

REALITY

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2019

The Ratings | BONDING AGENTS – UNIVERSAL

3

★★★★
(4.4)

Scotchbond Universal

INTRODUCTION/MANUFACTURER'S CLAIMS

Latest version of the Scotchbond legacy that no longer includes the unnecessary prefix Adper. As the name implies, it is being promoted for virtually all types of restorations using it either as a self-etcher or as an etch & rinser.

USES

All types of restorations.

COMPOSITION

Adhesive MDP phosphate monomer, HEMA, dimethacrylates, Vitrebond copolymer (methacrylate functional copolymer of polyacrylic and polyitaconic acids), silane, silica filler, and photoinitiator in ethanol and water. It presumably starts out hydrophilic and then converts to hydrophobic. The MDP monomer provides its self-etching property.

Dual Cure Activator (DCA) Sodium toluene sulfinate in ethanol. Should be used whenever bonding to dual-cured or self-cured materials, with the exception of the manufacturer's own cement, RelyX Ultimate.

PH

2.7

VISCOSITY

All evaluators considered it to be acceptable.

ODOR

Most (89%) evaluators considered it not really noticeable, while 11% thought it was too strong.



RAVES & RANTS

- + Works with self-etch and etch & rinse
- + Bonds to zirconia and porcelain
- Even with DCA, bond to self-cured materials is mediocre
- Directions need to be professionalized

MANUFACTURER

3M www.3M.com/Scotchbond

PRICES

Introductory Kit

\$211.17/5 ml (\$42.23/ml)
\$165.40/4.4 ml/40 Unitdose
(\$37.59/ml or \$4.14 ea)

Refills

Bottles

\$178.58/5ml (\$35.72/ml)

Unitdose (100)

\$366.01/11ml (\$33.27/ml or \$3.66 ea)

Dual Cure Activator

\$179.40/5ml (\$35.88/ml)

SHELF LIFE

2 years

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SIMPLIFIED APPLICATION TECHNIQUES FOR DIRECT, LIGHT-CURED RESTORATIONS

1 In the etch & rinse mode, etch as usual for 15 seconds and rinse. Leave preparation **MOIST**. In the self-etch mode, clean and leave preparation **MOIST**. In the etch & rinse mode, most (75%) evaluators used moist, while the other 25% preferred dry. In the self-etch mode, most (57%) evaluators used dry, while the other 43% used moist. And for those who used the self-etch mode, 42% always selectively etched unprepared enamel, while the other 58% were evenly split between sometimes using selective etch and never using it.

2 Apply the adhesive for **10-15s using RUBBING**. Note that the rubbing action with the supplied applicator tips cannot be very aggressive since these tips are not particularly stiff. All evaluators stuck with one application, with half using 15s, while the other half used 20s.

However, despite the rubbing directive by the manufacturer, most (67%) evaluators chose to use gentle agitation, while rubbing was used by the remaining 33%.

3 Suction most of the excess and apply **GENTLE AIR** to evaporate the solvent. Most (45%) evaluators used gentle air, while 33% used medium air and 22% chose forceful air. Two evaluators used the Adec warm air dryer. When it came to evaporation time, most (62.5%) evaluators used 10s, while the other 37.5% went as long as 20s.

4 Light-cure for 10s. Most (56%) evaluators used 10s, while 33% used 20s and 11% used only 5s.

Using this technique, the bond strengths (MPa) with light-cured composite were:

Substrate	Etch & Rinse	Self-Etch
Enamel	31.0 ¹	31.8 ²
Dentin	27.6	25.3

¹ Enamel fractured in one specimen and another specimen failed cohesively within the composite

² Enamel fractured in three specimens

These results indicate Scotchbond Universal can effectively be used with both protocols, although the self-etch method was particularly outstanding on enamel.

FOR DIRECT, DUAL-CURED/SELF-CURED RESTORATIONS

1 In the etch & rinse mode, etch as usual for 15 seconds and rinse. Leave preparation **MOIST**. In the self-etch mode, clean and leave preparation **MOIST**.

2 Mix equal parts of the Adhesive and DCA and apply the mixture for **10-15s using RUBBING**. Note that the rubbing action with the supplied applicator tips cannot be very aggressive since these tips are not particularly stiff. Please be aware that the DCA is very fluid and if you are not careful when dispensing the drops, you can easily dispense too much material.

3 Suction most of the excess and apply **GENTLE AIR** to evaporate the solvent.

4 Light-cure for 10s.

Using this technique, the dentin bond strengths (MPa) with self-cured composite were:

Substrate	5 min	24 hrs
Dentin	4.7	5.7

Unfortunately, these tests with a self-cured composite did not have results consistent with those achieved with light-cured composite. Because of these results, we urge caution concerning using this bonding agent with self-cured materials.

Nevertheless, for the evaluators who used it with self-cured composite, no bond failures were reported.

FOR INDIRECT LIGHT-CURED RESTORATIONS

1 In the etch & rinse mode, etch as usual for 15 seconds and rinse. Leave preparation **MOIST**. In the self-etch mode, clean and leave preparation **MOIST**.

2 Apply the adhesive for **10-15s using RUBBING**. Note that the rubbing action with the supplied applicator tips cannot be very aggressive since these tips are not particularly stiff.

3 Suction most of the excess and apply **GENTLE AIR** to evaporate the solvent.

4 Do **NOT** light-cure – the adhesive will be light-cured **AFTER** you seat the indirect restoration.

FOR INDIRECT DUAL-CURED/SELF-CURED RESTORATIONS

1 In the etch & rinse mode, etch as usual for 15 seconds and rinse. Leave preparation **MOIST**. In the self-etch mode, clean and leave preparation **MOIST**.

2 Mix equal parts of the Adhesive and DCA and apply the mixture for **10-15s using RUBBING**. Note that the rubbing action with the supplied applicator tips cannot be very aggressive since these tips are not particularly stiff. Please be aware that the DCA is very fluid and if you are not careful when dispensing the drops, you can easily dispense too much material.

3 Suction most of the excess and apply **GENTLE AIR** to evaporate the solvent.

4 Do **NOT** light-cure – the adhesive will be light-cured **AFTER** you seat the indirect restoration.

INSIDE SURFACE OF INDIRECT RESTORATION

Light-cured Adhesive, but do not cure. If you are using a low viscosity resin cement, applying the Adhesive as a wetting agent may not be necessary.

Dual-cured/Self-cured Mixture of Adhesive + DCA, but do not cure.

For those evaluators who used it to bond indirect restorations, no bond failures were reported.

POST-OPERATIVE SENSITIVITY

Regardless of whether it was used in the etch & rinse or self-etch mode, only one evaluator reported any post-operative sensitivity and it occurred in only one patient.

PACKAGING

Bottle Very basic, easy to stack, small footprint cardboard box with product identification on three sides and on top. Expiration date is on a label on the back. No sealed in any manner. Inside the bot-

tle of Adhesive is secured in a cardboard recess with the accessory items.

The Adhesive comes in the same type of semi-translucent, photobloc orange plastic bottle with the "pinch and flip" cap that was introduced by its brethren, Adper Single Bond Plus. The "pinch and flip" cap features a rear-hinged dark blue plastic top which, when "pinched" with the thumb and index finger, can be "flipped" back, out of the way. This mechanism is simple to use, easy to open with one hand and seals the bottle's integral eyedropper well, but cleaning and disinfecting it can be a nuisance due to all the nooks and crannies in the flip cap. Three evaluators commented on the features of the bottle, but one of them did not think the cap sealed the bottle very well.

Unidose Very basic, easy to stack, small footprint cardboard box with product identification on three sides and on top. Expiration date is on a label on the back. No sealed in any manner. Inside are the unidoses loose in the box. The unit dose also borrows from its cousins with the L-Pop, which is a foil head holding the adhesive in a reservoir along with an applicator tip. You squeeze its large chamber using a rolling motion, which forces it into the adjoining small chamber where it can now wet the fibers of the applicator.

DCA Comes in a non-resealable plastic bag that is white opaque on one side and transparent on the other side. Product identification and expiration date are on the opaque side of the bag, but this type of packaging is not shelf-friendly. The product itself comes in a typical, screw top, black plastic squeeze bottle with the expiration date on the label.

DIRECTIONS

The conventional directions are typical multi-language, plain paper in the annoying foldout format, but at least the font size is reasonably easy to read without loupes. The information is logically presented although some of the terminology (tooth stump) is not in keeping with proper professional jargon. In another area concerning pulp protection, it states "to avoid bite increases during the seating of the later

restoration..." We get the gist of what it is trying to state, but again the terminology is clumsy, especially for a manufacturer like 3M.

There are also several plastic-coated technique cards with color illustrations depicting different uses. While the cards are well-done, their lack of copy could lead to the incorrect use of the product.

REALITY

STRENGTHS

One component for virtually all uses regardless of whether you etch or not with phosphoric acid. Bottle or unidose. Bottle allows dispensing one drop at a time and one-handed operation. No problems seating indirect restorations. Easy to use — only one application in necessary. Ability to bond to zirconia as it contains MDP monomer, which facilitates chemical bonding. It also contains silane for adhesion to glass-ceramic surface.

WEAKNESSES

Ability to bond to self-cure composites is mediocre even when DCA is used. Directions are confusing in several sections.

BOTTOM LINE

Performs well in both the etch & rinse and self-etch modes with light-cured materials, but even though it comes with an activator, it did not work as well as we expected with our self-cured test composite.

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