

Color Ion Technology: Getting the most from your technology

Lava™ Plus High Translucency Zirconia Article for dental labs

Versatile shade matching

You're in the business of helping dentists create beautiful smiles, and there's no bigger critic than an unhappy patient. Getting the color right is key, so it's no surprise that dental labs across the globe recently revealed almost 20% of their crown and bridge remakes were due to poor shade matching.

At 3M, we're in the business of applying our science in ways that make your life easier. That's why 3M's ceramic engineers invented Color Ion Shading Technology for zirconia dental restorations. The Lava™ Plus High Translucency Zirconia Shading System, which is comprised of Dyeing, Enamel and Effect shading liquids, is an extensive line of some of the most advanced materials for the intrinsic shading of zirconia-based all-ceramic restorations on the market. With these specially designed liquids, lab technicians have an almost unlimited palette of custom coloring options without a concern for compromising strength. In addition to further improving the lab's productivity, a more efficient Speed sintering cycle has also been developed.

On-demand dip shading for monochromatic restorations

Lava Plus zirconia offers the flexibility to shade milled restorations on demand. If a monochromatic restoration will meet your esthetic needs, then 16 VITA® classical and two bleach shades can be produced using a dip shading technique, a fast and easy process where the color ions in the shading liquid are evenly absorbed throughout the restoration. The technician simply submerges the pre-sintered restoration in the dyeing liquid and lets it sit for two minutes (Figure 1). Upon drying, the carrier liquid evaporates and the color ions are locked in place by the special chemistry 3M scientists designed into the Lava Plus zirconia liquids. During the final sintering process, the color ions become part of the zirconia crystal structure, resulting in coloration that comes from throughout the depth of the restoration. If your dentist needs to make a minor adjustment, the burr won't create a white spot because the coloration is throughout the body of the restoration.



Fig. 1: Monochrome dip shading offers quick and easy esthetics.

Natural gradient shading for the artisan

For situations that call for a higher esthetic result, artisan labs can also use the Lava™ Plus High Translucency Zirconia Shading System to replicate the look of a hand-layered porcelain veneered restoration. Multiple applications of the Dyeing Liquids can be used to increase the concentration of color ions in specific areas to increase shade intensity. This can be used, for example, to create a darker cervical region. The Lava™ Plus High Translucency Zirconia Enamel Liquids offer the flexibility to achieve a differentiated shade on the occlusal surfaces and the Effect Shades can be used to create specific highlights and nuances (Figure 2). A skilled technician can create unparalleled restorations that are not possible with the simpler dip shading method and will be virtually undetectable for patients.

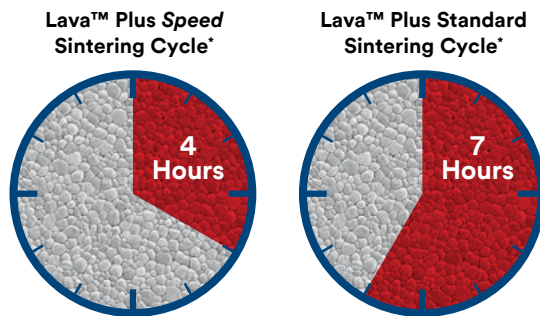


Fig. 2: Custom gradient shading provides a warm natural appearance and extra esthetic characteristics.

Speed sintering cycle

Sintering conditions are an important variable in achieving the perfect shade. The *Speed* sintering cycle has been developed to reduce furnace cycle time. This high-productivity sintering cycle allows for an “in furnace” time of less than 140 minutes, without compromising strength or translucency. This allows for up to three batches a day.

Source: Impact of Fast Sintering on Materials Properties of Translucent Zirconia, Herrmann et al. J Dent Res 93 (Spec Iss A): 1452, 2014



The speed sintering cycle produces the same crystalline structure as the standard sintering cycle, which means labs can produce high-quality restorations in three batches a day.

* Includes two-hour dyeing liquid dry time. Actual times may vary depending on furnace load and design

More satisfied customers and patients

With Lava™ Plus High Translucency Zirconia and Lava™ Plus High Translucency Dyeing Liquids, labs can create restorations that are a near perfect match to natural teeth, and can do it in a shorter amount of time. With so many shading options and the ability to have custom coloring, dentists can be confident in the final esthetic outcome of a restoration, and the patient walks away knowing they received great work.

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