52-18 Single Bond Dental Adhesive System (Project 97-11) (10/97)

Single Bond Dental Adhesive System is a light-activated, "one-component" dentin bonding agent recommended by the manufacturer for direct applications. Specifically, 3M indicates that Single Bond can be used for direct composite applications, porcelain veneers, root surface desensitization, and porcelain repair. For other types of bonding such as amalgam bonding and inlay/onlay cementation, 3M recommends using the broader, multi-purpose bonding product it manufactures, Scotchbond Multi-Purpose Plus Adhesive. The Single Bond kit contains two 3-mL syringes of 35 percent phosphoric acid etchant, one 6-mL bottle of Single Bond Adhesive, application accessories (e.g., brush tips, syringe tips, disposable mixing wells), and technique cards. According to 3M, the adhesive contains ethanol, water, hydroxyethyl methacrylate (HEMA), polyalkenoic acid copolymer, bisphenol glycidylmethacrylate (Bis-GMA) and a photoinitiator.

To use the product for routine direct composite bonding, the etchant is applied for 15 seconds to enamel and dentin. The etchant is then removed by thorough rinsing and the tooth structure is blotted to remove excess water. The tooth surface should be "moist" immediately before the adhesive is applied. The adhesive is applied to enamel and dentin in 2 consecutive coats using a fully saturated brush. The adhesive is then lightly dried for 2 to 5 seconds and light cured for 10 seconds.

Manufacturer:
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Suggested Retail Price:
$122.50 Single Bond Dental Adhesive System (product number 3410)
two 3-mL syringes of 35% phosphoric acid etchant
one 6-mL bottle of Single Bond Adhesive
50 etchant dispensing tips
1 brush handle
60 brush tips
48 disposable mixing wells
product instructions
4 technique cards
$104.00 Single Bond Adhesive (product number 3411), one 6 mL bottle

Government Price:
$73.50 Single Bond Dental Adhesive System (product number 3410, contents as listed above)
$62.50 Single Bond Adhesive (product number 3411), one 6 mL bottle

ADVANTAGES:
+ Bond strength was significantly greater than that of three other "single-component" products evaluated by DIS.
+ Requires less time to apply than other "one-component" bonding products tested by DIS.
+ Evaluators reported that the product was easy to use.
+ Is provided with laminated instruction cards that use graphics to depict product application.
+ Graphics depicting method for opening/closing innovative adhesive bottle are printed on inside cover of box.
+ Expiration date and lot number are stamped on box.
+ Recommended storage conditions are listed on outside of box.
+ No mixing of components is required.
+ Bottle has a hinged cap that prevents the cap from being dropped or misplaced.
+ Etchant is used to simultaneously condition enamel and dentin; this simplifies the etching process.

DISADVANTAGES:
- Is not provided with all the components called for in product instructions (i.e., silane solution, resin cement, and opaquing resin).
- Can not subjectively assess quality of the enamel etch because instructions state that enamel should be moist.
- Box is large which makes storage difficult.
- Inadequate number of syringe tips provided for etchant syringe.
- Level of remaining adhesive is difficult to see.

SUMMARY AND CONCLUSIONS:
Evaluators reported that Single Bond was easy to use and relatively quick to apply. Although it is advertised as a "one-bottle" bonding agent, its use requires pre-application etching of enamel and dentin with a 35 percent phosphoric acid etchant. The Single Bond adhesive, however, does simplify the application process because it is both primer and adhesive resin in one bottle. 3M has provided complete instructions printed in a larger-size font than normal, which makes them easier to read. To further simplify using the product, 3M includes summary instruction cards with graphics that briefly describe and show how the product is used. In DIS laboratory tests, the bond strength of Single Bond was greater than that of three other "one-component" bonding products. 3M has not provided some of the important components called for in product instructions. This lack of inclusivity is a significant disadvantage. 3M has introduced two features that distinguish Single Bond from other "one-component" bonding products: the bottle has an attached, hinged cap to keep it from being dropped or lost and the bottle is made of orange, semi-transparent plastic so the amount of liquid remaining can be visually checked. Users noted that the hinged bottle cap worked well in keeping the cap with the bottle, but they didn't think it was a very important feature. Although they felt that it was a good idea to make the bottle of adhesive slightly transparent so users can see how much of the liquid is left, the plastic bottle was too thick to easily see the remaining level. **Single Bond** is rated **Acceptable** for use by the federal dental services.