

[54] USE OF A POLYFUNCTIONAL SURFACE-ACTIVE COMONOMER AND OTHER AGENTS TO IMPROVE ADHESION BETWEEN A RESIN OR COMPOSITE MATERIAL AND A SUBSTRATE

[75] Inventor: Rafael L. Bowen, Gaithersburg, Md.

[73] Assignee: American Dental Association Health Foundation, Washington, D.C.

[21] Appl. No.: 10,803

[22] Filed: Feb. 9, 1979

[51] Int. Cl.³ A10N 1/02

[52] U.S. Cl. 427/2; 427/407.1; 427/407.2; 428/418; 428/539; 428/441; 525/531; 428/500; 428/420; 428/416; 428/415; 433/226; 156/330

[58] Field of Search 32/8, 12, 15; 525/531; 422/399; 427/2, 407 A, 407 R; 428/418, 539, 441, 500, 420, 415, 416, 414

[56] References Cited

U.S. PATENT DOCUMENTS

3,507,041	4/1970	Walraven	32/15
3,766,132	10/1973	Lee	32/15
3,774,305	11/1973	Stoffey	32/15
3,785,832	1/1974	Bowen	32/15
3,815,239	6/1974	Lee	32/15
4,097,994	7/1978	Reaville	525/531

OTHER PUBLICATIONS

J. Biomedical Mat. Res., vol. 9, pp. 501-509, 1975, Bowen.

Primary Examiner—Sam Silverberg
Attorney, Agent, or Firm—Allegretti, Newitt, Witcoff & McAndrews

[57] ABSTRACT

A family of polyfunctional surface-active comonomers which act to improve the adhesion between a resin or composite material and solid surfaces capable of binding polyvalent cations is described. These polyfunctional surface-active comonomers, or "PolySACs", are preferably the reaction product of an epoxy acrylate or methacrylate and an aminobenzoate. The adhesion of the resin or composite material to certain solid surfaces is also improved by the preparatory treatment of these surfaces with a monobasic acid of intermediate strength followed by treatment with a mordant.

In its most preferred form the invention is employed in reconstructive dental work to improve the adhesion between a resin or composite material and dentin. The dentin is cleansed with isotonic formic acid, treated with an isotonic ferric chloride mordant and then treated with a PolySAC which is the reaction product of an oligomeric diglycidyl ether, acrylic acid and lithium ortho-aminobenzoate. The resin or composite material is then applied.

28 Claims, No Drawings