

BONDING TO PORCELAIN...OR IS IT A CEREC CROWN...AND WHAT IF IT IS ZIRCONIA?

Every practice has or will have the occasion to bond to a surface that resembles porcelain. Bonding to porcelain has become uneventful. The steps are as follows:

- Sandblast the surface using 50 micron particle size alumina oxide. Sandblasting I feel is mandatory for 2 reasons. First it will improve adhesion and more importantly will not damage the surface like a coarse bur. A sandblasted surface will be easier for the clinician to restore a shine to at the time of debonding. Take a look at the SEM photos below and it is evident the sandblasted surface is far more mechanically retentive than a coarse bur roughened surface.
 - Isolate the gingival with a barrier gel.
 - Place the Porc Etch a 9% solution of hydrofluoric acid gel on the surface where the bracket will be placed and slightly beyond.
 - After 4 minutes, wipe the acid off the surface and rinse excess into suction. Dry with air.
 - Place a THIN coat of Porcelain conditioner (silane) on the etched porcelain surface and dry.
 - Place a coat of Assure Universal Bonding resin on the conditioned porcelain and dry. Place bracket with paste and cure. If using a light cure paste double your curing time as the light will not penetrate the porcelain like enamel.

OK, we followed those steps twice yet had failure between the adhesive paste and the tooth surface...now what? Check with the dentist and see if the tooth is a Cerec Crown, one that would have been fabricated in his or her office. If so inquire which material they used to fabricate the crown. Below are the materials they would have used to fabricate the crown. Notice 4 are porcelain but one, the 3M ESPE Paradigm MX 100 is a composite and must be conditioned as a composite restoration: Fine diamond (not carbide or green stone) roughening, coat of Assure or Plastic Conditioner and bracket with paste.

Vita Cerec Bloc MARK II	Porcelain
Vivadent Empress	Porcelain
Vivadent IPS eMax	Porcelain
3M ESPE Paradigm C	Porcelain
3m ESPE Paradigm MX 100	Composite

Upon investigation what if you discover the surface resembling porcelain is Zirconia? Zirconia is increasing in popularity for its strength and durability. Generally it is found in the posterior section of the mouth which makes it imperative to be able to bond successfully to it. In early 2013 Reliance will introduce an upgraded version of Assure which will bond to Zirconia with no additional primers.

BONDING ALIGNER ATTACHMENTS

There are several materials you can use to fabricate aligner attachments. The criteria for choosing the proper paste should be as follows: Select a paste that is hard when cured with a high resultant Barcol hardness rating. The paste when cured should be "as smooth as glass". These 2 features combined will reduce the wear of the composite as the aligner is inserted and removed several times a day. I feel this a great place for the use of a self etching primer as long as it is used properly: Scrub at least 5-10 seconds in the area where the attachment will be placed, dry thoroughly to reduce the chance of the excess solvent interfering with the bond, then apply 1 coat of Assure UBR, dry and place the composite loaded aligner. Light cure 10 seconds through the aligner with a high intensity light, remove the aligner and cure the composite pad an additional 10 seconds on the tooth. Light activated pastes that meet the aforementioned criteria are LCR and Flow Tain.

WHAT IS A DIGITAL RADIOMETER AND WHY DO I NEED ONE?

A digital radiometer is a device that measures the intensity of your dental curing light. It is essential that you know the intensity of your curing light when you cure the first bracket on a patient and does your light maintain its intensity as you cure multiple brackets. To determine how long you have to cure per bracket with your light simply divide the intensity of your light into 10,000. For example if your light intensity on a digital radiometer measures 1000 you would have to cure 10 seconds for maximum curing efficiency, if it measures 500, 20 seconds, etc. My recommendation is once a month when you have a patient strapped up and ready for light curing, place the light on the digital radiometer, illuminate it and take a reading. Then cure 10 brackets and take a second reading. If the intensity dissipates by more than 10% then you will have to correspondingly cure longer the more brackets you cure at one time. This is a great way to test a light before you buy it...unfortunately some lights will flunk this test, or the handle will warm up to an uncomfortable level or the light director could warm to the point where it could burn soft tissue on a patient during the curing process. A couple of digital radiometers I recommend are made by Demetron and Vivadent.

DO I REALLY NEED A CHAIRSIDE SANBLASTER?

YES, YES, YES to mechanically prepare three surfaces in the mouth: any metal surface (gold, amalgam, stainless steel) any porcelain surface (improved bond less surface damage) and any time you are placing an appliance on a lingual enamel surface. Below are SEM's showing microetched metal and porcelain surfaces compared to those same surfaces that have been roughened with a coarse diamond.....the sandblasted surfaces are far more mechanically retentive.

What new products are coming from Reliance?

Coming soon from Reliance are 3 exciting new products: Single strand Bond A Braid, Pontic Paint and Aligner adhesive.

For many years Bond a Braid has been the choice of clinicians for lingual retention because it is a flat metal ribbon that prevents root torque(?) Like all retention systems interproximal breakage is a problem. The new titanium single strand Bond A Braid will have increased strength at the interproximal and is safe for all patients because it is nickel free.

Pontic paint is a single light cure paste that comes in 3 shades and can be painted on any aligner material to mask a space or missing tooth. The patented paint formulation will not crack regardless of the deformation of the aligner.

Aligner adhesive is a clear light cure paste that will bond any metal or plastic button, hook or power arm to any aligner material regardless of manufacturer. Look for these exciting new products exclusively from Reliance.

Titanium BAB is patent pending

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and to place orders or
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www.relianceorthodontics.com**