The coated resin was subjected to light activation for 10 seconds with a Demetron 401 light generating unit (Demetron-Kerr) and then a piece of Z100 composite (Minnesota Manufacturing & Mining, St. Paul, Minn.) was adhered to the treated surface followed by light activation for an additional 40 seconds. Testing was performed on the resulting composite after the time noted below.

The samples were stored in water at 37° C. for a given period of time. For testing purposes, the samples were subjected to shear bond strength testing on a Universal testing machine with a crosshead speed of 1 mm/min. The force required to break the composite from the surfaces was recorded in kg and converted to mPa on the basis of the surface area of the sample. The results are provided in the following table:

Time	Surface	No Rinse	Rinse Etchant
Immediate	Dentin	33-36 mPa	34-36 mPa
Immediate	Enamel	25-28 mPa	32-34 mPa
24 hours	Dentin	53-55 mPa	53-56 mPa
24 hours	Enamel	40-44 mPa	44-46 mPa
6 month	Dentin	53 mPa	54-57 mPa
6 month	Enamel	44 mPa	44-46 mPa

For comparison purposes, tests were performed with OPTIBOND FL® (Kerr Corporation, Orange, Calif.) and Z-100 as described above. This resin bonding system that has been commercially available for more than a decade. Dentin samples had immediate bond strengths of 32 mPa and 24 hour bond strength of 43 mPa. The samples were prepared using the manufacturer's standard method. These results demonstrate that the present invention is equivalent to or better than existing technology.

Although the present invention has been described with reference to preferred embodiments, persons skilled in the art will recognize that changes may be made in form and detail without departing from the spirit and scope of the invention. All references cited throughout the specification, including those in the background, are incorporated herein in their entirety. Those skilled in the art will recognize, or be able to ascertain, using no more than routine experimentation, many equivalents to specific embodiments of the invention described specifically herein. Such equivalents are intended to be encompassed in the scope of the following claims.

I claim:

1. A three part dental bonding system, comprising:

(a) an etch solution comprising an inorganic acid, present in an amount of from about 1 to about 10 parts by weight; an organic acid, present in amount from about 0.1 to about 10 parts by weight; a solvent present in an amount from 0 to about 65 parts by weight; an ethylenically unsaturated functional monomer, present in an amount from about 0.1 to about 10 parts by weight and water, present in an amount from 0 to about 50 parts by weight, all components in an amount to equal a total of 100 parts by weight;

(b) a preparative solution comprising an ethylenically unsaturated functional monomer, present in an amount of from about 5 to about 25 parts by weight; a polyethylenically unsaturated functional crosslinking monomer, present in an amount of from about 10 to about 40 parts by weight; a solvent present in an amount from 0 to about 65 parts by weight; and water, present in an amount from 0 to about 50 parts by weight, all components in an amount to equal a total of 100 parts by weight; and

(c) a curable composite comprising an ethylenically unsaturated functional monomer, present in an amount of from about 10 to about 30 parts by weight; a polyethylenically unsaturated functional crosslinking monomer, present in an amount of from about 50 to about 90 parts by weight; a solvent present in an amount from 0 to about 15 parts by weight; and water, present in an amount from 0 to about 15 parts by weight, all components in an amount to equal a total of 100 parts by weight.

2. A three part dental bonding system, comprising:

(a) an etch solution comprising nitric acid, present in an amount of from about 1 to about 10 parts by weight; succinic acid, present in amount from about 0.1 to about 10 parts by weight; methacrylic acid, present in an amount from about 0.1 to about 10 parts by weight and water, present in an amount to equal a total of 100 parts by weight;

(b) a preparative solution comprising hydroxymethylacrylate, present in an amount of from about 5 to about 25 parts by weight; a reaction product of pyromellitic dianhydride with glycerol dimethacrylate (PMGDM), present in an amount of from about 15 to about 25 parts by weight; 2,2'-bis[4-(3-methacryloxy-2-hydroxy propoxy)-phenyl]-propane (bis-GMA), present in an amount of from about 5 to about 12 parts by weight; ethanol present in an amount from about 25 to about 35 parts by weight; and acetone, present in an amount from about 20 to about 30 parts by weight, all components in an amount to equal a total of 100 parts by weight; and

(c) a curable composite comprising hydroxymethylacrylate, present in an amount of from about 15 to about 25 parts by weight; bis-GMA, present in an amount of from about 60 to about 70 parts by weight; and PMGDM, present in an amount of from about 5 to about 15 parts by weight, all components in an amount to equal a total of 100 parts by weight.

3. A three part dental bonding system, comprising:

(a) an etch solution comprising nitric acid, present in an amount of about 5 parts by weight; succinic acid, present in amount of about 2.5 parts by weight; methacrylic acid, present in an amount of about 2.5 parts by weight and water, present in an amount to equal a total of 100 parts by weight;

(b) a preparative solution comprising hydroxymethylacrylate, present in an amount of about 15 parts by weight; a reaction product of pyromellitic dianhydride with glycerol dimethacrylate (PMGDM), present in an amount of about 20 parts by weight; 2,2'-bis[4-(3-methacryloxy-2-hydroxy propoxy)-phenyl]-propane (bis-GMA), present in an amount of about 8 parts by weight; ethanol present in an amount of about 30 parts by weight; and acetone, present in an amount of about 26 parts by weight, all components in an amount to equal a total of 100 parts by weight; and

(c) a curable composite comprising hydroxymethylacrylate, present in an amount of about 20 parts by weight; bis-GMA, present in an amount of about 66.5 parts by weight; and PMGDM, present in an amount of about 10 parts by weight; ethyl N,N-dimethyl-4-aminobenzoic acid (EDMAB), present in an amount of about 3 parts by weight; camphorquinone (CQ), present in an amount of about 0.5 parts by weight, all components in an amount to equal a total of 100 parts by weight.

* * * * *