

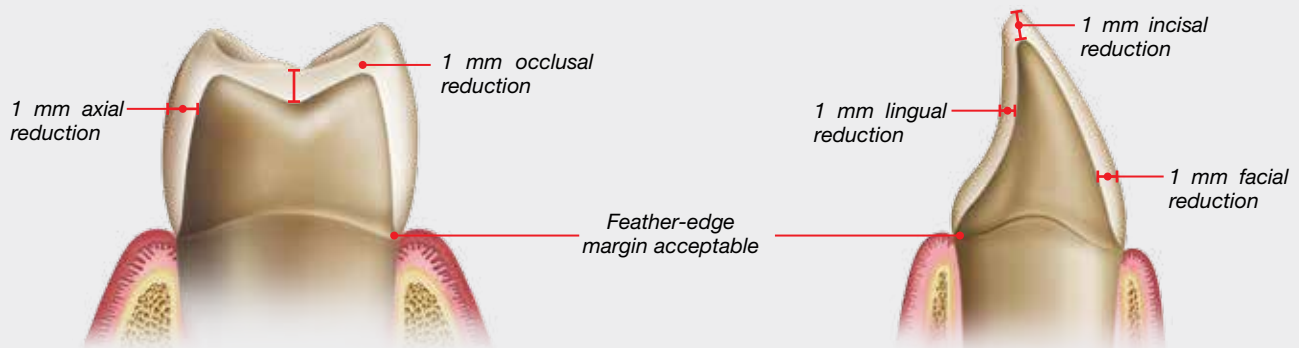


Indications

BruxZir Solid Zirconia is indicated for crowns, bridges, veneers, inlays and onlays. It is an esthetic alternative to PFM metal occlusal/lingual or full-cast restorations and ideal for restorations requiring extra durability such as crowns under partials or screw-retained implant crowns. The chip-proof durability of BruxZir restorations also makes them ideal for bruxers who have broken natural teeth or previous PFM restorations. BruxZir restorations are also ideal for patients lacking the preparation space for a PFM.

Preparation Requirements

- Shoulder preparation not needed, feather edge is OK. It is a conservative preparation similar to full-cast gold, so any preparation with at least 0.5 mm of occlusal space is accepted.
- Minimum occlusal reduction of 0.5 mm; 1 mm is ideal.



These illustrations show an ideal 1 mm reduction for an anterior or posterior BruxZir crown with feather-edge margins. BruxZir Solid Zirconia does fine at 1.5 or 2.0 mm as well, but this amount of reduction is not always possible. Maintaining 1 mm of BruxZir thickness allows you to safely adjust the crown if necessary when checking the occlusion. While BruxZir Solid Zirconia can be milled as thin as 0.5 mm, it cannot be adjusted at this thickness without the risk of breakage. With a BruxZir crown at 0.5 mm thickness with high occlusion, consider adjusting the opposing tooth.

Typical Prep with PFM Crown



This image represents the typical PFM prep we receive with a conservative feather-edge margin. When a PFM is fabricated for this prep, there is a bulky 1 mm margin on the PFM that catches on the explorer. Even if the margin is sealed, the emergence profile is unacceptable.

Typical Prep with BruxZir Crown



This image represents the typical PFM prep we receive with a BruxZir crown in place. Because it is a monolithic crown and can be milled to a feather edge, there is no bulk of material, or "speed bump," at the margin. Dentists tell us their explorer cannot detect where the tooth ends and the BruxZir crown begins.

Cementation Recommendations

- Ceramir® Crown & Bridge (Doxa Dental; Newport Beach, Calif.) or a resin-reinforced glass ionomer cement such as RelyX™ Luting Cement (3M ESPE; St. Paul, Minn.) or GC Fuji Plus™ (GC America; Alsip, Ill.) with Z-Prime Plus or Monobond Plus
- For short or over-tapered preparations, use a resin cement such as RelyX™ Unicem (3M ESPE) or Panavia™ F2.0 (Kuraray; New York, N.Y.) with Z-Prime Plus or Monobond Plus

BruxZir Seating Instructions

Instructions for Seating BruxZir and Other Zirconia-Based Crowns & Bridges

BruxZir restorations are fabricated from solid zirconia oxide material, much like the zirconia oxide coping found in restorations such as PrismaTik Clinical Zirconia™, Lava™ Zirconia (3M ESPE; St. Paul, Minn.) and NobelProcera™ (Nobel Biocare; Yorba Linda, Calif.). Interestingly, zirconia oxide exhibits a strong affinity for phosphate groups. We can take advantage of this fact with phosphate-containing primers, such as Monobond Plus (Ivoclar Vivadent; Amherst, N.Y.) and Z-Prime™ Plus (Bisco; Schaumburg, Ill.), or cements, such as Ceramir® Crown & Bridge (Doxa Dental), to increase our bond strengths to zirconia oxide. Unfortunately, saliva also contains phosphates in the form of phospholipids, so when a BruxZir crown or bridge is tried in the patient's mouth and comes in contact with saliva, the phosphate groups in the saliva bind to the zirconia oxide and cannot be rinsed out with water. Attempting to use phosphoric acid (which is full of phosphate groups) to "clean out" the saliva only makes the problem worse.

The only way we have found to successfully remove these phosphate groups from the interior of a BruxZir restoration is with the use of Ivoclean (Ivoclar Vivadent). This zirconia oxide solution is placed inside the restoration for 20 seconds and then rinsed out. Due to the large concentration of free zirconia oxide in the Ivoclean, it acts as a sponge and binds to the phosphate groups that were previously bonded to the BruxZir restoration. Once the Ivoclean is rinsed out, you will have a fresh bonding surface for the Monobond Plus, Z-Prime Plus or Ceramir to bond to.

The clinical steps would look like this:



1. This patient has a PFM crown on tooth #9 that he would like to replace. Tooth #8 has a failing composite with some fairly significant recurrent decay underneath it that will also require a full-coverage crown. Every month or two I do an anterior BruxZir case like this to give the R&D department some feedback on the translucency of the material, which they continue to improve. Tooth #8 & #9 will be prepped for BruxZir crowns.



2. The BruxZir crowns fit well, and the patient has approved them, so it is time to start the cementation procedure. Since zirconia crowns are susceptible to salivary contamination from phospholipids when they are tried in the mouth, if you simply rinse them out with water, as I am doing here, you remove the visible saliva, but the phosphate groups remain bonded to the zirconia surface. The good news is that once we remove these salivary phosphate groups, we are going to take advantage of this fact when we cement or bond these crowns.



3. Fortunately, Ivoclean was released earlier this year, specifically for the purpose of cleaning out restorations prior to bonding or cementation. I place a couple drops in both of the crowns that will stay in place for 20 seconds. Ivoclean is a concentrated zirconia oxide solution. When placed in crowns, it sets up a concentration gradient so that the salivary phosphate groups bonded to the inside of the crowns are drawn across the gradient to the zirconia particles in the Ivoclean, which can then be rinsed away.



4. I use a microbrush to ensure that the Ivoclean is evenly distributed and has come in contact with all of the internal surfaces of the crowns, although it is not necessary to agitate it against the surface of the zirconia crowns. We just want to ensure that the purple Ivoclean material is coating the entire internal surface of the crown; then, after 20 seconds, it can be rinsed out. Make sure you brush it all the way onto the margins with the microbrush; don't be afraid to get it on the outside surface of the crown.

BruxZir Seating Instructions



5. After 20 seconds, the Ivoclean is rinsed from the crown with an air/water syringe. Ironically, perhaps the worst thing you can do to clean out zirconia-based crowns after try-in is to use phosphoric acid to clean them. As you might imagine, phosphoric acid is full of phosphate groups, so they will occupy every receptor site on the zirconia. It is only by flooding the crowns with Ivoclean that we can decontaminate the internal surfaces in preparation for cementation or bonding. Since Ceramir cement contains phosphates, it will bond directly to the BruxZir crowns without the use of a zirconia primer.



6. Fill the BruxZir crowns with the Ceramir and seat them simultaneously on the preps. Because Ceramir cement is so moisture tolerant, I no longer have to vigorously air-dry the preps prior to cementation, I simply use cotton balls to remove pooling moisture. Not having to blast the preps with air anymore, I find that I have to anesthetize far fewer patients for crown seats than before. We use pinewood sticks to ensure that the crowns stay in place while the cement sets, in case there is any soft tissue rebound. Ceramir is the one cement I use where the excess always peels off in one piece, simplifying cleanup.

Instructions for Adjusting and Polishing BruxZir Crowns & Bridges

Adjust BruxZir Solid Zirconia restorations using a fine-grit diamond with light pressure to avoid potential microfractures. The specially designed BruxZir Adjustment & Polishing Kit may be purchased through Glidewell Direct at www.glidewelldirect.com or by calling 888-303-3975.



A football-shaped bur is most effective for adjusting occlusion on the occlusal surfaces of posterior teeth and lingual surfaces of anterior teeth.



A tapered bur is most effective for adjusting cusps or proximal contacts.



A round bur is used to adjust a cusp or fossa and for creating endodontic access.



Using light pressure and no water, begin pre-polishing with the brown cup to remove abrasions left by the diamonds.



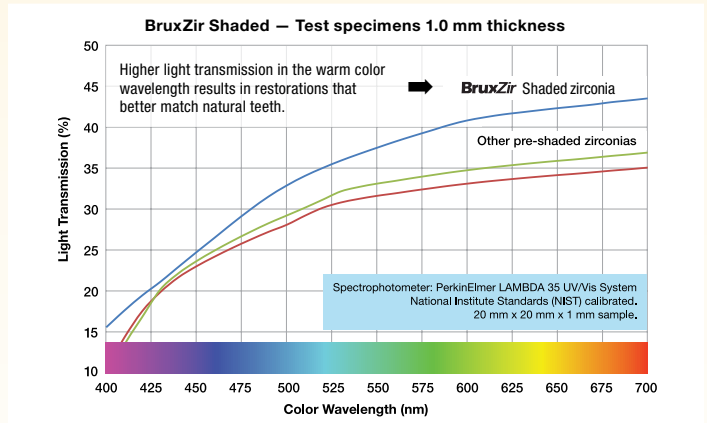
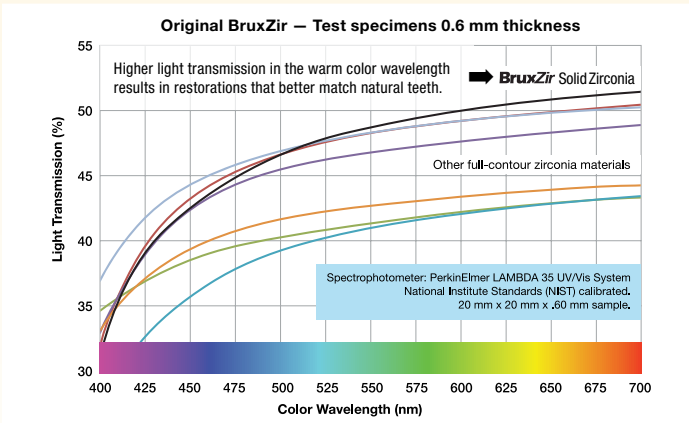
Continue pre-polishing with the green cup until a more glossy look starts to appear on the adjustment areas.



Finally, use the white cup with light to medium pressure to achieve a "wet" high shine.

BruxZir Scientific Validation

The translucency of BruxZir Solid Zirconia is unsurpassed in the warm color spectrum for more natural esthetics.



BruxZir Solid Zirconia exhibits higher translucency in the warm color spectral wavelength (>550 nanometers), allowing for more natural-looking restorations.

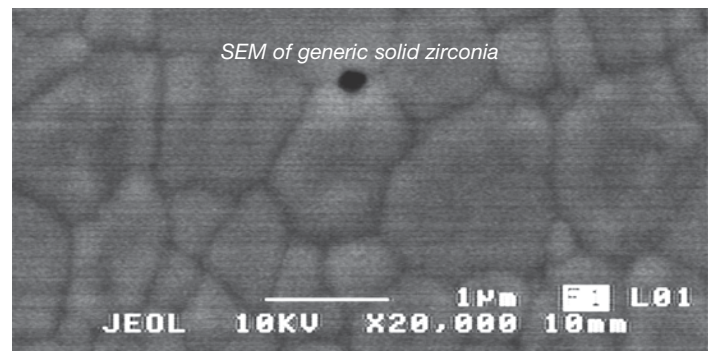
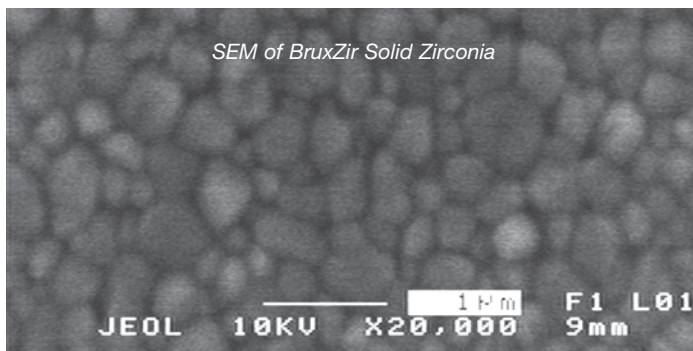
BruxZir Shaded zirconia, which allows for improved shade consistency, also exhibits a higher translucency when compared to other pre-shaded zirconias.

BruxZir Restorations Deliver More Lifelike Results



Note the differences in these photomicrographs of solid zirconia brands. The high-resolution photomicrographs capture cross-sectioned samples of BruxZir Solid Zirconia and two generic competitors. The visible white spots in the competitor samples reveal agglomerates that remain after the sintering process, which decrease translucency and flexural strength. BruxZir Solid Zirconia has a smaller grain size and is nearly free of agglomerates. Unique, patented colloidal zirconia processing gives BruxZir Solid Zirconia higher flexural strength and provides more natural-looking restorations.

Scanning Electron Microscope Images



SEM of sintered, colloiddally processed BruxZir Solid Zirconia vs. sintered, isostatically pressed zirconia