

3M ESPE

Adper™ Prompt™ L-Pop™ and Adper™ Prompt™

Self-Etch Adhesives

Technical Product Profile



Table of Contents

Preface	5
Introduction	6
History	6
Motivation	7
Indications	7
Chemical Background	8
Adhesion Mechanism of Conventional Adhesives	8
Mechanisms of Adhesion to the Enamel	8
Adhesion Mechanism of 3M ESPE Self-Etch Adhesives	10
Product Composition	12
Test Results	13
Application Test	13
Laboratory Evaluation	13
Technique Guides	18
Instructions for Use	20



Preface

3M™ ESPE™ Adper™ Prompt™ L-Pop™ Self-Etch Adhesive is a new adhesive based on the original 3M™ ESPE™ Prompt™ L-Pop™ All-In-One Adhesive. It is indicated for bonding direct light-cured composite and compomer materials to dentin and enamel. It is also available in a vial delivery system, 3M™ ESPE™ Adper™ Prompt™ Self-Etch Adhesive.

Building on the innovative, award winning¹ L-Pop dispenser design, Adper Prompt L-Pop self-etch adhesive introduces better activation control and improved chemistry for more reliable, consistent performance. Uniformity of the adhesive film is enhanced resulting in improved dentin bond strengths. At the same time, its unique chemistry offers an aggressive etch of enamel, eliminating the need for a separate etching step. Since etching, priming and bonding all take place in a single process, time savings are realized compared to total etch adhesive systems.

Reducing the numerous bonding steps previously required to a single step also leads to a decrease in errors. Because Adper Prompt self-etch adhesives do not rely on the total etch concept, the concern that the dentin is too wet or too dry before applying the adhesive is not as significant. The elimination of technique sensitivity, in this respect, reduces the chance for post-operative sensitivity.

Adper Prompt self-etch adhesives contain camphorquinone (CPQ) and are compatible with all light sources including halogen, LED, Plasma Arc and laser. The yellow color of CPQ also ensures proper activation when using the L-Pop delivery method.

Due to its disposable application system, Adper Prompt L-Pop self-etch adhesive also contributes toward effective operatory infection control.

¹ In 1999, the innovative L-Pop dispenser concept won both the German and the International Packaging Award, "World Star 1999."

Introduction

The introduction of tooth-colored restorative composites represented a leap forward in the development of adhesive systems. Initially, a reliable bond was only possible to enamel. This “adhesion” was achieved by acid conditioning of the enamel with phosphoric acid. In comparison, dentin is a much more difficult substrate for the adhesive bonding of composites. The adhesive systems used today offer satisfactory bond strengths for both enamel and dentin. The problem with most systems is their method of use, since dentin adhesives are characterised by a complex series of steps. Errors in use and the associated reduction in bond strength may result in premature failure of an adhesive restoration.

History

In restorative dentistry, the adhesive bond between restorative material and tooth substance permits an aesthetic treatment which preserves tooth substance. In the 1960s the first adhesives appeared on the dental market. For approximately the next 30 years, these adhesives were improved to such an extent that the clinical success of adhesive restorations is now undisputed. To better describe the adhesives, the term “generations” was established, which permits a relatively simple classification of adhesive systems.

The individual generations are distinguished, for example, by the fact that the smear layer on the dentin was not removed by the first products (2nd generation), whereas with later generations it is removed with phosphoric acid (3rd, 4th and 5th generations). Another distinguishing feature is the number of components used. While 4th generation adhesives mostly consist of a primer and a bonding agent, 5th generation products, known as “one-bottle-adhesives”, only have a single component for both the priming and bonding stages.

Whereas the term “generations” is frequently applied to adhesive systems which require separate etching, it is virtually impossible to categorize self-etching products in terms of “generations.” For this reason, the 2nd ESPE Dental Symposium, held in May 2000, proposed a classification of adhesives according to the number of procedures required and the type of interaction with the dentin:

Table 1.
Overview of the individual generations of dentin adhesives

	Number of components			
	3	2	2	1
Components	-Etching gel -Primer -Bonding agent	-Etching gel -Primer/Bonding agent	-Self-etch Primer -Bonding agent	-Self etch primer/ bonding agent
Removal of the smear layer	Yes	Yes	—	—
Dissolving the smear layer	—	—	Yes	Yes
Examples	Adper™ Scotchbond™ Multi-Purpose	Adper™ Single Bond	Clearfil™ SE (Kuraray)	Adper™ Prompt™ L-Pop™

Motivation

The adhesive systems currently available on the market are products of varying complexity which require a large number of steps. The errors in use which frequently occur with this process may result in failure of the restoration in extreme cases.

The original Prompt L-Pop All-In-One Adhesive was developed to deal with this problem. Adper Prompt self-etch adhesives continue this strategy. The properties of the materials used in Adper Prompt adhesives allow the number of steps required in the adhesion process to be reduced. Separate acid etching, rinsing and drying the cavity are no longer necessary. The following table makes a comparison between the steps required with Adper Prompt self-etch adhesives and those for a 5th generation adhesive system.

Table 2.
Step-by-step procedure
with Adper™ Prompt™ Self-
Etch Adhesives compared to
a "total etch" adhesive

5th Generation Adhesives	Adper Prompt Adhesives
Etch with phosphoric acid	Application of adhesive
Wash off acid	
Dry the cavity	
Application of adhesive	
Spread thinly with air stream	
Light curing	
Second layer of adhesive	
Spread thinly with air stream	Spread thinly with air stream
Light curing	10 second light curing
Restoration with composite	Restoration with composite

As mentioned above, etching with phosphoric acid is the standard procedure used for pretreatment of enamel and dentin. However, in routine clinical practice the procedure with a "total etch" is difficult as it involves a large number of consecutive steps. Although this complex process (see table above) is susceptible to error, it produces very good results under ideal conditions. Adper Prompt self-etch adhesives reduce the number of steps required while obtaining optimum adhesion quality.

Adper Prompt self-etch adhesives are capable of producing a well-defined enamel etch pattern. In addition, this is a "non-rinse" system because the adhesive is simply applied, without any subsequent need for rinsing or drying. This minimizes the number of steps involved.

Indications

The high bond strengths to both enamel and dentin make Adper Prompt self-etch adhesives suitable for bonding purely light-cured composite and compomer restorative materials.

The photoinitiator system contains camphorquinone, which means that Adper Prompt self-etch adhesives can be light-cured with all conventional polymerization units. This includes not only halogen lamps, but also plasma arc lamps, lasers and LED lamps.

Chemical Background

Adhesion Mechanism of Conventional Adhesives

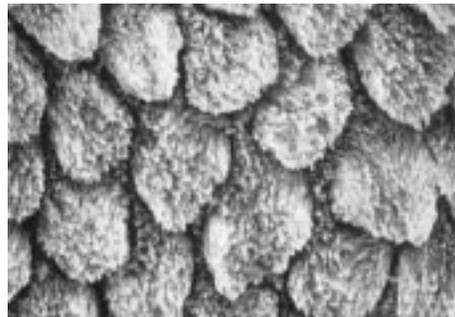
Adhesive dentistry permits a minimally invasive preparation technique. Preparations for restorations can be designed so that less tooth substance has to be removed because no retentive shape has to be created. The bond between the restorative material and the hard tooth substance is created by adhesive systems. The adhesion mechanism upon which it is based is explained in greater detail below.

Mechanisms of Adhesion to the Enamel

Untreated enamel does not allow any durable bond with the composite material because it only has minimal porosities and its surface energy is not very suitable for wetting with monomers. Owing to the acid conditioning, for example with 30% to 40% ortho-phosphoric acid, enamel prisms and interprismatic enamel are dissolved to a different extent and a microretentive relief is created.

On etched enamel, a low-viscosity composite or an enamel adhesive (bonding agent) disperses easily, penetrates the microporosities of the treated enamel surface and thus provides for microretentive bonding of the composite.

Figure 1.
Enamel etch pattern
– 35% Phosphoric acid



Adhesion to Dentin

Emulation of enamel etching technology for dentin was doomed to failure for many years due to chemical and morphological differences between the two substrates. When dentin is treated with phosphoric acid, its permeability increases dramatically. This increased outward flow of dentinal fluid results in a moisture-rich bonding interface that impairs the bond with the hydrophobic resins contained in “enamel bonding” systems and composite restoratives. The impaired bond may possibly contribute to the formation of marginal gaps during hardening of the composite.

Early developments for dentin adhesives did not achieve satisfactory dentin adhesion. This was followed by the use of adhesives with bifunctional molecules on a methacrylate basis. These molecules permit mechanical and chemical bonding of the composite to the organic and inorganic components of dentin.

Composite-Dentin Bonding Mechanism

Figure 2.
Smear layer seen through a scanning electron microscope

For the smear layer of the prepared dentin there are three different bond principles: preservation, modification and complete removal of the smear layer (Figure 2). The majority of adhesives on the market are based on removal of the smear layer (“Total Etch”).

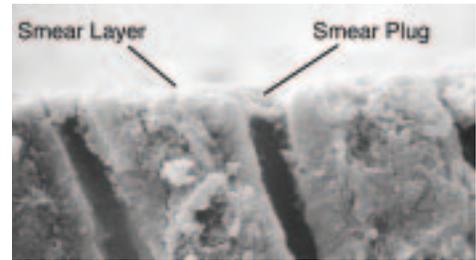
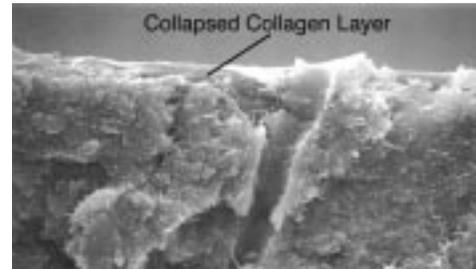


Figure 3.
Demineralized dentin seen through a scanning electron microscope

Removal of the Smear Layer – “Total Etch”

Phosphoric acid is used to remove the smear layer and demineralize the surface of the dentin. This exposes a network of collagen fibers on the surface (Figure 3).



A primer with bifunctional monomers can be used to modify the network of collagen fibers so that the bonding agent applied subsequently penetrates the dentin more effectively. This infiltration of monomers in the network of collagen fibres creates a hybrid layer which forms a micromechanical bond between the composite and the dentin. The development of so-called “tags” in the dentin tubules produces an additional mechanical bond to the dentin.

Figure 4.
Diagram of operating principle of a dentin adhesive (“Total Etch”)

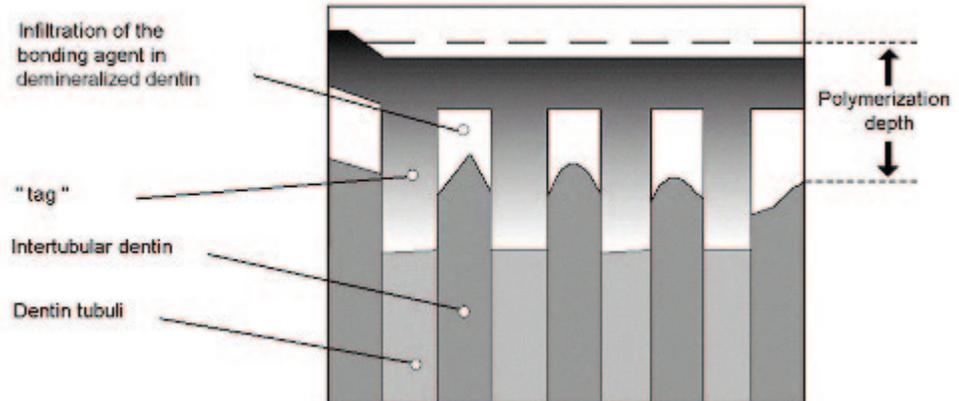
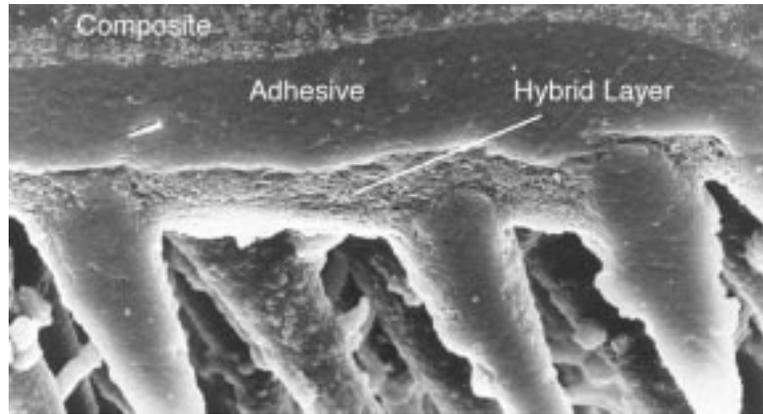


Figure 5.
Hybrid layer and tags seen through a scanning electron microscope

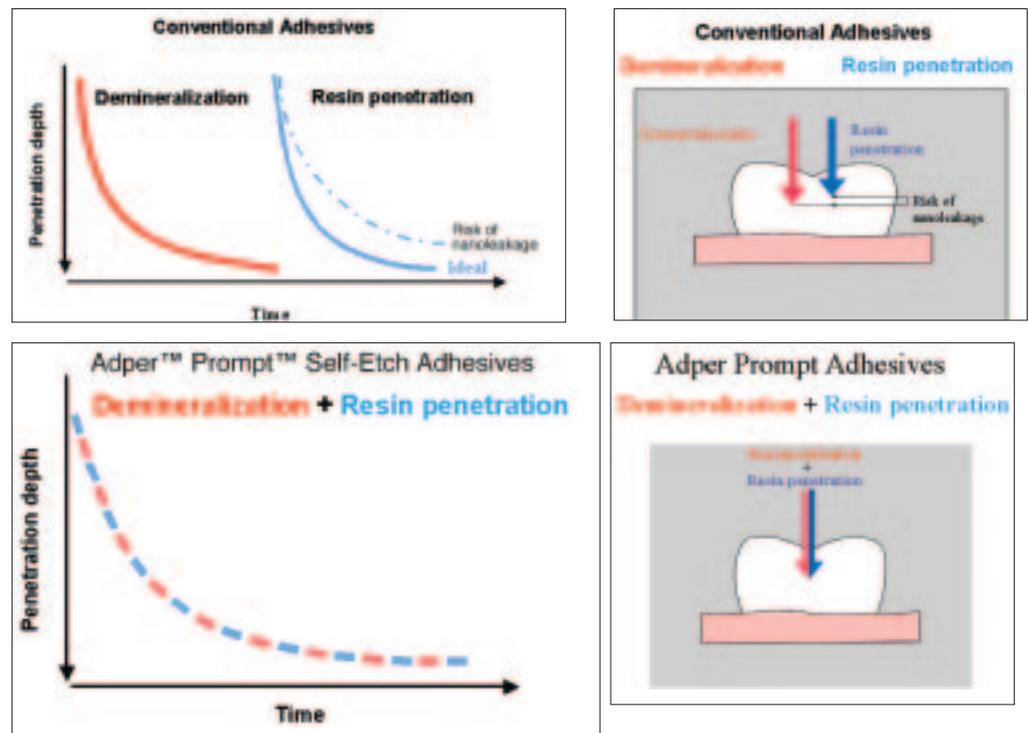


Provided the collagen layer remains hydrated, infiltration of the resin monomers is maximized. Upon desiccation, however, the collagen layer “collapses“, limiting the infiltration of resin monomers and impairing the formation of a hybrid layer throughout the demineralized zone. Under this scenario, localized adhesion may be compromised during polymerization contraction of the composite restorative material contributing to gaps between the adhesive and dentin substrate. The clinical significance is possible post-operative sensitivity.

Adhesion Mechanism of Adper™ Prompt™ L-Pop™ and Adper™ Prompt™ Self-Etch Adhesives

Unlike the conventional adhesive systems described in the above section, etching and subsequent penetration of monomers into the demineralized dentin is carried out as one step with Adper Prompt self-etch adhesives. A benefit of this procedure is that the etching depth and the depth of penetration of the adhesive are identical.

Figure 6.
Etch and penetration depth with conventional systems and Adper Prompt self-etch adhesives

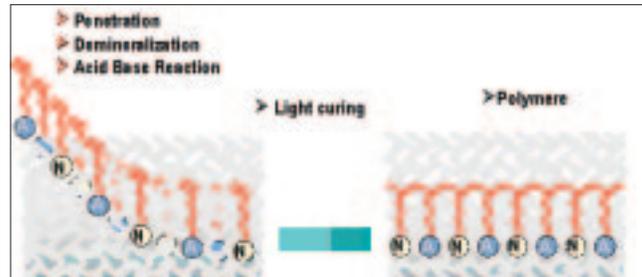


Eliminating the separate etch common to the “total etch” technique also eliminates the dependence on “moist” bonding guidelines characteristic of “single bottle” adhesive systems. This last point is significant, considering technique sensitivity, associated with adhesives requiring a “moist” bonding technique may be associated with post-operative sensitivity.

A possible adhesion mechanism for the original Prompt L-Pop all-in-one adhesive was described by Professor Reinhardt (University of Münster) and will now be used as the basis for the action of Adper Prompt self-etch adhesives.

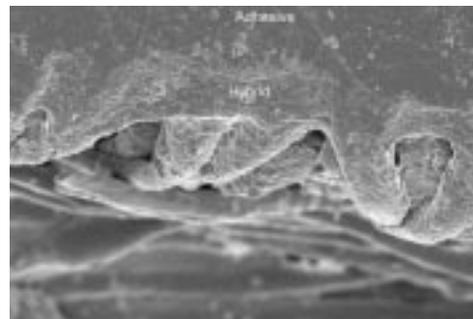
The success of Adper Prompt self-etch adhesives, based on phosphoric esters, is initially due to the fact that the aqueous phosphoric ester solution dissolves the surface areas of enamel and dentin. Given its low pH, Adper Prompt adhesives etch the enamel in a similar way to phosphoric acid itself. The result is an etch pattern for the micromechanical bonding of a restorative material. The advantage is that Adper Prompt adhesives do not have to be rinsed off with water. Rather, simply apply a thin layer using a stream of air. Unreacted phosphoric esters are polymerized into the matrix in the subsequent light-curing procedure.

Figure 7.
Diagram of operating principle of the self-conditioning adhesive Adper Prompt adhesive on the dentin



Bonding to the dentin is carried out by the formation of a hybrid layer and the creation of tags, as in the case of conventional systems. Here, too, the use of Adper Prompt adhesives causes the inorganic constituents of the surface dentin to dissolve. The monomers which cause etching are also responsible for bonding. The depth of the demineralization zone corresponds to the depth of penetration of the monomers to be polymerized. Nanoleakage, resulting from an insufficient penetration depth of the adhesive can be prevented by this mechanism.

Figure 8.
SEM photomicrograph of hybrid layer formed with Adper Prompt adhesive



As the etching process progresses, the pH of the phosphoric esters rises. This stops the demineralization reaction. In the subsequent drying process, the monomers of Adper Prompt adhesives can no longer be removed from the demineralized zone, or the dentin tubules, due to their high viscosity. The precipitates produced during this process are either blown away with the excess adhesive or incorporated into the matrix during light-curing.

In addition to the mechanical bond between the adhesive and the dentin, a chemical bond between the calcium hydroxyl apatite and the matrix can also be postulated for phosphoric esters. The phosphoric ester attaches itself to the calcium ions of the apatite.

Product Composition

Product Components

Adper Prompt self-etch adhesives are water-based adhesives consisting of two components which are mixed together immediately prior to use. Maximizing both enamel and dentin bond strengths has been achieved, in part, by optimizing the relative amounts of non-acid functional methacrylates with acidic methacrylated phosphoric esters. The result is a formula that achieves high bond strengths to dentin and, as with the original Prompt L-Pop adhesive, offers an aggressive etch of enamel.

Components consist of:

Liquid 1 (red blister):

- Methacrylated phosphoric esters
- Bis-GMA
- Initiators based on camphorquinone
- Stabilizers

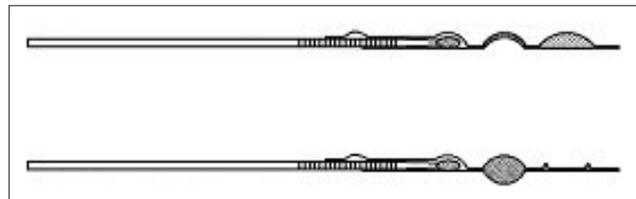
Liquid 2 (yellow blister):

- Water
- 2-Hydroxyethyl methacrylate (HEMA)
- Polyalkenoic acid
- Stabilizers

Delivery

The innovative L-Pop dispenser introduced a convenient delivery of a two-component adhesive that requires mixing before application to the tooth. For Adper Prompt L-Pop adhesive, the L-Pop dispenser has been designed with activation control to enhance consistent delivery. As shown in the diagram below, the middle chamber is slightly concave prior to activation. As the red blister is squeezed, its contents are transferred to the middle chamber causing a visible convexity. As described in the application test below, this modification has contributed to enhanced activation.

Figure 9.
Prompt L-Pop
delivery device



Test Results

Application Test

A global field application test was conducted to gauge acceptance of Adper Prompt L-Pop self-etch adhesive. Over 1,400 restorations were placed in vital teeth by fifty-eight clinicians. An overwhelming majority of clinicians considered the new L-Pop dispenser improved with respect to activation. It was also found that a majority of evaluators found it easier to obtain a homogeneous shiny layer after application to the tooth.

Figure 10.
How well can the new blister pack be activated compared to the former Prompt L-Pop adhesive?

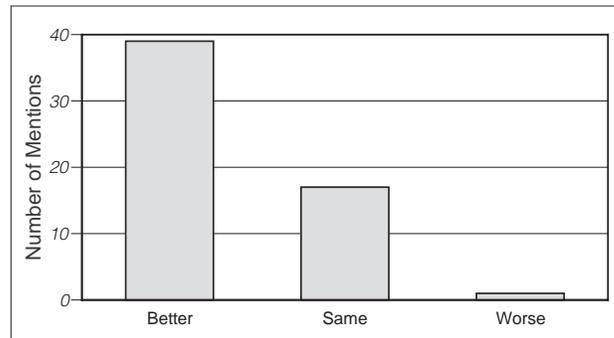
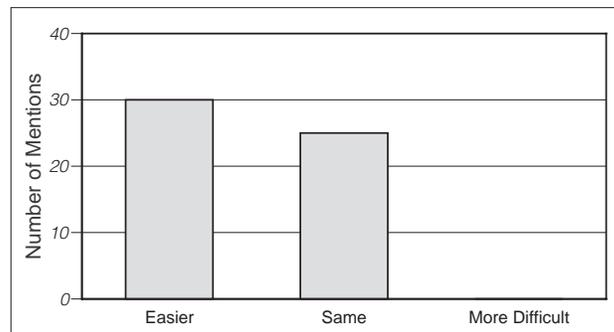


Figure 11.
How easy is a homogeneous shiny layer produced in comparison to the former Prompt L-Pop adhesive?



Finally, of the 1,400 restorations placed in vital teeth, only three reports of post-operative sensitivity were recorded. This result lends strong support for using Adper Prompt L-Pop self-etch adhesive for the management of post-operative sensitivity.

Laboratory Evaluation

Test centers:

Belgium: Prof. B. van Meerbeek (Leuven)

Germany: Dr. K.-H. Friedl (Regensburg)

Japan: Dr. Nara (Nippon Dental)

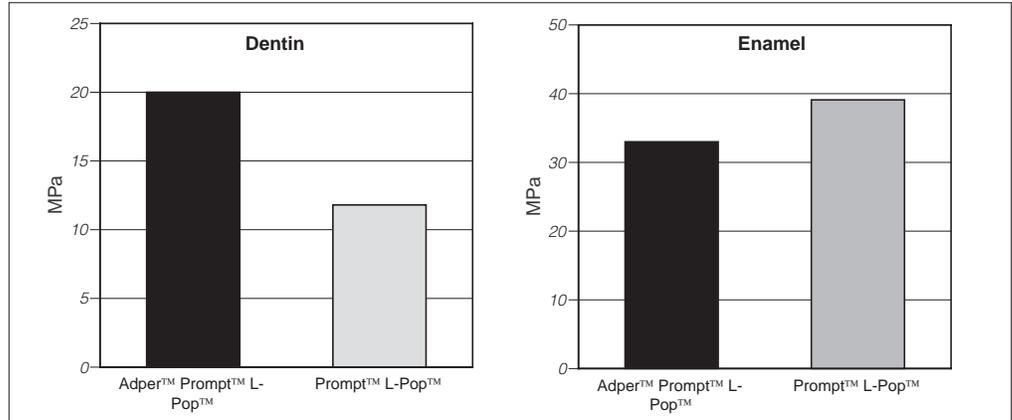
USA: Dr. J. Perdigão (University of Minnesota)
Prof. J. Powers (Houston)

These tests focused primarily on adhesion. Different test methodologies often produce results that, in absolute terms, are highly variable. For this reason, comparison across sites should be limited to relative differences between materials. Scanning electron microscopy was also used to characterize the etch on enamel.

Shear Bond Strength To Dentin and Enamel

Comparison between Adper Prompt L-Pop Self-Etch Adhesive and the former Prompt L-Pop adhesive (Dr. K.-Friedl, Regensburg, Germany).

Figure 12.
Shear bond strength to dentin and enamel

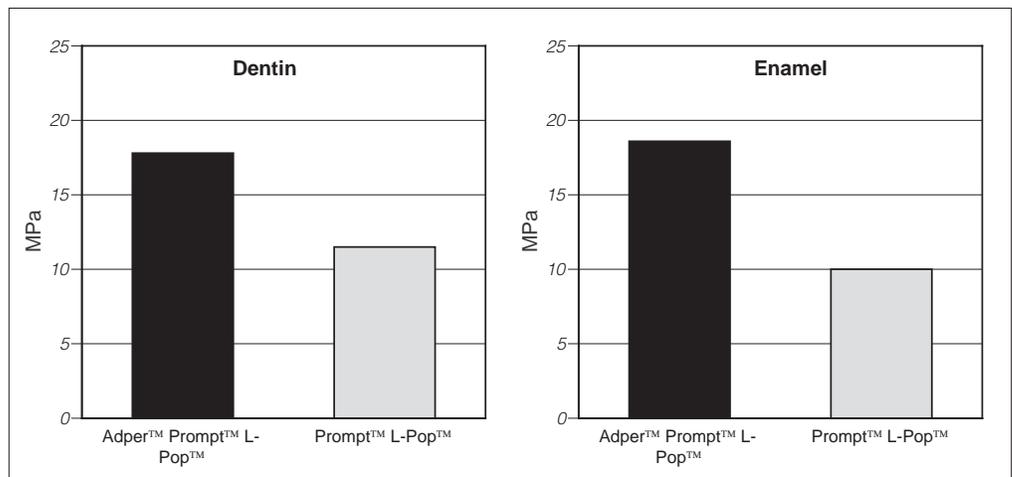


A significant improvement in dentin bond strengths was obtained with Adper Prompt L-Pop self-etch adhesive. Additionally, the investigator noted that it was easier to create a uniform, shiny surface with Adper Prompt L-Pop adhesive compared to its predecessor formula.

Microtensile Adhesion Measurements to Dentin and Enamel

Adper Prompt L-Pop vs Prompt L-Pop
(Professor Dr. B. Van Meerbeek, Catholic University Leuven, Belgium)

Figure 13.
Microtensile adhesion measurements to dentin and enamel

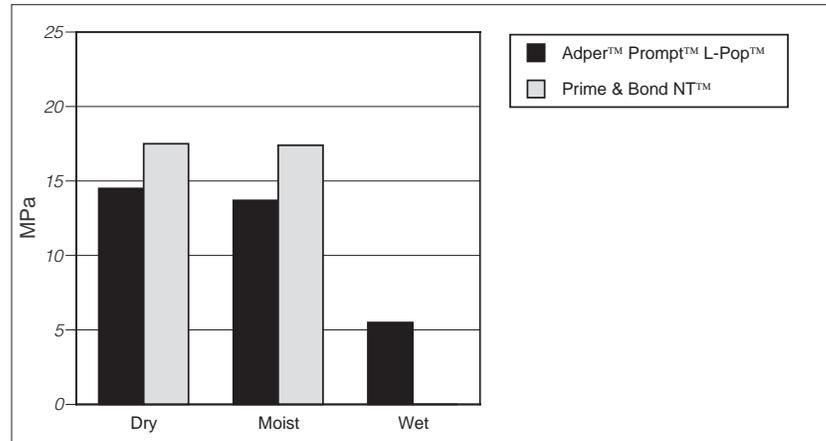


In the above study, the dentin and enamel substrate was prepared with a diamond bur. Significant differences were obtained between Adper Prompt L-Pop self-etch adhesive and its predecessor on both dentin and enamel ($p < .05$).

Dentin Tensile Bond Strength

Comparison between Adper Prompt L-Pop Self-Etch Adhesive and Prime & Bond NT™; effect of moisture (Dr. J Powers, University of Texas-Houston).

Figure 14.
Effect of moisture on dentin tensile bond strength comparison Adper Prompt L-Pop Self-Etch Adhesive and Prime & Bond NT



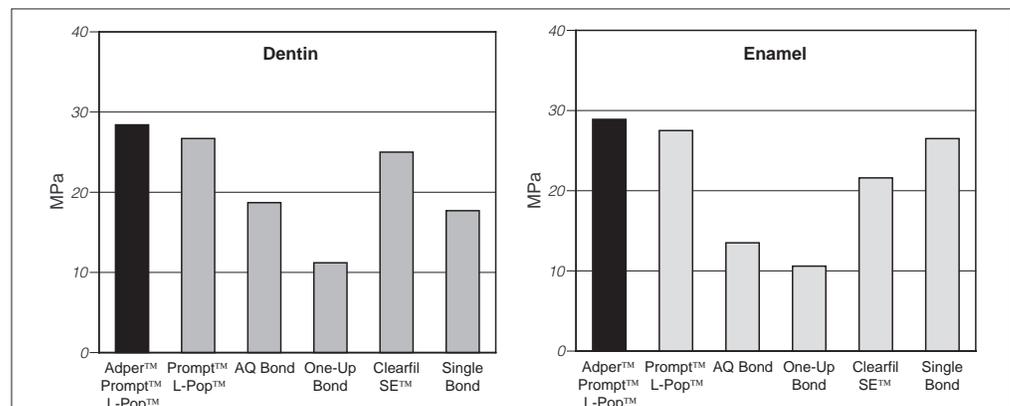
In this study, the effect of moisture on dentin tensile bond strength was examined. Prior to applying the adhesive, the dentin was either dried for five seconds, left moist using a blotting technique or re-wetted with 20 μ L of water. For both adhesives, bond strengths were tolerant of different states of dentin hydration except for the “wet” group. Previous studies with non-aqueous containing adhesives have shown compromised dentin hybrid layer formation when applied using a “total-etch” technique on air-dried dentin. Despite the finding above, a “moist” bonding technique is recommended with “total-etch” non-aqueous adhesives. Adper Prompt self-etch adhesives, however, do not rely on a moist-bonding technique since etching and adhesive infiltration occur concurrently. It is sufficient to briefly air-dry the preparation prior to applying the adhesive.

Tensile Bond Strength to Dentin and Enamel

(Dr. Nara, Nippon Dental, Japan)

In the field application test discussed above, it was found that over a third of the respondents routinely apply more than one coat of Adper Prompt adhesive during the restorative procedure. The results presented below depict tensile bond strengths obtained when two coats of Adper Prompt adhesive and Prompt L-Pop adhesive were applied during the bonding process. All other materials listed were used according to manufacturers’ specifications.

Figure 15.
Tensile bond strength to dentin and enamel



Microtensile Adhesion to Dentin and Enamel and Characterization of Enamel Etch via SEM

(Dr. J. Perdigão, University of Minnesota School of Dentistry).

In this study, a medium diamond bur was used to prepare the dentin and enamel substrates for microtensile specimens. Unprepared enamel was also studied by bonding to intact buccal and lingual enamel. While higher dentin microtensile bonds were noted for Clearfil™ SE, the reverse was found on enamel. The higher microtensile bonds to enamel for Adper Prompt adhesive is presumed to be due to its significantly greater demineralization potential as observed in the SEM's below.

Figure 16.
Microtensile adhesion to dentin and enamel

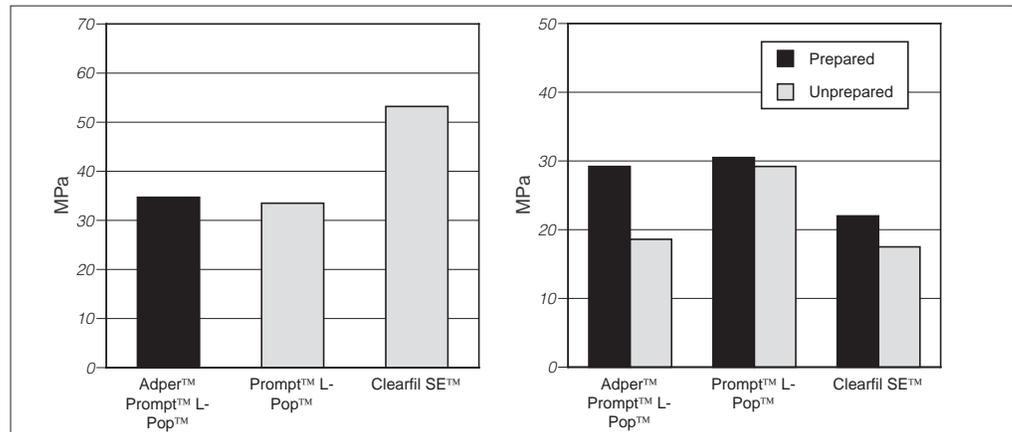


Figure 17.
Adper Prompt self-etch adhesive - medium diamond ground enamel

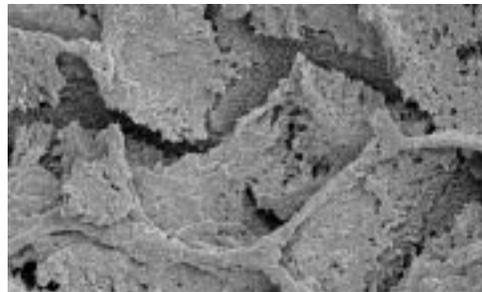


Figure 17

Figure 18.
Clearfil SE - medium diamond ground enamel

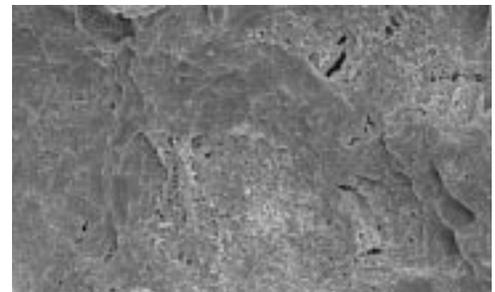


Figure 18

Figure 19.
Adper Prompt self-etch adhesive - intact enamel

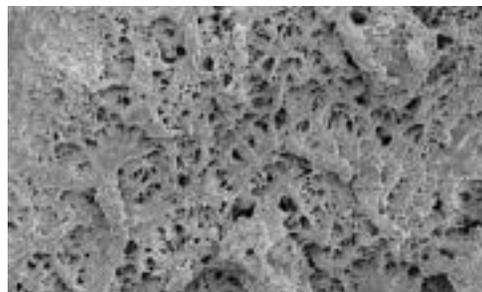


Figure 19

Figure 20.
Clearfil SE - intact enamel

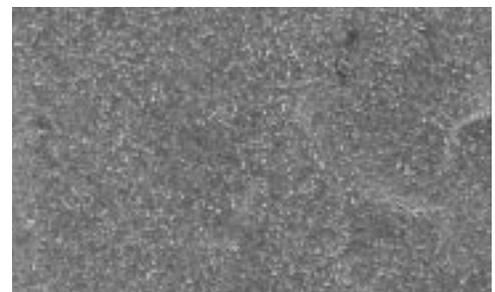


Figure 20

Compatibility Adhesion Tests on Enamel and Dentin

Adper Prompt Self-Etch Adhesive was tested in a shear bond test for compatibility with various composite restorative materials including flowable and compomer materials. The results are shown in the two tables below.

Figure 21.
Compatibility adhesion tests on enamel

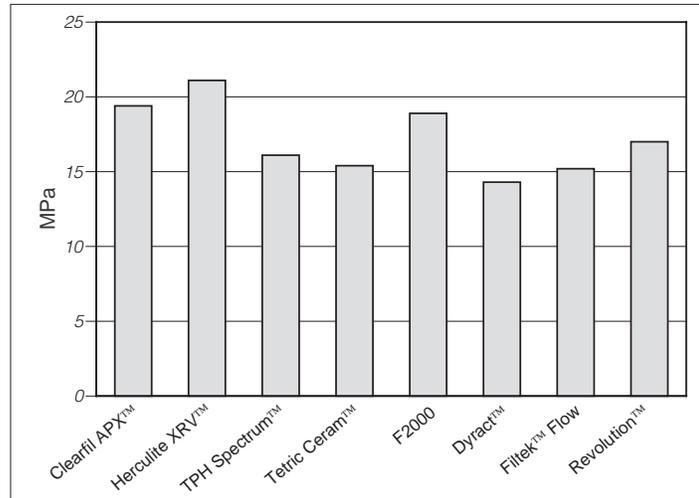
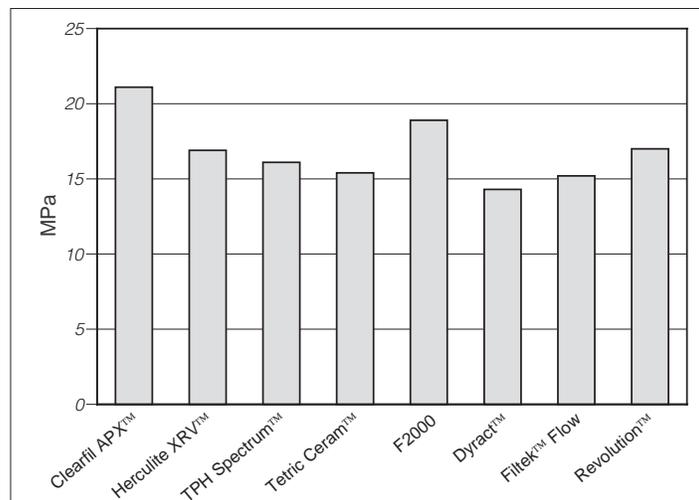


Figure 22.
Compatibility adhesion tests on dentin



Technique Guides

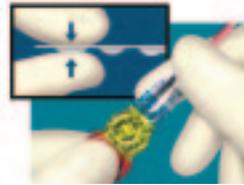
3M ESPE DIRECT LIGHT-CURE RESTORATIVE

Adper™ Prompt™ L-Pop™ Self-Etch Adhesive

Preparation:

Clean unprepared tooth structure with a rubber cup and cleaning paste free of fluoride and oil; rinse thoroughly with water spray and dry.

- Squeeze the material from the red reservoir into the yellow (middle) reservoir.
- The middle reservoir will expand indicating proper transfer of fluid.



1

- Carefully fold back the red reservoir until it meets the flat face of the yellow reservoir.
- **Keep the red reservoir tightly squeezed while bending the package to prevent the material from flowing back.**



2

- Squeeze the liquid from the yellow reservoir into the green reservoir.



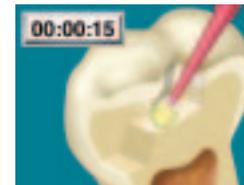
3

- Apply a churning or spinning motion to the applicator for 5 seconds to mix the adhesive and fully coat the applicator tip.
- **A lightly yellow-tinted applicator tip indicates proper activation.**



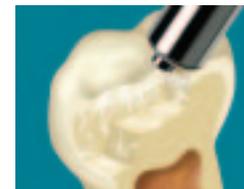
4

- Apply adhesive to the entire surface of the cavity, rubbing in the solution with moderate finger pressure for 15 sec.
- **Do not shorten this time. Proper bonding will not occur if the solution is simply applied and dispersed.**



5

- Use a gentle stream of air to thoroughly dry the adhesive to a thin film.
- **If the surface does not appear smooth and glossy, reapply adhesive and dry as instructed. Repeat as necessary.**



6

- Light cure for ten seconds (3 second exposure with a plasma arc lamp).



7

3M ESPE Technical Hotline 1-800-634-2249
Please refer to instructions for more detailed information
as well as precautionary and warranty information.

44-0007-3459-8
70-2009-3471-2
© 2002 3M

Adper™ Prompt™ Self-Etch Adhesive

Preparation:

Clean unprepared tooth structure with a rubber cup and cleaning paste free of fluoride and oil; rinse thoroughly with water spray and dry.

- Hold vial in a vertical orientation as shown.
- Dispense one drop from **solution A** into the disposable mixing well.
- **Note:** holding the vial vertically for a few seconds before dispensing allows trapped air to escape out of the vial tip.



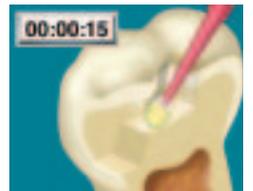
- Hold vial in a vertical orientation as shown.
- Dispense one drop from **solution B** into the disposable mixing well.
- **Note: to ensure optimum drop ratios, keep the vials vertical when dispensing.**



- Mix the solution aggressively for 5 seconds with the disposable mixing brush.



- Apply adhesive to the entire surface of the cavity, rubbing in the solution with moderate finger pressure for 15 seconds.
- **Do not shorten this time. Proper bonding will not occur if the solution is simply applied and dispersed.**



- Use a gentle stream of air to **thoroughly** dry the adhesive to a thin film.
- **If the surface does not appear smooth and glossy, reapply adhesive and dry as instructed. Repeat as necessary.**



- Light cure for ten seconds (3 second exposure with a plasma arc lamp).



Instructions for Use

Adper™ Prompt™ L-Pop™ Self-Etch Adhesive Adper™ Prompt™ Self-Etch Adhesive

Product Description

Adper Prompt L-Pop adhesive by 3M ESPE, is a self-etch adhesive in L-Pop blisters for one-time use. Both components in the blister packaging are activated, making the solution ready for use. Adper Prompt adhesive by 3M ESPE, is a self-etch adhesive in bottles. Both solutions are mixed in a mixing well. Etching, priming, and bonding take place in one step while the adhesive is being brushed on. The adhesive is polymerized with halogen, laser, LED, or plasma lights.

Instructions for Use should not be discarded for the duration of product use.

Fields of Application

- Bonding between dentin/enamel and composite filling materials
- Bonding between dentin/enamel and compomer filling materials

Adper Prompt adhesive is suited for purely light-curing composite or compomer materials, but not for dual-curing or self-curing materials.

Precautions

Avoid contact with mucosa, skin, and eyes. In the event of accidental contact, the affected area should be thoroughly rinsed with water.

Wear gloves during processing!

Use a rubber dam if necessary. Superficial changes of the gingivae, which may occur in some cases, are reversible.

Eugenol-free products should be used, as relining materials that contain eugenol, can adversely affect the polymerization of the adhesive.

Preparation

Remove loose preparation debris by spraying with water and dry the teeth to be treated with air. Do not overdry!

Clean untreated tooth structure with a rubber cup and a fluoride-free cleaning paste (e. g. pumice paste); rinse thoroughly with water spray and dry.

Pulp Protection

To prevent pulpal irritation, the areas around the pulp should be covered by dabbing them with a calcium hydroxide preparation (e. g. Alkaliner™ Liner/Base by 3M

ESPE). The calcium hydroxide preparation can be covered with a relining material, e.g. Vitrebond™ Liner/Base by 3M ESPE.

Mixing Adper Prompt L-Pop Self-Etch Adhesive

Attention: Do not activate Adper Prompt L-Pop adhesive without a disposable applicator!

Hold the shaft of the disposable applicator with one hand.

With the thumb and index finger of the other hand, squeeze the red fluid reservoir, starting with the outer end, in the direction of the disposable applicator.

- When the reservoir has been fully squeezed out, the yellow blister area will be markedly convex toward the outside. This clearly visible convexity indicates that the blister has been properly activated.

Squeeze the red reservoir until it is completely empty and carefully fold it at the connection to the yellow reservoir.
- To prevent the fluid from flowing back, keep the red reservoir squeezed together while folding.
- The red and yellow blister sections are now on top of each other (only the green end of the blister is now visible).

Beginning at the outer end again, squeeze all fluid from the yellow section into the green section of the blister. Use measured pressure and cover the blister opening at the shaft of the applicator with your thumb. This will prevent the contents from spraying out and coming into contact with skin and clothing.

As soon as the fluid has flowed into the green area of the blister, **turn the disposable applicator back and forth in the fluid**. This will mix the fluid again and cover the applicator completely.

For easier application in the cavity, the applicator can be folded while it is still in the blister: In order to do this, only pull the disposable applicator out of the blister far enough that the intended folding area (narrow section of the applicator shaft) can be seen at the edge of the foil, and fold the applicator at this location over your thumbnail.

The applicator can only be removed in order to be used. **When the fluid is optimally mixed, it will have a homogeneous, yellowish color without streaks!** Treat **each tooth individually and quickly**, as described under Application.

During treatment, move the fluid into the open end by fully squeezing out the green blister area. This allows the applicator to be remoisturized without covering the applicator shaft with fluid. However, if the shaft does become covered with fluid, be sure that the fluid-covered applicator shaft does not come into contact with the mucosa.

Mixing Adper Prompt Self-Etch Adhesive

Before dosing both solutions, remove fluid residue from the dropper to guarantee precise dosage!

Hold the bottle with liquid A down with the dropper and wait a few seconds. This allows the relatively highly viscous fluid to flow in the direction, and any air bubbles present can rise up in the fluid.

Dose 1 drop of liquid A and 1 drop of liquid B into the mixing well. **Keep the bottles vertical**, in order to ensure equal drop size, guaranteeing optimal proportions in the mixture! **In the case of accidental misdosing, the fluid must be disposed of, as the adhesive effect has been eliminated.** Close the bottles immediately after use.

Mix both components with a disposable applicator **until a clear, yellowish solution without streaking results.**

Protect the liquid from light in the mixing well during treatment.

Application

Brush the adhesive onto the entire cavity surface, and, for a treatment surface of approximately 5×5 mm (25 mm²), **massage it in for 15 sec, applying pressure; longer massaging times are required for larger surfaces.**

- This time cannot be shortened! It is not enough just to brush it on and distribute it!
- The adhesive must be massaged in over the entire surface, as this is the step in which the cavity surface is also etched, conditioned, and covered with adhesive. The more thoroughly the adhesive is massaged in, the more effective it will be!
- Protect the disposable applicator from light during treatment.
- If the applicator is contaminated with blood or saliva, use a new Adper Prompt L-Pop dispenser or a new disposable applicator. Disposable applicators are available separately in sizes M (medium) and XS (fine).

Next, blow the adhesive until it becomes a thin film. The surface must have an even shine; otherwise, the adhesive must be brushed on and blown again. Surfaces without a silky shine will compromise adhesion!

Harden the adhesive with a halogen or LED light for 10 seconds. Harden for only 3 seconds if using a laser or plasma light.

Continue according to the manual for the filling material you are using.

Dispose of the blister with the rest of the adhesive after treating the patient.

Notes

It is extremely important for adhesion that both adhesive components be completely mixed. Using incompletely activated Adper Prompt L-Pop blisters can cause the adhesion effect to be eliminated.

Massaging the adhesive only partially or shortening the massage time also compromises adhesion.

Disposal

Only dispose of completely empty packages. The residue of the etching fluids - if heavily diluted with water or neutralized - can be poured down the drain.

Incompatibilities

In susceptible individuals, sensitization to the product cannot be excluded. If allergic reactions occur, use of the product should be discontinued and the product completely removed. In rare cases, particularly when the instructions for processing are not followed, pulp discomfort is possible.

Storage and Shelf Life

Adper Prompt L-Pop blisters should be protected from light.

Do not store the product at temperatures above 25°C.

Do not use after expiration date.

Customer Information

No person is authorized to provide any information which deviates from the information provided in this instruction sheet.

Warranty

3M ESPE warrants this product will be free from defects in material and manufacture.

3M ESPE MAKES NO OTHER WARRANTIES INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

User is responsible for determining the suitability of the product for user's application. If this product is defective within the warranty period, your exclusive remedy and 3M ESPE's sole obligation shall be repair or replacement of the 3M ESPE product.

Limitation of Liability

Except where prohibited by law, 3M ESPE will not be liable for any loss or damage arising from this product, whether direct, indirect, special, incidental or consequential, regardless of the theory asserted, including warranty, contract, negligence or strict liability.

3M, ESPE, Alkaliner, L-Pop, Prompt, Scotchbond and Vitrebond are trademarks of 3M ESPE or 3M ESPE AG.

Dyract, Prime & Bond NT, Spectrum and TPH, are registered trademarks or trademarks of Caulk/Dentsply or Dentsply DeTrey-DeDent.

Tetric Ceram is a trademark of Vivadent Ivoclar.

Herculite and Revolution are trademarks of Kerr.

Clearfil is a trademark of Kuraray Company.

3M ESPE

Dental Products
3M Center,
Building 275-2SE-03
St. Paul, MN 55144-1000

Dental Products
3M Canada
Post Office Box 5757
London, Ontario, Canada N6A4T1



40% Pre-consumer waste paper
10% Post-consumer waste paper

Printed in U.S.A.
© 3M IPC 2002 70-2009-3482-9