

## BONDING TO DENTIN

Most offices treating adult patients will have the need to place attachments on dentin. If the dentin is conditioned like enamel, the adhesion will be poor and sensitivity beneath the bracket can occur. The proper way to bond to dentin is to acid etch it for 30 seconds, rinse and blot dry the surface: DO NOT DESICCATE it like you would enamel. If the dentin is desiccated, bond strength will be sacrificed and tooth sensitivity can occur. Next, apply 4 coats of Assure<sup>®</sup> Universal Bonding Resin and lightly dry after the last coat only. Light cure the Assure for 10 seconds. Apply bracket with any light or chemical cure paste and cure as recommended.

## METAL AND PORCELAIN SURFACES IN THE MOUTH.... BUR ROUGHEN OR SANDBLAST?

The most difficult surface to bond to in the mouth is gold followed by amalgam, then stainless steel. Most offices will roughen the metal surface with a medium or coarse bur, followed by the application of a metal primer. The study below shows that a bracket with light cure paste bonded to a gold surface that was sandblasted and primed with Assure UBR produced twice the sheer bond strength as that of a coarse bur roughened and primed surface.

### Surface: GOLD

**Method 1:** Sandblast/Assure/ bracket with light cure paste

**Method 2:** Green Stone/Assure/ bracket with light cure paste

### SBS

19Mpa

10Mpa

The recommended bonding technique on any metal surface is to sandblast, rinse and dry. Apply 1 coat of Assure UBR, stroke over it several times and lightly dry with air. Apply bracket with chemical or light cure paste. WARNING: If you use a light cure paste, double your normal curing time because the light will not reflect off the metal like it does enamel.

**Porcelain:** The two reasons we recommend you sandblast porcelain as opposed to roughening with a bur is that it will increase the bond strength and more importantly do less damage to the crown making it easier for you to restore a shine to the surface after debonding. The technique is as follows: Sandblast, rinse and dry. Place barrier gel on gingival margin. Place Porc Etch<sup>™</sup> (hydrofluoric acid) on crown. After 4 minutes, wipe off acid and rinse thoroughly and carefully into suction. Dry thoroughly with contaminate free air. Apply 1 **thin** coat of Porcelain Conditioner (silane). Dry and apply 1 coat of Assure UBR. The barrier gel will protect the gingiva in the event the hydrofluoric acid reaches the gingival margin. Be sure to apply only 1 **thin** coat of silane.....too much silane will weaken the bond . Occasionally I receive queries from offices asking if mixing phosphoric acid and silane on the porcelain surface can be substituted for the aforementioned technique. Below is a bond strength comparison of these two techniques. After debonding the shine can be restored on a non-enamel surface by removing any composite with a finishing point and polishing with Restore<sup>™</sup> diamond polishing paste.

### Surface: PORCELAIN

**Method 1:** Sandblast/Porc Etch/ Porcelain Conditioner (silane)/Assure/ Bracket with L.C. paste

**Method 2:** Sandblast/Mix phosphoric acid and silane/ Bracket with light cure paste

### SBS

21Mpa

10Mpa

## **CURING LIGHTS.....DO I NEED A SPECIAL LIGHT TO CURE CERTAIN MATERIALS AND HOW DO I EVALUATE A LIGHT FOR PURCHASE?**

At this time all LED curing lights will cure all pastes, cements and sealants commercially available regardless of manufacturer. The only exception is the original Pro Seal<sup>®</sup> which has to be cured with either a halogen light, the Vivadent Bluephase<sup>®</sup> 20i or the Fusion<sup>®</sup> Purple LED light. However LED Pro Seal can be cured with any light. There are a lot of good lights available and the intensity of the diodes has increased meaning curing times have decreased. However, an orthodontist uses a curing light a lot longer at one sitting than a restorative dentist, placing more stress on the unit. When you are going to purchase a light, illuminate it and place it on a digital radiometer (Demetron<sup>®</sup> or Vivadent<sup>®</sup> brand). Record the intensity. Cycle the light like you would if you were curing an arch or more of brackets, so the light is illuminated for 2 to 3 minutes. Then check the intensity again....if the intensity has dissipated by more than 10%, you won't want to purchase that light because you would have to cure subsequent brackets longer to achieve maximum strength. Also, if that continuous curing has warmed the handle to an uncomfortable state, your assistant won't want the light. Finally, be sure the company selling the light has the ability to service it after the warranty expires.

### **BITE TURBOS**

The most important criteria in the selection of a paste to form a composite bite turbo is that it has the same wear rate as enamel (Ultra Band Lok<sup>®</sup>, LCR<sup>™</sup> Light Cure Retainer). It cannot be harder or it will wear the opposing enamel surface. A lot of the conventional bracket adhesives are too hard for this application. Many clinicians like the paste they choose to have color such as blue to contrast enamel and make removal easier. Enamel preparation is generally done with phosphoric acid, but the use of a self etching primer is quick and reliable. If using a self etching primer, be sure to scrub all areas where adhesion is required for at least 5 seconds and dry thoroughly to get the best bond. If any of the dentition you are bonding to is primary, be sure to use a coat of Assure UBR and dry as your final step before applying the paste.

### **GLUTEN ALLERGIES**

Reliance is proud to announce that all our adhesives, cements, conditioners, primers and sealants are Gluten free.

I hope you benefited from this edition of the bonding bulletin. I will be on the program at the AAO Monday, May 16th, from 8:30am to 10:00am and Tuesday, May 17th, from 1:00pm to 1:45pm. Hope to see you there. If not, you can always email me at [paulgropi@aol.com](mailto:paulgropi@aol.com). If you have a topic you would like me to address in future bonding bulletins please email or call me anytime.

**REMINDER!!** You can go online at [www.relianceorthodontics.com](http://www.relianceorthodontics.com) to view videos on special bonding situations.

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