Chroma Inhibitor (green),
Incisal Enhancer (1.0, blue),
A2 Shade (Level 70)
Incisal Enhancer (1.5),
A1 Shade (Level 70)
Sintered for 10 hours
<table>
<thead>
<tr>
<th>Product Image</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td>16 shades for Full Contour (level 80, Slightly light)</td>
<td>Slightly light in chroma intensity. Developed for Full Contour restorations of 1.0 - 2.0 mm in standard thickness.</td>
</tr>
<tr>
<td><img src="image2.png" alt="Image" /></td>
<td>16 shades for Full Contour (level 70, Standard)</td>
<td>Creates the same shades as the body portion of each shade tab. Developed for Full Contour restorations of 1.0 - 2.0 mm in standard thickness.</td>
</tr>
<tr>
<td><img src="image3.png" alt="Image" /></td>
<td>16 shades for Full Contour (level 60, Slightly strong)</td>
<td>Slightly stronger in chroma intensity than shade tabs. Developed for usage with certain oven calibrations and uniquely higher temperatures.</td>
</tr>
<tr>
<td><img src="image4.png" alt="Image" /></td>
<td>16 shades for substructure (level 45)</td>
<td>Strongest in chroma intensity. Developed for Copings and Substructures of 0.4 - 0.5 mm in standard thickness.</td>
</tr>
<tr>
<td><img src="image5.png" alt="Image" /></td>
<td>Incisal Enhancer (0.5, 1.0, 1.5, 2.0, 2.5, 3.0 &amp; 3.5)</td>
<td>Creates a gradually reduced chroma effect and increases translucent effects on the applied area of the incisal and occlusal ridges.</td>
</tr>
<tr>
<td><img src="image6.png" alt="Image" /></td>
<td>Chroma Inhibitor</td>
<td>Creates balanced chroma between the pontics and abutments on bridge cases by reducing the chroma intensity on the pontics (large masses) that would otherwise be too strong.</td>
</tr>
</tbody>
</table>
1
Slightly light
Level 80

2
Standard
Level 70

3
Slightly strong
Level 60

Liquid Chroma Level 80 - Slightly lighter than body portion of shade tab

Liquid Chroma Level 70 (Standard) - Same as body portion of shade tab

Liquid Chroma Level 60 - Slightly stronger than body portion of shade tab
1. Remove the Zirconia disc from your milling machine and prepare to cut the units from the zirconia disc at a work space that has a suction unit.

2. Using a H135F cross cut high speed bur, cut through the middle of the sprue's that are attached to each restoration. Carefully allow the restorations to drop into your hand or onto a soft piece of foam under the zirconia disc.

3. After all zirconia restorations have been cut and removed from the zirconia disc, use a 9554M Universal Polisher at 8,000 -10,000rpm to re-contour the areas of the crown where the sprue's were attached. A 9572M Blue Metal Polisher can be used for this as well.

4. Utilizing a small art brush, brush all zirconia dust from the inside and outside of the restoration. Be careful not to apply too much pressure.
1. The Zirconia restorations are now ready to be colored. The first step in pre-sinter coloring of the zirconia is to brush **Incisal Enhancer** onto the incisal third of the crown. Apply **Incisal Enhancer** to lobes (incisal 1/3) and to occlusal ridges. It is recommended to apply two coats. More or less may be applied based on personal preference.

Note:
- The purposes of this step are 1) to relatively reduce the chroma level of a certain hue (one of the 16 shades) in the incisal & ridge area as compared to the body/gingival area, and 2) to create the grayish and blueish incisal translucency effects in the applied area.

The following recommendations are general guidelines for **Incisal Enhancer** use. Please refer to the specific corresponding instruction sheet included with each Origin zirconia disc.

- Multiple levels of the **Incisal Enhancer** are available:

<table>
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<tr>
<th>Shades</th>
<th>Level</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>OM1, OM2, OM3, BL1</td>
<td>Extra-Light</td>
<td>Incisal Enhancer 1.0-1.5</td>
</tr>
<tr>
<td>A1, B1, C1</td>
<td>Light</td>
<td>Incisal Enhancer 1.5-2.0</td>
</tr>
<tr>
<td>A2, A3, B2, B3, C2, D2, D3</td>
<td>Medium</td>
<td>Incisal Enhancer 2.0-2.5</td>
</tr>
<tr>
<td>A3.5, B4, D4</td>
<td>Intense</td>
<td>Incisal Enhancer 2.5-3.0</td>
</tr>
<tr>
<td>A4, C3, C4</td>
<td>Very Intense</td>
<td>Incisal Enhancer 3.0-3.5</td>
</tr>
</tbody>
</table>

2. Once the Incisal Enhancer has been applied, dip the zirconia restoration in the Chroma Color liquid of your choice (16 shades) depending upon the body shade you are trying to replicate. Submerge the restorations for a total time of 1 minute. **Do Not Perform This Step Under Vacuum. Shading under a vacuum will result in darker shades.**

- Three chroma levels of **Color Liquids** are available:

<table>
<thead>
<tr>
<th>Types</th>
<th>Level</th>
<th>Shade Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>A2 (80)</td>
<td>Light</td>
<td>Lighter chroma of 16 shades</td>
</tr>
<tr>
<td>A2 (70)</td>
<td>Medium</td>
<td>Standard chroma of 16 shades</td>
</tr>
<tr>
<td>A2 (60)</td>
<td>Slightly More Intense</td>
<td>Slightly more intense chroma of 16 shades</td>
</tr>
</tbody>
</table>

3. Remove the restoration from the Chroma Color Liquid using plastic tweezers and blot any excess liquid off of the restoration with a tissue or paper towel. Let the restoration air dry for 15 minutes on a clean bench and then place into sintering tray. Place restorations into the sintering tray so that margins are up and occlusal tables are on the beads.

4. Place your sintering tray into your sintering oven and begin the sintering process. Depending upon the sintering furnace and size of the case this process could range between 90 minutes to 14 hours. It is important to follow the instructions for the specific zirconia being sintered.
1. Begin your color staining process with a clean and zirconia dust free restoration.

2. Use Chroma Inhibitor for large mass units, such as pontics, to reduce the extra absorption due to its density (this extra absorption occurs with all coloring systems on the market). This will create a chroma balance between the pontics and the abutments.

Note: In the picture above and pictures below, Chroma Inhibitor has been applied to the pontic(s) on the bridge to the left, while the bridge on the right has none applied. Notice the increase in chroma of the pontic(s) on the right. The bridge on the left has a more uniform distribution of chroma throughout the restoration using the patent-pending ORIGIN Chroma Inhibitor method.
3. While holding the bridge in your hands, apply the green Chroma Inhibitor to the pontics and or other areas of large zirconia mass. The application of the Chroma Inhibitor liquid will neutralize the pigmentation of the main body color when the restoration is dipped. Apply this liquid with a #1 natural hair brush (Kolinsky or Sable Hair) over the entire surface of the pontics or areas of large zirconia mass.

4. After application of the Chroma Inhibitor you can immediately apply the Incisal Enhancer. The Incisal Enhancer will be applied in a similar manner as the Chroma Inhibitor but is limited to the incisal third, cusp tips, and occlusal ridges of the posterior units. Apply the Incisal Enhancer starting at the incisal edge and tapering downward into the body region in a vertical manner.

Note:
- The purposes of this step of applying Incisal Enhancer are: 1) to relatively reduce the chroma level of a certain hue (one of the 16 shades) in the incisal & ridge area as compared to the body/gingival area, and 2) to create the grayish and blueish incisal translucent effects in the applied area.

The following recommendations are general guidelines for Incisal Enhancer use. Please refer to the specific corresponding instruction sheet included with each Origin zirconia disc.

- Multiple levels of the Incisal Enhancer are available:

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<td>Incisal Enhancer 1.5-2.0</td>
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<tr>
<td>A2, A3, B2, B3, C2, D2, D3</td>
<td>Medium</td>
<td>Incisal Enhancer 2.0-2.5</td>
</tr>
<tr>
<td>A3.5, B4, D4</td>
<td>Intense</td>
<td>Incisal Enhancer 2.5-3.0</td>
</tr>
<tr>
<td>A4, C3, C4</td>
<td>Very Intense</td>
<td>Incisal Enhancer 3.0-3.5</td>
</tr>
</tbody>
</table>
5. Once the Incisal Enhancer has been applied, dip the zirconia restoration in the Chroma Color liquid of your choice based upon the body shade you are trying to replicate. Submerge the restorations for a total time of 1 minute. **Do Not Perform This Step Under Vacuum. Shading under a vacuum will result in darker shades.**

Note:
Large bridges may be dipped in a shade liquid that is one or two shades lighter for compensation of chroma intensity that may occur on the large Zirconia mass.

6. Remove the restoration from the Chroma Color Liquid using plastic tweezers and blot any excess liquid off of the restoration with a tissue or paper towel. Let the restoration air dry for 15 minutes on a clean bench and then place into sintering tray. Place restorations into the sintering tray so that margins are up and occlusal tables are on the beads. Some large bridges may require support in the lingual area. These bridges can rest on that support while sintering, as seen in these pictures.

7. Place your sintering tray into your sintering oven and begin the sintering process. Large Zirconia bridges require a longer sintering process to help eliminate warping during the sintering process.
Please keep the following facts in mind when sintering:

- A longer cycle time produces slightly stronger chroma after the completion of sintering (for example, A2 looks more like A2.5 and A3 looks more like A3.5).
- Zirconia restorations sintered in short cycle times (2-3 hours) look slightly weaker in chroma intensity. Some technicians prefer this since they can more easily create higher chroma on the gingival area and leave the light incisal.
- Older, slightly contaminated zirconia sintering ovens may not produce color results as accurately as intended. Be sure to check the sintering oven conditions if you do not get the intended result. Do this by sintering uncolored bleach pieces of zirconia to visually check the effects of the sintering oven.
After the restoration has been cleaned, the Glaze firing is conducted. Most of the time, the 16 color liquids along with the Incisal Enhancer and Glaze Paste are enough to create the intended color. Depending on the situation, the Stain and Glaze firing may be conducted together or separately one after the other.

### Firing parameters for the ORIGIN Zirconia glaze firing

<table>
<thead>
<tr>
<th></th>
<th>Preheating Temp</th>
<th>Drying Time</th>
<th>Temp Speed (Heat Rate)</th>
<th>Final Temp</th>
<th>Holding Time</th>
<th>Vacuum Start</th>
<th>Vacuum End</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B [°C/F]</td>
<td>S [min]</td>
<td>t [°C/F/min]</td>
<td>T [°C/F]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glaze Firing</td>
<td>403 / 757</td>
<td>6.00</td>
<td>60 / 108</td>
<td>800 / 1472</td>
<td>1:30</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

- Below is the typical example of the screen copy for the Hot Clear glaze program adjusted for zirconia glazing

**Please note:**

- Do not apply vacuum during the glazing stage. This will help ensure a consistent chroma level as intended. Test results show that even the same brand of ovens, depending on their age and when the last calibration was done, may produce a slightly different chroma level even when using the same color liquid and same zirconia. This could be solved by eliminating the vacuum process.
- With no vacuum, the glazed surface may become a little less glossy. This can be overcome, however, by using less glazing liquid when mixing with the glazing paste.
- Keeping the high temperature at 800 °C is also important. Lower temperatures produce higher chroma (about 1 shade stronger), and higher temperatures (850 °C for example) produces lower chroma (lighter shades).
- Make sure the full contour restorations and/or substructures are elevated on the firing peg and NOT directly on the tray. This will ensure correct shading at a recommended optimal temperature of 800 °C. If the restorations are directly on the tray, the resulting shades are lighter than intended.

- In A shades particularly, non-elevated full contour crowns can have a negative effect by not accurately depicting the redish brown color which is an important characteristic of the A shades (the yellowish brown color predominates). ORIGIN color liquids have been developed to produce the correct shades based on the elevated position of the full contour crowns about ¼ inch off the glazing tray. It is known that the temperature difference is about 10 - 20 °C degrees between the elevated and non-elevated positions.

- Do not overheat the full contour restorations during the glazing cycle time. Utilizing a higher temperature than recommended (800 °C) will produce a lighter chroma level. Test results using the VITA Easyshade Compact, a spectrophotometer, to confirm this result.

- Do not put too many full contour crowns on the tray at a time. The recommended number of crowns per tray is about 5. Too many full contour crowns will produce a weak chroma due to the lack of heat for each crown from the coil of the oven.
Factors That Affect the Final Color of Zirconia Restorations

1. Coloring liquid

Origin® CHROMA™ coloring liquid was developed based on zirconia powder processing unique to ORIGIN® brands of zirconia. Other zirconia processed with a different technology will respond differently to the same coloring liquid. For best results, please match Origin® zirconia with the corresponding Origin® CHROMA™ coloring system.

2. Sintering oven

The Origin® zirconia coloring system, CHROMA™, was developed based on the test results sintered from the ORIGIN® DuoTron™ oven which is one component of the Origin® CAD/CAM system. The DuoTron™ gives consistent and reproducible results over long periods of time. Test results show that conventional ovens with a longer sintering cycle (7-8 hours) give a result that is one shade darker (or at least a half shade darker) as compared to when the DuoTron™ oven is used, utilizing a faster cycle. So if you are sinteing Origin® zirconia colored with the Origin® CHROMA™ system on longer cycles, you will likely need to use level 80 liquid instead of the standard level of 70.

3. Glazing temperature

The higher glazing temperature you use, the lighter color your glazed zirconia will have. The high glazing temperature for Origin® zirconia colored with the Origin® CHROMA™ system is 800 °C with a holding time of 1min 30 seconds. The proper glazing temperature schedule is introduced on page 12 of the Instructions For Use for the ORIGIN® Zirconia & ORIGIN® CHROMA™ Zirconia Coloring System.

4. Glazing with vacuum

Test results show that using vacuum during glazing will create lighter shades in the final glazed zirconia. In addition, the vacuum level of different brands of glazing ovens differ from each other. As a result, we have eliminated this varying factor from our standard process and recommend that you do not use vacuum during glazing. Your glazed zirconia will still look great at the glazing temperature of 800 °C.

5. Light conditions when checking shade

Color perception of the final glazed zirconia reataration depends on many factors including; the light source (natural light, fluorescent light, incandescent light), light intensity (3000 K - 6500 K), abundance of light in a room, observation angle, etc. The Origin® CHROMA™ zirconia coloring system was developed based on the following parameters.

* light source: Natural, full-spectrum light
* light intensity(color temperature): 5000 K (3000K-Soft white, 3500-Neutral, 4100 K- Cool white, 5000 K-Natural light, 6500 K - Daylight)
* color reproduction capability (color rendering index) of light source: 90%
* observation angle of the restoration: combination of straight angle and side angle
* color determination: combination of experience of skilled ceramist and colorimeter (VITA Easyshade Compact)