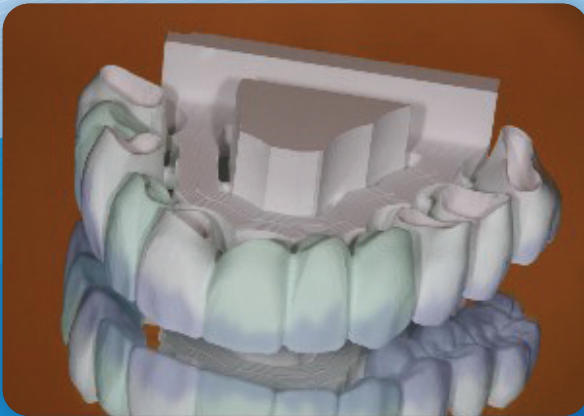


Zirconia Coloring System

Instructions for use



Last Updated: 2022

Zirconia Coloring System

Introduction

Thank you for choosing our Origin Chroma system. Origin Chroma Liquids are confidently used by many labs for accurate, reliable shades.

We are the only provider of Vita 3D Master shade liquids in addition to the Vita Classic 16 shades.

The instructions for use (IFU) provided in this booklet are guidelines to help technicians “dial in” shades required by discerning clinicians. Zirconia is a sophisticated material. Understanding the nature of zirconia and how it functions within its complete ecosystem is critical in achieving shade success.

These are a few of the many factors can impact your outcomes:

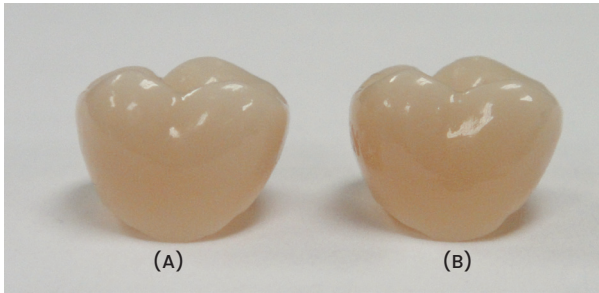
- Zirconia composition and Yttria Levels
- How the zirconia disks are made
- Thickness or mass of the restoration
- Method of liquid application (dipping or painting)
- Sintering program (total time and rates of heating and cooling)
- Sintering oven conditions (e.g. heating elements, insulation integrity, temperature accuracy, sufficient power)
- Glazing procedure

B&D Dental Technologies continues to commit significant resources, both human and technical, to develop tools that labs can leverage to achieve superior restorations. With these tools, labs can eliminate costly remakes and gain market advantage as they create crowns clinicians and patients love.

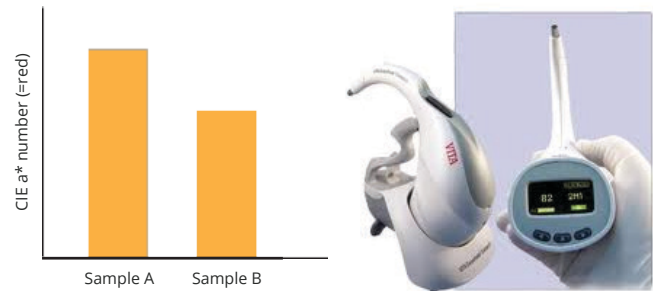
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Universal Rules for Coloring Zirconia



same zirconia, same color liquid, sintered on different sintering oven (A) was sintered on an Accusinter oven, whereas (B) was sintered on conventional oven



1. Coloring liquid you use

Origin® Chroma™ Liquids were developed based on zirconia manufacturing processes unique to Origin zirconia. Zirconia disks from other manufacturers will respond differently to the Origin coloring liquids and processes. For reliable results, please match Origin Chroma liquids to the appropriate zirconia type from Origin.

2. Variables among sintering ovens

The Origin Chroma Liquid system was developed based on test results sintered in an Origin sintering oven. The Accusinter Oven® produces consistent and reliable results over long periods of time. Test results show that conventional ovens with longer sintering cycles produce shades that are 1/2 to 1 shade darker when compared to AccuSinter ovens utilizing a faster cycle.

Older, slightly contaminated, sintering ovens may not produce color results as accurately as intended. Please use Temperature control rings to assess internal muffle temperature. Check heating elements for loss of silica coating. To check for some of these problems, fire some scrap, uncolored zirconia and examine for color variations.

3. Glazing considerations

Higher glazing temperature often results in lighter shades. The recommended glazing temperature for Origin zirconia, colored with Chroma liquids is 800C, with a hold time of 90 seconds. A suggested glazing schedule can be found on page 13 of Instructions for Use, Origin zirconia with Origin Chroma liquids.

4. What about glazing with a Vacuum?

Tests results show that vacuum glazing will create somewhat lighter shades in glazed zirconia. In addition, the vacuum levels available in various glazing ovens differ from one to another, due to a number of factors (e.g. altitude). Therefore, we generally recommend glazing without a vacuum. An exception to this guideline is that Beyond Plus Multi-Y preshaded zirconia does require use of vacuum.

5. Getting the correct shade initially, in the operatory and the lab.

Color perception on the final glazed zirconia restoration depends on many factors including;

- Color rendering index of light source (CRI)
- Light temperature
- intensity of light source
- Angle of observation
- Experience of observer
- Age of observer (older individuals often see more yellow due to changes in ocular structure).
- Hydration of tooth




We suggest, to the extent you can, matching light sources in the operatory and lab as closely as possible. Of critical importance is matching of CRI in both locations. 95%CRI, or greater, lights are readily available online or locally. High CRI%, in conjunction with light temperature of around 5500 Kelvin, will produce the best outcomes.



6. Length of sintering oven cycle influences chroma strength

- Lengthening the cycle time may produce a slightly stronger chroma. (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 cervical area and retain a light incisal.

Zirconia Color Liquid Components

Developed for full Contour restorations of 1.0 – 2.0 mm in standard thickness.

Product Image	Level	Product name	Product Description
	Slightly Light (Level 80)	16 shades for Full Contour	Chroma slightly lighter than shade tab
	Standard (level 70)	16 shades for Full Contour	Chroma matches shade tab
	Slightly Strong (level 60)	16 shades for Full Contour	Chroma is slightly stronger than shade tab.

Product Image	Product name	Product Description
	Incisal Enhancer (0.5, 1.0, 1.5 2.0, 2.5, 3.0, 3.5) See Incisal Enhancer Intensity chart on pg 6	Creates a gradually reduced chroma effect and increases translucent effects on the area to which it is applied. The lower the Enhancer number, the lighter shade it matches e.g. .5 for OM1, 2.0 for A2,3,5 for A4
	Chroma Inhibitor	Creates balanced chroma between the dense pontics and abutments on bridge cases by reducing the chroma intensity on the pontics (large masses) that would otherwise be too strong.



Coloring Liquid Type

Make sure to use the right liquid with the right Zirconia Disc

Shade

Available in 16 classic shades and 29 3D Master shades

Chroma Strength Level

(For classic 16 shades only)

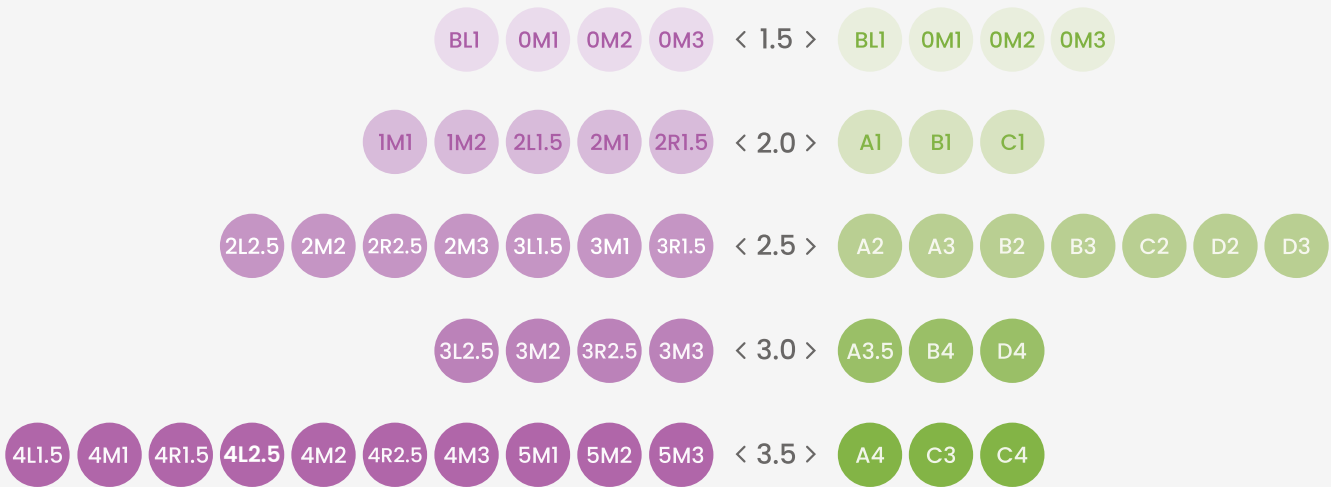
Formulated specifically for Origin zirconia

Incisal Enhancer Intensity

3D Master Shades

&

16 Classic Shades



Zirconia Finishing Instructions

(Preparation for Receiving Chroma™ Color Liquids)



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 something like a Komet H135F cross cut high speed bur, cut through the middle of the sprues 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, using something like a Komet 9554M Universal Polisher at 8,000 -10,000rpm to re-contour the areas of the crown where the sprues were attached. Something like a Komet 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.

5. Compressed air from a CLEAN, DRY source can be used to complete dust removal. Be sure to have a firm grasp of the restoration to avoid blowing it across the room which may cause a fracture.

Coloring of Full Contour Single Units



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** on the incisal third of the crown and on occlusal ridges. It is recommended to apply two coats, but adjust more or less for personal preference.

Incisal Enhancer

Note:

The purposes of this step are to:

- 1) Relatively reduce the chroma level of the hue in the incisal & ridge area as compared to the body/cervical area.
- 2) Create the gray/blueish incisal translucent effect in the incisal area.



2. Once the Incisal Enhancer has been applied, dip the zirconia restoration in the Chroma Color liquid of your choice (16 Classic or 29 3D Master shades). Submerge the restorations for a minimum of 1 minute. ***Do Not Perform This Step Under Vacuum. Shading under a vacuum will result in darker shades.**

**Note: This is not technique sensitive. It can be a little longer without an adverse effect.*



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 and then place into sintering tray with the margins up and occlusal tables on the beads pointed down.



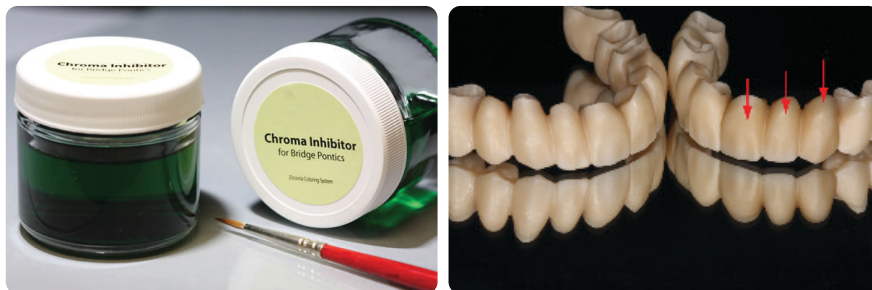
4. Place tray containing unsintered crowns into sintering oven. Depending on the sintering oven and the size of case or number of units in the tray, the firing cycle can be from 2 ½ hours to 14 hours. It is important to follow instructions for the specific zirconia being sintered.

Coloring a Full Contour Bridge Cases

1. Begin your color staining process with a clean and zirconia dust free restoration. (See instructions for prepping on page 7.)

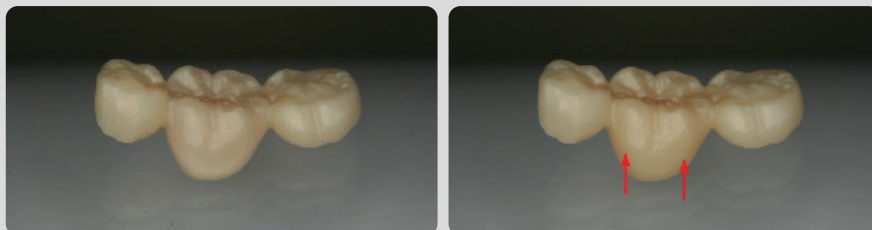


2. Chroma inhibitor reduces excessive absorption of chroma liquid due to the mass of the pontic . This extra absorption happens with all coloring systems on the market. Using the Chroma Inhibitor creates a better uniformity of chroma across abutments and pontics on a bridge.

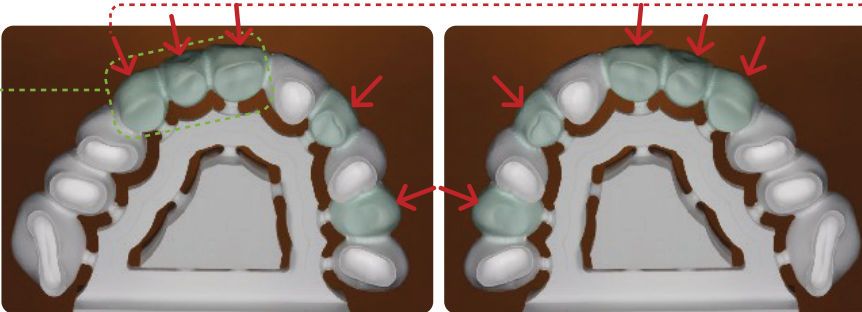


Note:

In the picture above and pictures below, **Chroma Inhibitor** has been applied to the pontics in the bridge on the left, while the bridge on the right has none applied. Notice the increase of chroma in the pontic on the right. This is a typical problem inherent with current coloring systems. The bridge on the left has a more uniform distribution of chroma throughout the restoration thanks to the patented ORIGIN **Chroma Inhibitor** method.

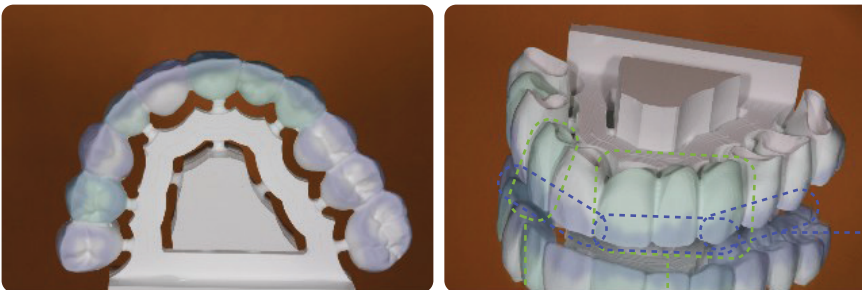


3. While holding the bridge in your hands, apply the green **Chroma Inhibitor** to the pontics and or other areas of large zirconia mass. The application of the **Chroma Inhibitor** liquid will neutralize the pigmentation of the main body color when the restoration is dipped. Apply this liquid with a #1 natural hair brush (Kolinsky or Sable Hair) over the entire surface of each pontic.



Thick pontic area

4. After application of the **Chroma Inhibitor**, apply the **Incisal Enhancer**. The **Incisal Enhancer** will be applied in a similar manner as the **Chroma Inhibitor** but it 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.



Incisal Enhancer

Chroma Inhibitor

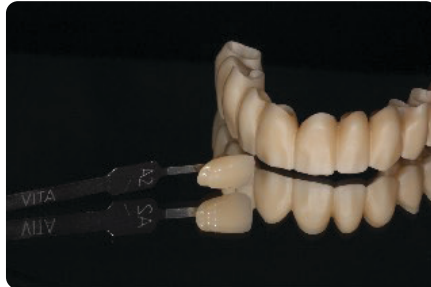


5. Once the Incisal Enhancer has been applied, dip the zirconia restoration in the Chroma Color liquid of your choice depending upon the body shade you are trying to replicate. Submerge the restorations for a total time of 1 minute. **Do Not Perform This Step Under Vacuum. Shading under a vacuum will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

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. For large bridge restorations, use a heat source to thoroughly dry it prior to sintering. 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.

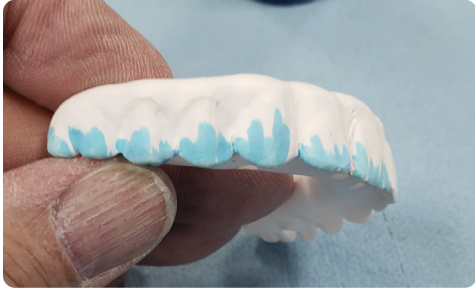
7. Place tray containing units in sintering oven and begin sintering process. Be sure to choose the correct program the the cases being processed.



Note: Large zirconia restorations require longer sintering cycles which feature slower heating and cooling ramps. Please double check your sintering cycle for appropriate heating and cooling ramps. Place the tray in oven and the begin cycle.

Additional Notes on Coloring a Full Contour Bridge Cases

Painting method



1. Using Incisal Enhancer of your choice, paint the Enhancer on surfaces where you want to recreate the appearance of incisal enamel.

2. Paint one coat of Chroma on entire surface of the teeth.



3. Paint second coat on cervical 2/3rds.

4. Paint a third coat on the cervical 1/3. Based on your experience you may decide to paint another coat at the cervical 1/3. This choice depends on what previous outcomes have been. It will not adversely affect the shade if you do this.



5. Using Standard Pink, paint all gingival tissue areas with 4 coats. Stay slightly away from margin on each tooth. Capillary action will move the liquid a slight amount and staying about .3 mm to .5mm away from the margin of the teeth will help prevent pink colorant on the teeth.

6. Thoroughly dry the all-on-four, before placing in sintering oven for at least 60 minutes using a heat source, such as a heat lamp or toaster oven or a drying program on the sintering oven. The mass of the zirconia holds moisture simply due to its size. Inadequate dry time can result in cracks in the restoration.

Note: We do not recommend the use of Chroma inhibitor on all-on-fours. We have found that using the technique outlined above will allow for uniform color absorption without over-absorption.

Cautions Regarding Glaze Firing

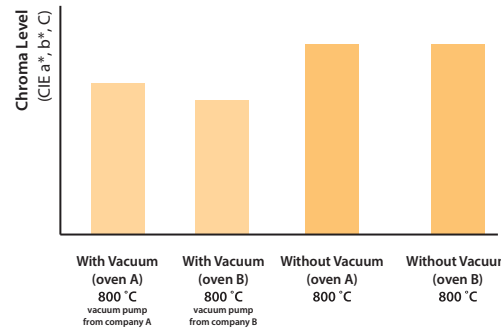
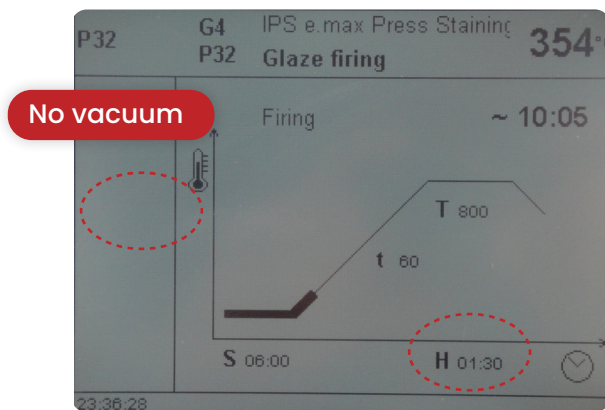
After making any necessary adjustments on the sintered and thoroughly cleaned restoration, it is ready for glazing. Most of the time, the use of Chroma liquids and Incisal Enhancer are sufficient to obtain the desired shades. If the technician wishes to enhance or add characterization post sinter, these firings can be either sequential or simultaneous depending on the preference of the technician.



Recommended parameters for the Origin Zirconia glaze firing

	Preheating Temp BS [C/F]	Drying Time [min]	Temp Speed (Heat Rate) tT [C/F/min]	Final Temp [C/F]	Holding Time HV [min]	Vacuum Start 1V [C/F]	Vacuum End 2 [C/F]
Glaze Firing	403 / 757	6:00	60 / 108	<u>800</u> / 1472	1:30	None	None

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



Different vacuum levels created from various companies vacuum pumps produce a chroma level that is slightly lower than the intended shade tab. Whereas, test results show that not using a vacuum during glazing helps produce a consistent chroma level.

Please Note: As mentioned on page 3...

- 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 they were last calibrated,) 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).

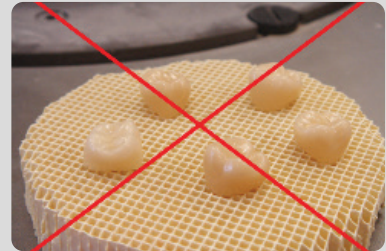
Additional Notes on Cautions Regarding Glaze Firing

Elevation

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 may be lighter than intended.

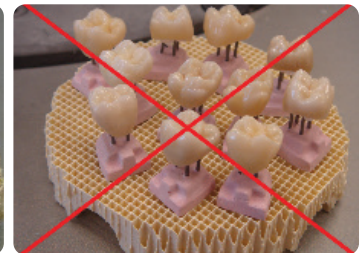
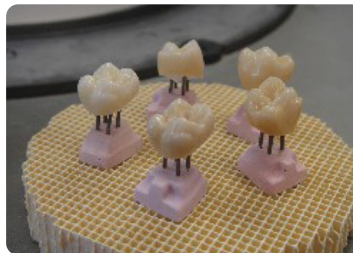
Please Note:

In **A shades** particularly, non-elevated full contour crowns can be negatively impacted and not accurately show the reddish, brown color which is an important characteristic of the **A shades** (the yellowish brown color is still exhibited). ORIGIN color liquids have been developed to produce the correct shades based on the elevated position of the full contour crowns about 3/4 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.



Crowding Crowns

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 insufficient lack of total calories of heat for each crown from the coil of the oven.



Need to Place an order? Have Questions? Contact us today!

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