group;
- (b) contacting with the surface of the dentin, enamel or industrial substrate a solution comprising a sol-

vent and a surface-active compound of the formula:



where:

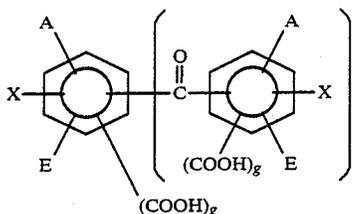
- d=0 or 1;
m=0 to 6;
n=1 to 10;
p=0 to 12;
q=0 to 12;
r=0 to 10;
m+p+q=0 to 20;

R is selected from the following groups:

- (1) $-(\text{O})_t(\text{CH}_2)_f\text{H}$ straight or branched aliphatic groups, with f=0 or 1, and with t=0 to 12;
- (2) $-(\text{O})_t(\text{CH}_2)_f\text{COOH}$, with t=0 to 12, and with f=0 or 1;
- (3) $-(\text{O})_d(\text{CH}_2)_d\text{O}-\text{H}$, with d=1 to 12, and with f=0 or 1;
- and
- (4) F, Cl, Br and I;
- and

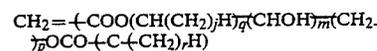
the number of R groups per molecule is 0 to 5, and these R groups may be in the para meta, or ortho positions relative to the nitrogen;

- (d) contacting with the surface of the dentin, enamel, or industrial substrate a solution comprising at least one coupling agent of the formula:



where:

- g=0 to 7;
E is a polymerizable moiety:



wherein

- r=0 to 1;
p=0 to 12;
m=0 to 6;
q=0 to 2;
j=0 or 1;
p+m+q=2 to 20;

the number of E groups per molecule is 1 to 8;
A is an anhydride group $-\text{OCOCO}-$ (attached to vicinal ring carbon atoms); the number of A groups per molecule is 0 to 1;
X is a halide group; and the number of X groups per molecule is 0 to 8, and
y is 0 to 1.

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