

Orthodontic Bonding: The Next Generation

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General dentists are in the midst of a bonding revolution, replacing Black's old dovetail amalgams with metal-free, tooth-shaded bonded restorations that preserve tooth structure and strengthen weakened cusps instead of splitting them. This revolution has been made possible by a succession of enamel and dentinal adhesives that have recently undergone marked improvements in ease of use and bond strength.

The Prompt L-Pop* system (Fig. 1), now receiving enthusiastic reviews in operative dentistry,¹⁻³ will be of significant value to orthodontists because it is a unit-dose system, with etchant, primer, adhesive, and microbrush sealed in a triple-lollipop-shape aluminum foil package. Acid etching, rinsing, priming, and application of adhesive are thus combined into one step.

Procedure

1. Pumice or microabrade the enamel surfaces to be bonded.
2. Pop the top bubble of the Prompt L-Pop package and fold it over, forcing the liquid into the second chamber (Fig. 2).
3. Pop the second bubble, forcing the adhesive mixture into the third chamber, which contains the microbrush. Stir the brush around in the third chamber to saturate it with resin.
4. Rub the adhesive into the enamel surface for 15 seconds (Fig. 3). Air-dry lightly to evaporate the water carrier, leaving a smooth, glossy surface rather than the frosted appearance of phosphoric acid etching. One package of Prompt L-Pop will usually be enough to bond one arch.
5. Place Unitek self-adhesive brackets.** Light-curing the adhesive separately is optional.

*Registered trademark of ESPE America, Inc., 1710 Romano Drive, P.O. Box 2000, Plymouth Meeting, PA 19462.

**3M Unitek, 2724 S. Peck Road, Monrovia, CA 91016.



Fig. 1 Prompt L-Pop adhesive system.

Discussion

Solvent evaporation changes the consistency of an adhesive as a newly opened bottle is emptied. When Prompt L-Pop is used with unit-dose Unitek brackets, the entire system is self-contained, eliminating both evaporation and cross-contamination.

Prompt is a low-pH, self-etching adhesive that produces a well-defined etch pattern similar to that of phosphoric acid.² As with fourth- and fifth-generation adhesives, it forms a microretentive bond with the treated surface. Unlike these systems, however, it allows the etchant and monomer to penetrate at the same time, avoiding potential technique errors and nanoleakage. Prompt has shown outstanding bond strength to both dentin and enamel.¹

Because composite can shrink by about 1-3% during light-curing, I aim the light source at the adhesive-bracket interface from the occlusal (Fig. 4). Any shrinkage then occurs toward the tooth surface rather than away from it. Newer, more intense light sources allow shorter exposures and thus more accurate and complete bonding, even in hard-to-cure areas such as an acrylic bite ramp behind the maxillary incisors. While argon lasers and plasma-arc curing systems are



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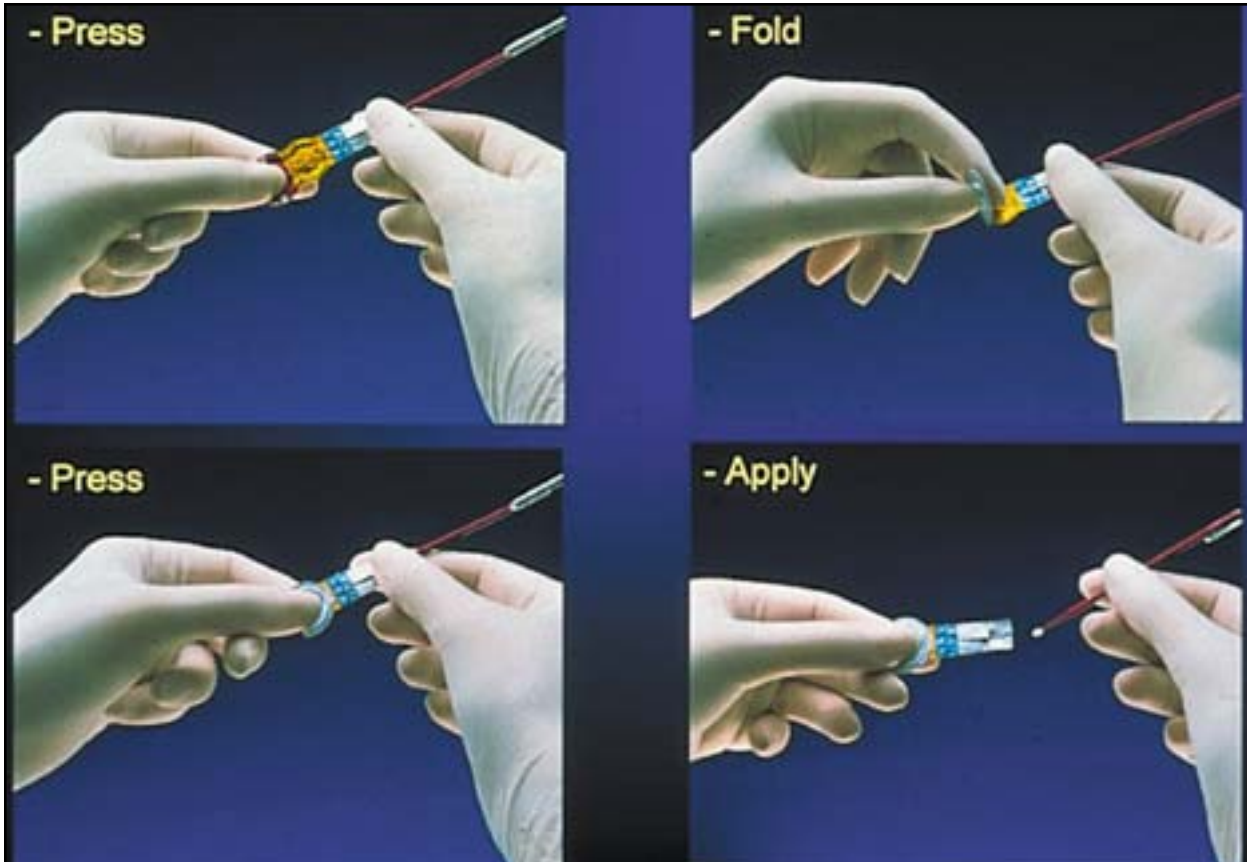


Fig. 2 Activation of adhesive.



Fig. 3 Adhesive rubbed into enamel surface with microbrush for 15 seconds.



Fig. 4 Curing with light source aimed at adhesive-bracket interface from occlusal.

expensive, new light-concentrating tips such as Power Slot*** and Turbo Tip† also permit nearly instantaneous curing.

***Reliance Orthodontic Products, P.O. Box 678, Itasca, IL 60143.

†Demetron Kerr Corporation, 5 Ye Old Road, Danbury, CT 06810.

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3. Denehy, G.E.; Cobb, D.S.; Bouschlicher, M.B.; and Vargas, M.A.: Clinical evaluation of a self-etching primer/adhesive in posterior composites (abstr.), J. Dent. Res., in press.