

52-20 Synopsis of Bonding Systems (Project 97-03) (12/01)

Currently, there is an abundance of adhesive bonding systems on the market. In recent years, the term "dentin bonding agent" has typically been used to describe adhesive systems used primarily to bond composite resin to enamel and dentin. In the four years since the last synopsis on these products was published (DIS 40-12), a growing number of bonding systems have been introduced. The purported capability for multi-substrate bonding has prompted the use of a more inclusive terminology, such as "universal bonding system" as opposed to the more limited "dentin bonding agent". In addition, many manufacturers are marketing multiple versions of adhesive products, including the so called "one-step" or "one-bottle" systems. The sheer number and variety of these products make it difficult for the clinician to understand the specific uses of these products and the characteristics that distinguish one from another. This synopsis provides information obtained from the manufacturers on their various products, and is organized in the form of a table. [Attachment 1](#) lists the manufacturer's address and phone numbers, the adhesive system's recommended uses, the contents of their "most inclusive" kit, the constituents for the major components, and method of activation. [Attachment 2](#) is a continuation of the table and notes whether the material contains fluoride and/or filler particles, and whether it claims to be radiopaque. In addition, it is noted if the Material Safety Data Sheet (MSDS) is included with the kit, the retail and government cost, whether the product has been evaluated by DIS (and, if so, where the evaluation report can be found), and any additional information that may be useful to dental clinic personnel.

It is interesting to note the wide diversity of contents for the various kits. They run the gamut from a simple enamel bonding agent/pit and fissure sealant (Harry J. Bosworth) to fairly inclusive kits that provide the components to perform dentin and enamel bonding, amalgam bonding, and porcelain/metal repairs (Confidential Dental Products, Bisco). Other products fall in between. Most systems claim an indication for luting indirect restorations, but all require the use of a resin cement, which is not included in any of the bonding system kits reviewed in this synopsis. Dental treatment facilities must decide the capabilities needed in a bonding system and carefully evaluate the products available to ensure that the appropriate system is purchased.

SYNOPSIS OF BONDING SYSTEMS (Table 1)

PRODUCT	MANUFACTURER	RECOMMENDED USES	KIT CONTENTS	COMPONENTS			METHOD OF ACTIVATION
				ETCHANT	PRIMER	ADHESIVE	
Confi-Bond	Confi-Dental Products 416 S. Taylor Ave Louisville CO 80027 (800) 383-5158 (303) 665-7535 (303) 666-4320 FAX	dentin bonding, enamel bonding, dentin sensitivity, amalgam bonding, porcelain repair, luting indirect restorations (with resin cement)	dentin/ enamel etchant, porcelain etchant, primer (dentin), primer (dentin/metal), primer (metal), primer (porcelain) VLA adhesive resin, SC catalyst for adhesive resin, mixing wells, brush handles & tips, needle tube syringe tips	37% H ₃ PO ₄ (enamel/dentin) 4% APF (porcelain)	acetone- based primer system (Bowen system) for primers. silane solution for B primer	BisGMA with HEMA	Dual Cure or Light Cure only
Denthesive II	Heraeus Kulzer 4315 S. Lafayette Blvd South Bend, IN 46614 (800) 343-5336 (219) 291-0661 (219) 291-7248 FAX	dentin bonding, enamel bonding	4 ml Denthesive IIA, 4 ml Denthesive IIB, 2x2 ml Adhesive Bond II, mixing well, brush handle & brushes	maleic acid; purified H ₂ O	HEMA; HPMA; maleic acid ester; polycarboxylic acid; CQ; H ₂ O	BisGMA; TEGDMA; maleic acid ester; CQ	Light Cure
Gluma 3-Step	Heraeus Kulzer	dentin bonding, enamel bonding, dentin sensitivity	5 ml dentin/enamel conditioner, 5 ml primer/desensitizer, 5 ml adhesive pad, brushes and applicator	1.6% oxalic acid	5% glutaraldehyde; 35% HEMA, H ₂ O	BisGMA	Light Cure
Solid Bond	Heraeus Kulzer	dentin bonding, enamel bonding, dentin sensitivity, luting indirect restorations & amalgam bonding (with dual cure resin cement)	2x2.5 ml Esticid 20 FG gel syringes, 1x4 ml Solid BondP, 2x2 ml Solid Bond S	20% H ₃ PO ₄	Solid Bond P: acetone, HEMA, maleic acid	Solid Bond S: BisGMA	Light Cure
A.R.T. Bond	Coltene/Whaledent 750 Corporate Drive Mahwah, NJ 07430 (800) 225-9382 (201) 512-8000 (201) 529-2118 FAX	dentin bonding, enamel bonding, dentin sensitivity, bonding composite to metals - amalgam-ceramic, luting indirect restorations (with resin cement)	2x2.5 ml etchant gel S, 5 ml primer A, 5 ml primer B, 5 ml A.R.T. Bond, 40 mixing wells, 2 brush holders, 100 brush tips	35% H ₃ PO ₄ (for enamel only)	primer A: 2% maleic acid; 1% NaF; 97% H ₂ O primer B: 47% HEMA; 36% HPMA; 6% polyalkenoate, methacrylate; 9% H ₂ O	43% BisGMA; 48% TEGDMA; 7% polyalkenoate, methacrylate	Light Cure

SYNOPSIS OF BONDING SYSTEMS (Table 1 cont'd)*

PRODUCT	MANUFACTURER	RECOMMENDED USES	KIT CONTENTS	COMPONENTS			METHOD OF ACTIVATION
				ETCHANT	PRIMER	ADHESIVE	
XR Primer/XR Bond	Kerr 1717 West Collins Ave Orange CA 92667 (800) 537-7187 (714) 516-7400 x7024 (800) 537-7345 FAX	dentin bonding, enamel bonding	No longer available as a kit; items sold as individual components only	none	GPDM; BHT; EtOH; H ₂ O	GPDM; UDMA; TEGDMA; ATPU; CQ	Light Cure
OptiBond with OptiBond FL	Kerr	dentin bonding, enamel bonding, amalgam bonding, porcelain/metal repair	3 g syringe gel etchant, 5 ml bottle OptiBond catalyst (3A), 1.5 g syringe x 2 OptiBond accelerator paste (3B), 8 ml bottle OptiBond FL prime, 8 ml bottle OptiBond FL adhesive, 10 etchant dispensing tips, 50 applicator tips, 25 mixing wells.	37.5% H ₃ PO ₄	BHT, CQ, HEMA ethanol, GPDM, water, phthalic acid MA	Adhesive: fumed silica, Na ₃ SiF ₆ , Ba-Al-Si glass, BisGMA, CQ, HEMA, GDM, ODMAB Catalyst: BisGMA, BPO, UV-9, BHT, CQ, HEMA, PAMA, camphor-quinone; Accelerator: BisGMA, DHEPT, HEMA, GDM, ODMAB, fillers including disodium hexafluoro- silicate	Dual Cure or Light Cure only
OptiBond Solo	Kerr	dentin bonding, enamel bonding, amalgam bonding, porcelain/metal repair	1 syringe gel etchant, 10 syringe tips, 50 applicator tips Bottle Kit: 2 x 5 ml bottles OptiBond Solo, 25 mixing wells Unidose Kit: 100 OptiBond Solo unidose packets	37.5% H ₃ PO ₄	included as part of adhesive	BHT, CQ, EtOH, HEMA, GPDM, fumed silica, NaSiF, barium aluminoborosili- cat, BisGMA, ODMAB	Light Cure

* Data in this table was provided by the manufacturers.

Synopsis of Bonding Systems (Table 1 cont'd)*

PRODUCT	MANUFACTURER	RECOMMENDED USES	KIT CONTENTS	COMPONENTS			METHOD OF ACTIVATION
				CONDITIONER	PRIMER	ADHESIVE	
WetBond	Mirage Dental Systems 200 N Sixth Street Kansas City, KS 66101 (800) 336-0001 (913) 281-5552 (913) 621-7012 FAX	dentin bonding, enamel bonding, dentin sensitivity	1x1.2 ml syringe gel etchant, 1x6 ml bottle Primer A, 1x6 ml bottle Primer B, 1x3 ml bottle unfilled resin, 2 brush handles, 50 brush tips, 10 syringe tips, 4 mixing well trays	37% H ₃ PO ₄	"A" (Resin Adhesive Activator): NTG-GMA, acetone "B" (Adhesive Resin): PMGDM, acetone, silica	BisGMA, HEMA	Dual Cure or Light Cure only
Clearfil LinerBond	Kuraray America, Inc. 200 Park Avenue New York, NY 10166-3098 (212) 986-2230	dentin bonding, enamel bonding, dentin sensitivity, amalgam bonding, porcelain/metal repair, metal (incl. Amalgam) bonding	5 ml CA agent (conditioner), 6 ml SA primer, Clearfil Photo Bond (6 ml each Universal & Catalyst), 2 ml Protect Liner, mixing wells, paper pad, brush holder, 10 brush tips, sponge pads, applicator nozzles	10% citric acid; 20% CaCl	5-NMSA	HEMA; MDP (Photo Bond) low viscosity microfill composite (Protect Liner)	Dual Cure (Photo Bond) Light Cure (Protect Liner)
Clearfil LinerBond 2	Kuraray America, Inc. 200 Park Avenue New York, NY 10166-3098 (212) 986-2230	dentin bonding, enamel bonding, dentin sensitivity, amalgam bonding	LB "self-etch" primer (6 ml each Liquid A & B), LB Bond, Protect Liner F (optional), mixing wells, brush handle, 100 brush tips, sponge pads	conditioner is a component of the primer	Phenyl-P; 5-NMSA; HEMA hydrophylic dimethacrylate, CQ	LB-Bond: MDP, HEMA, Bis-GMA, colloidal silica,; CQ Protect Liner F: F releasing polymer, prepolymerized organic filler, silanated colloidal silica, Bis-GMA, TEGDMA, CQ	Light Cure
Clearfil New Bond	Kuraray America, Inc. 200 Park Avenue New York, NY 10166-3098 (212) 986-2230	dentin bonding, enamel bonding, dentin sensitivity, amalgam bonding, porcelain/metal repair, metal bonding	Bonding Agent (6 ml each Universal & Catalyst)			MDP; HEMA; BisGMA	Auto Cure

* Data in this table was provided by the manufacturers.

Synopsis of Bonding Systems (Table 1 cont'd)*

PRODUCT	MANUFACTURER	RECOMMENDED USES	KIT CONTENTS	COMPONENTS			METHOD OF ACTIVATION
				CONDITIONER	PRIMER	ADHESIVE	
Clearfil Photo Bond	Kuraray America, Inc. 200 Park Avenue New York, NY 10166-3098 (212) 986-2230	dentin bonding, enamel bonding, dentin sensitivity, amalgam bonding, porcelain/metal repair	K-etchant gel, bonding agent (6 ml each Universal & Catalyst)	40% H ₃ PO ₄		Catalyst: MDP; HEMA; BisGMA, photoinitiator, hydrophobic dimethacrylate Universal: amine, ethanol	Dual Cure
Natural Enamel Bond	Harry J. Bosworth 7227 N. Hamlin Ave Skokie, IL 60076 (847) 679-3400 (847) 679-2080 FAX	enamel bonding, composite glaze, pit & fissure sealant	9 g acid etchant, 3 g liquid resin base, 3 g liquid catalyst, mixing pads	39% H ₃ PO ₄ liquid		Base: BisGMA, aliphatic methacrylates, aromatic 3 ^o amine, UV absorber, inhibitor Catalyst: BisGMA, aliphatic methacrylate, BPO, inhibitor	Auto Cure
ProBond	Caulk PO Box 359 Milford DE 19963-0359 (800) 523-2855 (302) 422-3480 (302) 422-3480 FAX	enamel bonding, dentin bonding, luting indirect restorations (with resin cement), porcelain/metal repair	6 ml bottle primer, 6 ml bottle adhesive, 80 brush tips, 1 transfer pad	34% H ₃ PO ₄ (must be purchased separately)	PENTA, acetone, ethanol	UDMA, PENTA, TEGDMA, CQ, glutaraldehyde	Light Cure
Prime & Bond 2.1	Caulk	enamel bonding, dentin bonding, luting indirect restorations (with resin cement), porcelain/metal repair, cavity sealer under amalgam	3x4.5 ml bottles Prime and Bond 2.1, 2 syringes of etch gel, 3 brush handles, 120 brush tips, 1 dispensing well	34% H ₃ PO ₄	combined with adhesive	Dimethacrylate resins, PENTA, photoinitiators, stabilizers, cetylamine hydrofluoride, acetone	Light Cure

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Synopsis of Bonding Systems (Table 1 cont'd)*

PRODUCT	MANUFACTURER	RECOMMENDED USES	KIT CONTENTS	COMPONENTS			METHOD OF ACTIVATION
				ETCHANT	PRIMER	ADHESIVE	
Bond-It	Jeneric/Pentron, Inc. 53 North Plains Industrial Rd. Wallingford, CT 06492 (800) 551-0283 (203) 265-7397 (203) 284-3310 FAX	dentin bonding, enamel bonding, dentin sensitivity, amalgam bonding, porcelain/metal repair, luting indirect restorations (with resin cement)	2x3 ml syringe etchant, 6 ml Primer A, 6 ml Primer B, 6 ml unfilled resin, 3 ml dual cure activator, brush handle and tips, syringe tips, mixing well	10% H ₃ PO ₄ 37% H ₃ PO ₄	Primer A: NTG- GMA, acetone Primer B: PMGDM, HEMA, acetone	Unfilled resin: BisGMA, HEMA, UDMA, HDDMA, CQ, amine accelerator	Light Cure Dual Cure
Bond-1	Jeneric/Pentron, Inc.	dentin bonding, enamel bonding, dentin sensitivity, amalgam bonding(with Amalgacure self-cured resin), porcelain/metal repair, luting indirect restorations (with resin cement)	1x5 ml syringe etchant, 4 ml primer/ adhesive, syringe tips, disposable applicators, mixing well	37% H ₃ PO ₄	combined with adhesive	PMGDM, HEMA, BisGMA, acetone	Light cure
Daisy Dentin-Bond	Daisy Dental Supply 1106 5th St. Redding, CA 96002 (800) 633-2479 (916) 221-0528 (916) 222-3356 FAX	dentin bonding, enamel bonding, dentin sensitivity	7 ml acid etch, 2x7 ml adhesive, 2 brush handles, 100 brush tips, 10 dappen dish trays	38% H ₃ PO ₄	none	BisGMA, HDDMA, DMAEMA, CQ, HEMA	Light Cure
Fuji Bond LC	GC America, Inc. 3737 W. 127th St. Alsip, IL 60803 (800) 323-3386 (708) 597-0900 (708) 597-1674 FAX	dentin bonding, enamel bonding, dentin sensitivity	5.7 ml conditioner, 5 gm powder, 7 ml liquid	20% polyacrylic acid	none	Powder: Fluoroaluminosilicate glass Liquid: Acrylic acid/maleic acid copolymer, HEMA, TEGDMA, TMHMD H ₂ O, CQ	Light Cure

* Data in this table was provided by the manufacturers.

Synopsis of Bonding Systems (Table 1 cont'd)*

PRODUCT	MANUFACTURER	RECOMMENDED USES	KIT CONTENTS	COMPONENTS			METHOD OF ACTIVATION
				ETCHANT	PRIMER	ADHESIVE	
All-Bond 2	Bisco Dental Products 1500 W. Thorndale Avenue Itasca, IL 60143 (800) BIS-DENT (630) 773-6633 (630) 773-6949 FAX	dentin bonding, enamel bonding, dentin sensitivity, amalgam bonding, porcelain metal repair, luting indirect restorations (with resin cement)	1x5 gm syringe etchant, 6 ml Primer A, 6 ml Primer B, 6 ml Dentin/Enamel bonding resin, 3 ml Pre-Bond resin, 1.5 gm Opaquer, 3 ml porcelain etch, 1.5 ml porcelain primer, brush handles, mixing well, brush tips, syringe tips	32% H ₃ PO ₄ or 10% H ₃ PO ₄ (clinician option)	Primer A: NTG-GMA, acetone, ethanol Primer B: BPDMA, acetone, EtOH	D/E Bonding Resin: BisGMA, HEMA, UDMA, DHEPT, DMAEMA Pre-Bond Resin: BisGMA, TEGDMA, HEMA, BPO	Light Cure Dual Cure
One Step	Bisco Dental Products	dentin bonding, enamel bonding, dentin sensitivity, porcelain/metal repair, luting indirect restorations (with resin cement), amalgam bonding (with Resinomer)	2x5 gm syringes etchant, 4 ml One Step	32% H ₃ PO ₄	combined with adhesive	BPDMA, acetone	Light Cure
Syntac	Ivoclar North America 175 Pineview Drive Amherst, NY 14228 (800) 533-6825 (716) 691-0010 (716) 691-2285	dentin bonding, enamel bonding, amalgam bonding, luting indirect restorations (with resin cement)	2x3 gm primer, 2.3 gm adhesive, 6 gm Heliobond, 15 gm cleansing paste, cannulas	enamel etchant not included in kit, "Primer" is actually dentin conditioner=TEGDMA, maleic acid, water, dimethyl ketone	"Adhesive" is actually the typical primer=PEGDMA, maleic acid, glutaraldehyde, water	Heliobond=BisGMA, TEGDMA	Light Cure
Syntac Single Component	Ivoclar North America	dentin bonding, enamel bonding, amalgam bonding, porcelain/metal repair, use with compomers	1x2 ml syringe etchant, 5 gm Syntac Single Component, 1 brush handle, 50 brush tips, cannulas for etchant	37% H ₃ PO ₄	combined with adhesive	MMPAA, HEMA, Maleic acid, fluoride compound, CQ, water	Light Cure

* Data in this table was provided by the manufacturers.

Synopsis of Bonding Systems (Table 1 cont'd)*

PRODUCT	MANUFACTURER	RECOMMENDED USES	KIT CONTENTS	COMPONENTS			METHOD OF ACTIVATION
				ETCHANT	PRIMER	ADHESIVE	
PermaQuick	Ultradent Products, Inc 505 W 10200 South South Jordan, UT (800) 793-5216 (801) 553-4133 (801) 572-0600 FAX	dentin bonding, enamel bonding, porcelain/metal repair	1x1.2 ml syringe etchant, 2x1.2 ml syringes primer, 1x1.2 ml syringe bonding resin, 40 inspiral brush tips, 20 black mini brush tips	35% H ₃ PO ₄	Canadian balsam, EtOH, HEMA, methacrylic acid, CQ, phosphate monomer	BisGMA, TEGDMA, diluent monomer, CQ, AAAM, fluoride barium alumina boro silicate glass	Light Cure
Scotchbond Multi-Purpose	3M 3M Dental Products Bldg 275-25E-03 St Paul, MN 55144-1000 (800) 451-5761 (612) 737-1021 (800) 728-0956 FAX (800) 634-2249 Ext 1 for Tech. Hotline	enamel bonding, dentin bonding, porcelain/metal repair, luting porcelain veneers (with resin cement)	2x3 ml syringe etchant, 8 ml primer, 8 ml adhesive, 3 brush handles, 60 brush tips, 50 syringe tips, mixing tray	35% H ₃ PO ₄	water, HEMA, polyalkenoic co-polymer	BisGMA, HEMA, photoinitiator	Light Cure
Scotchbond Multi-Purpose Plus	3M	enamel bonding, dentin bonding, porcelain/metal repair, luting porcelain veneers (with resin cement), amalgam bonding	2x3 ml syringe etchant, 8 ml primer, 8 ml adhesive, 4 ml activator, 4 ml catalyst, 5 ml ceramic primer, 3 brush handles, 60 brush tips, 50 syringe tips, mixing tray	35% H ₃ PO ₄	water, HEMA, polyalkenoic co-polymer; activator: ethanol, sulfinic acid salt, photoinitiator (combined with primer for auto-cure applications)	BisGMA, HEMA, amines, photoinitiator catalyst: BisGMA, HEMA, peroxide (combined with adhesive for autocure applications)	Dual Cure or Auto cure only or Light Cure only
Single Bond	3M	enamel bonding, dentin bonding, dentin sensitivity, porcelain/metal repair, porcelain veneers (with resin cement)	2x3 ml syringe etchant, 6 ml adhesive, 1 brush handle, 50 etchant tips, 60 brush tips, 48 mixing wells	35% H ₃ PO ₄	combined with adhesive	water, ethanol, HEMA, BisGMA, dimeth- acrylates, polyalkenoic acid co-polymer, photoinitiator	Light Cure

* Data in this table was provided by the manufacturers.

Synopsis of Bonding Systems (Table 1 cont'd)*

PRODUCT	MANUFACTURER	RECOMMENDED USES	KIT CONTENTS	COMPONENTS			METHOD OF ACTIVATION
				ETCHANT	PRIMER	ADHESIVE	
Imperva Bond	Shofu 4025 Bohannon Drive Menlo Park CA 94025 (800) 827-4638 (415) 324-0085 (425) 323-3180 FAX	enamel bonding, dentin bonding, dentin sensitivity	5 ml primer, 5 ml adhesive, 6 ml etching gel, dish, sponges, 3 brushes	30% H ₃ PO ₄	HEMA, AOETA, TEGDMA, CQ, silane coupling agent, water, DMAEMA, BHT	UDMA, UDA, TEDGMA, EGDMA, HEMA, AOETA, CQ, DMAEMA, silane coupling agent, BHT	
Tenure Quik with Fluoride	Den-Mat Corporation P.O. Box 1729 Santa Maria, CA 93456 (800) 433-6628 (805) 922-8491 (805) 922-6933 FAX	dentin bonding, enamel bonding, amalgam bonding, dentin sensitivity, porcelain/metal repair	1x3 ml syringe etchant, 5 ml Tenure Quik w/ fluoride, brush handle, 25 brush tips, 6 syringe tips, 2 Dappen dishes	37% H ₃ PO ₄	combined with adhesive	PMDM, acetone, methacrylate, resin, dimethacrylate resin	Light cure

* Data in this table was provided by the manufacturers.

Synopsis of Bonding Systems (Table 2)*

PRODUCT	CONTAINS FLUORIDE	TYPES/SIZE OF FILLER	RADIOPAQUE	PRICE Retail/Government	MSDS PROVIDED	COMMENTS	EVALUATED BY DIS
Confi-Bond	no	N/A	no	\$90/NA	yes		no
Denthesive II	no	N/A	no	\$101.70/\$60.39	upon request		no
Gluma 3-Step	no	N/A	no	\$199.30/\$118.45	yes		no
Solid Bond	yes (Solid Bond S)	25 wt% Ba-Al-F-Si glass, avg size 0.85 microns (Solid Bond S)	yes	\$123/NA	upon request		no
A.R.T. Bond	yes	N/A	no	\$186.93/\$140.20	yes	technique does not remove smear layer	no
XR Primer/XR Bond	no	N/A	no	\$545.50/\$256.90 (5 bottles each XR Primer/XRBond)	no	Etchant must be purchased separately, 3x2gm syringes with 30 tips=\$20.90(retail)/\$10.26(govt)	no
OptiBond with OptiBond FL	yes	48 wt% filler, avg size 0.6 microns	yes	\$168.65/\$74.46	no		DIS 40-011
OptiBond Solo	yes	25 wt% filler, avg size 0.6 microns	yes	\$163.33/85.50 same price for bottle or unidose kit	no	Only product with unidose delivery capsule	
WetBond	no	5% fumed silica (Part "B")	no	\$94.95/\$63	yes		no
Clearfil Liner Bond	no	42% colloidal silica (Protect Liner)	no	\$175/\$105	yes	Earlier version of Photo-Bond; essentially Photo-Bond with a different surface treatment	no
Clearfil Liner Bond 2	no (LB Bond) yes (Protect Liner F)	10 % colloidal silica (Protect Liner F)	no	\$185/\$111	yes	LB Primer acts as "self-etch" primer for both enamel/dentin. This product recommended primarily for direct placement restorations	no

* Data in this table was provided by the manufacturers.

Synopsis of Bonding Systems (Table 2 cont'd)*

PRODUCT	CONTAINS FLUORIDE	TYPES/SIZE OF FILLER	RADIOPAQUE	PRICE Retail/Government	MSDS PROVIDED	COMMENTS	EVALUATED BY DIS
Clearfil New Bond	no	N/A	no	\$53/\$31.80 \$9/\$5.40 (K-gel) \$16.60/\$10 (etch V, decreased viscosity gel in a syringe)	yes	Etch with 40% H ₃ PO ₄ (purchased separately) required prior to placement. Earliest version of manufacturer's bonding agent.	no
Clearfil Photo Bond	no	N/A	no	\$107/ \$64.20	yes	This product recommended primarily for indirect restorations	no
Natural Enamel Bond	no	N/A	no	\$32.25/ NA	yes		no
ProBond	no	N/A	no	\$147/ \$71.80	yes	34% H ₃ PO ₄ gel available in kit of 2x3ml syringes \$26.90 retail/\$14.30 govt	DIS 42-010
Prime & Bond 2.1	yes	N/A	no	\$224.25/ \$123.97	yes	considered a "single bottle" system; "improved" version of Prime & Bond; has elastomeric monomers and fluoride	DIS 46-013 (Prime & Bond, P&B 2.1 predecessor)
Bond-It	no	N/A	no	\$79.95/\$71.95	yes		no
Bond-1	no	N/A	no	\$49.95/NA	yes	considered a "single bottle" system	no
Daisy Dentin-Bond	no	N/A	no	\$69/NA	yes	claims to be a dentin bonding agent, but does not condition dentin and does not contain a primer system	no
Fuji Bond LC	yes	41 wt% Fluoroaluminosilicate glass, avg size 3-4 microns	yes (DIS testing determined radiopacity to be less than dentin)	\$125/\$81.25	yes	Different from other dentin bonding systems: it is a reinforced glass ionomer. DIS bond strength test found it to be weaker than most other systems	DIS 50-022
All-Bond 2	no	N/A	no	\$149/ \$126.65	yes	more complete than most kits: contains opaquer, porcelain etch and silane	DIS 40-010

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Synopsis of Bonding Systems (Table 2 cont'd)*

PRODUCT	CONTAINS FLUORIDE	TYPES/SIZE OF FILLER	RADIOPAQUE	PRICE Retail/Government	MSDS PROVIDED	COMMENTS	EVALUATED BY DIS
One Step	no	N/A	no	\$80/\$68	yes	considered a "single bottle" system	DIS 48-022
Syntac	no	N/A	no	\$195/\$62	yes	etchant must be purchased separately	DIS 41-020
Syntac Single Component	yes	N/A	no	\$99/\$38	yes	considered a "single bottle" system	currently under evaluation
PermaQuik	yes	45% fluoride barium alumina boro silicate glass/ 0.1 - 0.5 microns	yes	\$116.50/ \$99.03	yes	more complete than most kits	DIS 50-025
Scotchbond Multi-Purpose	no	N/A	no	\$175/\$101.41	yes	one of fastest DBAS to apply	DIS 40-009
Scotchbond Multi-Purpose Plus	no	N/A	no	\$222/ \$129.63	yes		no
Single Bond	no	N/A	no	\$122.50/ \$73.50 \$104/\$62.50 (reorder for 6ml adhesive)	yes	considered a "single bottle" system	currently under evaluation
Imperva Bond	no	N/A	no	\$125.95/ \$81.87	yes		DIS 42-009
Tenure Quik with Fluoride	yes	N/A	no	\$85/\$68	no	considered a "single bottle" system	DIS50-024

* Data in this table was provided by the manufacturers.

5-NMSA=N-Methacryloyl 5-Aminosalicylic acid
 AAAM=Alkyl Amino Alkyl Methacrylate
 AOETA=4-Acyloxyethyltrimeric acid
 APF=Acidulated Phosphate Fluoride
 ATPU=Acrylic Terminated Polyurethane
 BPDMA=Biphenyl Dimethacrylate
 BHT=2,6-Di-tert-butyl-4-methylphenol (inhibitor)
 BisGMA=Bis Glycidyl Methacrylate
 BPO=Benzoyl Peroxide
 CQ=Camphorquinone
 DMAEMA=N,N-Dimethyl Amino Ethyl Methacrylate
 DHEPT=Dihydroxyethyl p-toluidene
 EGDMA=Ethyleneglycoldietharylate

EtOH=Ethanol
GDM=Glycerol Dimethacrylate
GPDM=Glycerol Phosphate Dimethacrylate
 H_3PO_4 =Phosphoric acid
HEMA=Hydroxyethyl Methacrylate
HPMA=Hydroxypropyl Methacrylate
MDP=10-Methacryloyloxydecyl Dihydrogen Phosphate
MMPAA - Methacrylate Modified Polyacrylic acid
NaSiF=Disodium Hexafluorosilicate
NTG-GMA=N(p-tolyl) Glycine/glycidyl Methacrylate
ODMAB=2-(Ethylhexyl)-4-(dimethylamino)benzoate
PAMA=Phthalic Acid Monomethacrylate
PEGDMA=Polyethyleneglycol Dimethacrylate
PENTA=Dipentaerythritol Pentacrylate Phosphoric Acid Ester
Phenyl-P=Phosphoric Ester Adhesive Monomer
PMDM=Pyromellitic Dimethacrylate
PMGDM=Pyromellitic Glycerol Dimethacrylate
SC=Self Cure
TEGDMA=Triethylene Glycol Dimethacrylate
TMHMD=2,2,4-trimethyl Hexamethylene Dicarboxylate
UDA=Urethanediacrylate
UDMA=Urethane Dimethacrylate
UV-9=2-Hydroxy-4-methoxybenzophenone
VLA=Visible Light Activated