

TABLE 6-continued

Assembly #	Protocol	Iris Diam (mm)	Load (kN)	SBS (MPa)	Mean (MPa)	SD (MPa)
47	1A	3.97	0.353	28.5		
131	1A	3.97	0.390	31.5	27.9	9.6

1B) The same procedures as outlined above in connection with Table 6 above were utilized, except that the 1.25% HNO₃ and 6.4% PIDAA in acetone/H₂O solution was applied for 30 seconds instead of 60 seconds. The results of such application on shear bond strength are provided in Table 7 below.

TABLE 7

Assembly #	Protocol	Iris Diam (mm)	Load (kN)	SBS (MPa)	Mean (MPa)	SD (MPa)
138	1B	3.97	0.549	44.4		
105	1B	3.97	0.239	19.3		
A-13	1B	3.97	0.296	23.9		
97	1B	3.98	0.403	32.4		
50	1B	3.95	0.425	34.7		
425	1B	3.95	0.238	19.4		
A26	1B	3.95	0.208	17.0		
105	1B	3.95	0.328	26.8		
F3	1B	3.97	0.294	23.8		
138	1B	3.97	0.387	31.3	27.3	8.5

The same procedures outlined as 1A) were utilized to obtain the results indicated in Table 8 below, except that instead of the solution of 1.25% HNO₃ and 6.4% PIDAA in acetone/H₂O, a solution of 2.5% HNO₃ and 6.4% PIDAA in acetone/H₂O was applied. Further, any excess HNO₃ and PIDAA was not removed with air.

TABLE 8

Assembly #	Protocol	Iris Diam (mm)	Load (kN)	SBS (MPa)	Mean (MPa)	SD (MPa)
A-3	3A	3.97	0.271	21.9		
81	3A	3.97	0.415	33.5		
96	3A	3.98	0.483	38.8		
5	3A	3.95	0.387	31.6		
A2	3A	3.95	0.481	39.3		
81	3A	3.95	0.316	25.8		
A13	3A	3.95	0.417	34.0		
A10	3A	3.95	0.509	41.6		
97	3A	3.95	0.399	32.5		
306	3A	3.97	0.362	29.2	32.8	6.1

The same procedures outlined for obtaining the results in Table 8 were used for obtaining the results indicated in Table 9 below, except that the 2.5% HNO₃ and 6.4% PIDAA in acetone/H₂O solution was applied for 30 seconds instead of 60 seconds.

TABLE 9

Assembly #	Protocol	Iris Diam (mm)	Load (kN)	SBS (MPa)	Mean (MPa)	SD (MPa)
108	3B	3.97	0.273	22.0		
149	3B	3.98	0.416	33.4		
306	3B	3.98	0.299	24.0		
39	3B	3.95	0.309	25.2		
5	3B	3.95	0.361	29.5		
96	3B	3.95	0.321	26.2		
A104	3B	3.95	0.347	28.3		

TABLE 9-continued

Assembly #	Protocol	Iris Diam (mm)	Load (kN)	SBS (MPa)	Mean (MPa)	SD (MPa)
A3	3B	3.97	0.221	17.8		
112	3B	3.97	0.413	33.4		
149	3B	3.97	0.502	40.6	28.0	6.5

Example 4

Bovine enamel was treated as follows: a mixture 2.5% HNO₃ and 6.3% PIDAA in acetone/H₂O was applied for 30 seconds. Then, five coats of a mixture of 20% PMGDM and 0.07% CQ in acetone were applied and light cured for 20 seconds. Thereafter, a mixture of 60% bis-GMA and 40% HEMA was applied and light cured for 20 seconds. Finally, a composite resin of TPH™ (L.D. Caulk, Millford, Del.; urethane-modified Bis-GMA, TEGDMA, and barium silicate glass filler (avg. particle size of about 0.71 μm)) was applied and light cured for 60 seconds. The SBS results so-obtained are indicated in Table 10 below.

TABLE 10

Assembly #	Protocol	Iris Diam (mm)	Load (kN)	SBS (MPa)	Mean (MPa)	SD (MPa)
A10	1	3.97	0.237	19.1		
A3	1	3.97	0.245	19.8		
73	1	3.97	0.158	12.8		
F3	1	3.97	0.097	17.8		
149	1	3.97	0.195	15.8		
5	1	3.95	0.383	32.2		
81	1	3.95	0.304	24.8		
A2	1	3.95	0.211	17.2	18.7	7.4

Example 5

The following procedure was used to obtain the SBS results indicated in Table 11 below. To bovine enamel, a 2.5% aqueous HNO₃ solution was applied for 30 seconds. Thereafter, a 6.3% PIDAA in acetone/water solution was applied. Then, five coats of a mixture of 20% PMGDM and 0.07% CQ in acetone was applied and light cured for 20 seconds. Next, a mixture of 60% bis-GMA and 40% HEMA was applied and light cured for 20 seconds. Finally, a composite resin of TPH™ (L.D. Caulk, Millford, Del.; urethane-modified Bis-GMA, TEGDMA, and barium silicate glass filler (avg. particle size of about 0.7 μm)) was applied and light cured for 60 seconds.

TABLE 11

Assembly #	Protocol	Iris Diam (mm)	Load (kN)	SBS (MPa)	Mean (MPa)	SD (MPa)
39	2	3.97	0.367	29.6		
131	2	3.95	0.228	18.6		
72	2	3.95	0.146	11.9		
425	2	3.95	0.245	20.0		
36	2	3.95	0.389	31.7		
47	2	3.95	0.245	20.0		
306	2	3.95	0.201	16.4		
A13	2	3.95	0.366	29.9	22.3	7.2

Comparative Example 6

The following procedure was utilized to obtain the SBS results indicated in Table 12 below. Bovine enamel was