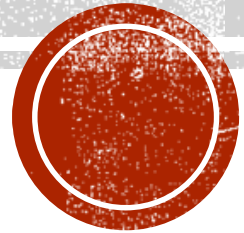
WHAT TO DO WITH THE BLUE CROWN



Crystallization and Staining and Glazing

Overview of the Processing Techniques

Efficiency

Esthetics

Technique	Polishing technique (self-glaze)	Staining technique Staining technique on the "blue" restoration		
		Variant A	Variant B	Variant C
Description	 **Polishing** of the "blue" restoration, followed by **crystallization** without individual characterization and glaze.	 **Glazing** with **IPS e.max CAD Crystall./Glaze Spray** on the blue restoration followed by **Speed Crystallization** (Speed Crystallization and Glaze firing in one step).	 **Staining** and **glazing** with **IPS e.max CAD Crystall./ Glaze Paste** on the blue restoration followed by **Crystallization** and the **Stain/Glaze firing** in one step.	 **Staining** and **glazing** with **IPS e.max CAD Crystall./ Glaze Spray** on the blue restoration followed by **Crystallization** and the **Stain/Glaze firing** in one step.
Firing cycles and times	**Speed Crystallization** **without** staining and glazing (max. 2 units) approx. 14:55 min or **Crystallization** **without** staining and glazing approx. 25 min	**Speed Crystallization** **with** IPS e.max CAD Crystall./ Glaze Spray (max. 2 units) approx. 14:55 min	**Crystallization** **with** IPS e.max CAD Crystall./ Shade, Stains and Glaze paste approx. 25 min	**Crystallization** **with** IPS e.max CAD Crystall./ Shades, Stains and Glaze spray approx. 25 min
Total firing time				

GREAT RESOURCE PDF

- https://www.ivoclarvivadent.us/mam/celum/celum_assets/9514750640158_IPS_e-max_CAD_Monolithic_Solutions_Chairside_pdf_4774.pdf?2

PRE-CRYSTALLIZATION FINISHING

FOR ALL GLAZING TECHNIQUES

- 1. Adjustments using fine diamonds or medium-fine diamond polishers
- 2. Low speed and light pressure
- 3. Overheating of the glass ceramic must be avoided
- 4. Remove sprue and smooth surface created from milling
- 5. Reduce proximal contacts and occlusion if necessary
- 6. Do not blast with aluminous oxide or glass beads

*slide 1

EXAMPLES OF FINISHING INSTRUMENTS

Smooth out the attachment point and take proximal contacts into account.

Finish restoration margins with medium-fine diamond polishers.

Adjusting the outer surface, particularly functional areas of the restoration with a fine diamond to smooth out the surface structure created by the CAD/CAM process.

POLISHING TECHNIQUE

SELF GLAZE

OPTION 1

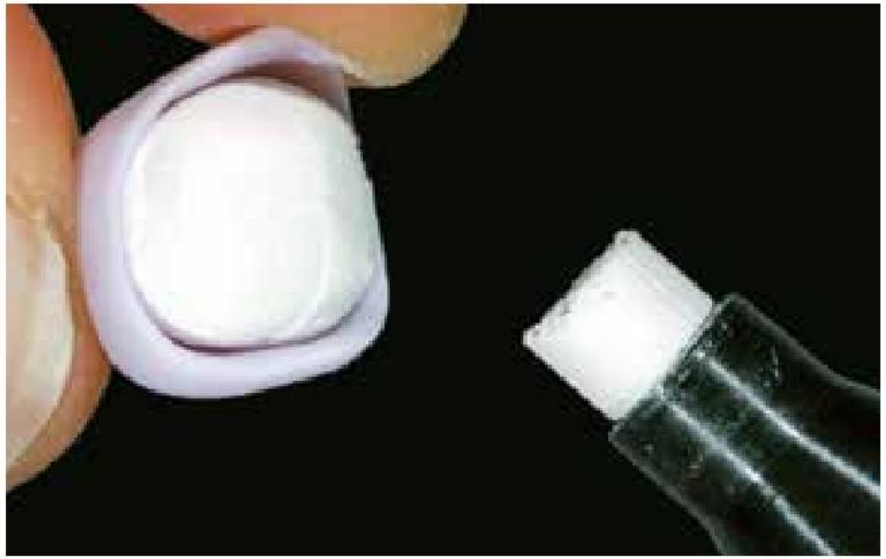
- 1. Follow the pre-crystallization finishing procedures (see *slide 1)
- 2. Always clean the restoration with ultrasound in a water bath and/or with a steamer to be certain the milling additive residue from the milling machine has been removed. Residue of the milling additive remaining on the surface may result in bonding problems and discoloration.
- 3. Restoration is ready to be fired in Crystallization Porcelain Furnace
- 4. Can use the speed or regular crystallization program

GENERAL CRYSTALLIZATION INSTRUCTIONS

- 1. Select the largest firing peg that best "fills" the inside of the restoration but does not come in contact with the intaglio walls.
- 2. Fill the inside of the blue restoration with IPS Object Fix Putty
- 3. Press the selected peg into the putty so that it is secure
- 4. Smooth out the firing paste so that the pin is secure and the restorations margins are completely closed and supported
- 5. Smaller restorations (veneers, inlays, onlays) do not require a peg just filled with putty and placed on tray with a "patty of putty"
- 6. Clean access putty off of the crown with a damp brush
- 7. Select the correct size of tray and program for the technique you are using for crystallizing

*slide 2

Select the largest possible IPS e.max CAD Crystallization Pin.



Fill the inside of the crown with IPS Object Fix Putty or Flow.

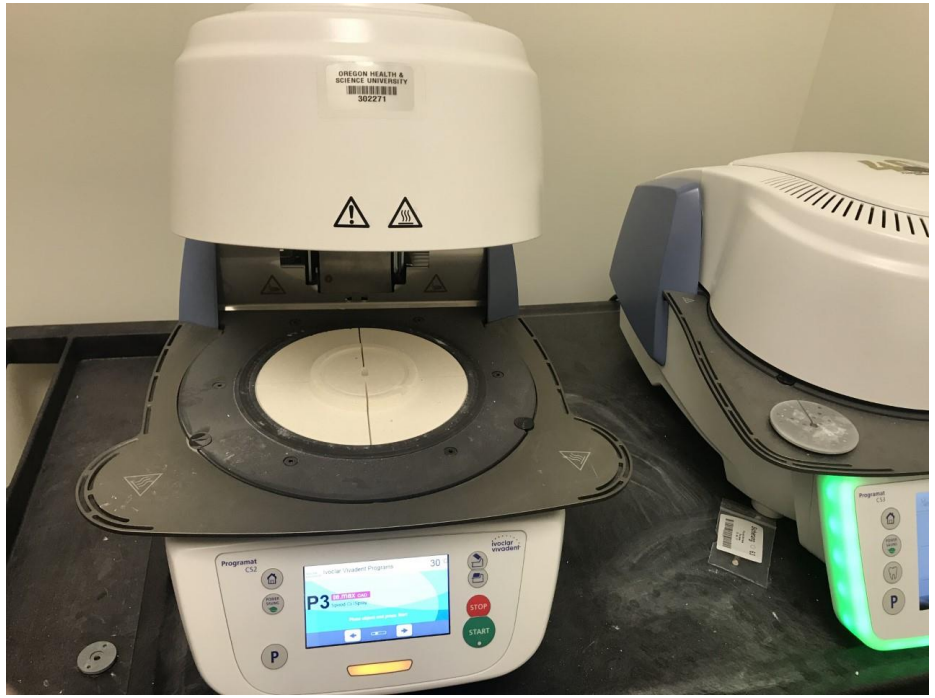
Press the selected IPS e.max CAD Crystallization Pin deeply into the IPS Object Fix Putty or Flow.

Place the restoration in the centre of the IPS e.max CAD Crystallization Tray and crystallize using the stipulated firing parameters.

REMOVE FROM FURNACE

ALWAYS FOLLOW THESE GUIDELINES

- 1. Leave under the muffle until 500C degrees is reached so thermal shock and fracture does not occur.
- 2. Do not touch ceramic with metal tongs
- 3. Any putty residue can be removed by steam or ultrasonic
- 4. Ivoclar does not recommend blasting with aluminous oxide or glass beads



***slide 4**

Remove the cool restoration from the set IPS Object Fix Putty or Flow.

Remove residue with ultrasound in a water bath…

… or with the steam jet.

Final try-in of the restoration before cementation

SELF GLAZE HAND POLISHING

AFTER CRYSTALLIZATION OPTION 1

SPRAY GLAZE AND SPEED CRYSTALLIZATION

OPTION 2

- 1. Follow steps in slide 1 for finishing the pre-crystallized blue restoration
- 2. Follow steps in slide 2 for applying the firing putty
- 3. VERY IMPORTANT the firing putty must be flush with the restoration margin with no gaps…well adapted for spray glaze use
- 4. Before applying glaze make sure all firing putty is removed from the outside of the restoration

with

IPS e.max CAD Crystallization Pin

Thin veneers, veneers
Inlays, onlays, partial crowns, anterior crowns, posterior crowns

Adapt IPS Object Fix Putty or Flow exactly up to the restoration margin so that the glazing spray does not touch the the inner areas.

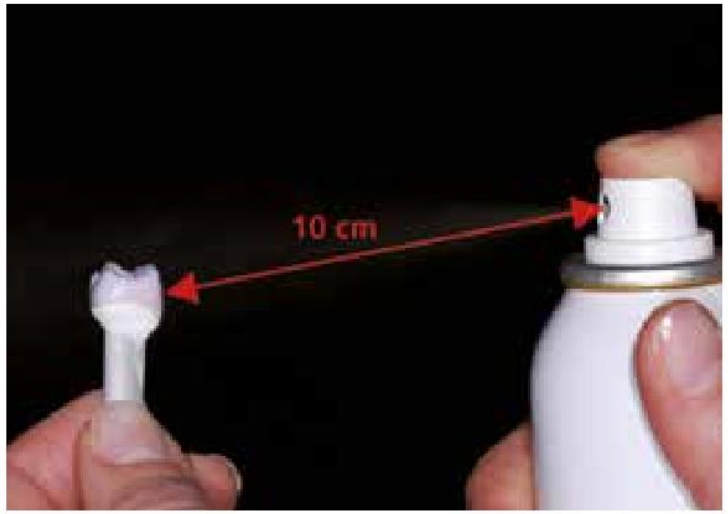
without

IPS e.max CAD Crystallization Pin

APPLICATION OF SPRAY GLAZE

- 1. After the restoration has been positioned on firing peg using the putty, spray the restoration. Do not spray while on the tray.
- 2. Shake the glaze spray can about 20 seconds. An insufficiently shaken can will result in the spray containing mainly propellant.
- 3. Spray from about 4 inch distance from can to restoration
- 4. Hold can in an upright position
- 5. Spray in short bursts while shaking can in between
- 6. When glaze layer is dry, a whitish color of coverage should be observed

Thoroughly shake the Glaze Spray can before application.



Hold the restoration by the IPS e.max CAD Crystallization Pin.

Spray the IPS e.max CAD Crystall./Glaze Spray directly on the unfired IPS e.max CAD Crystall./Shades and Stains. Spray the restoration from all sides while simultaneously rotating it.

Shake the spray can again between individual bursts.

Spray an even layer onto the restoration.

Example of incorrect Glaze Spray application

Problem/Cause	Before Firing Application of the Glaze Spray	After Firing Detailed view of the surface
Problem: **Not enough Glaze Spray** on the restoration **Possible cause:** – Distance between the spray can and the restoration too far – Spraying too short – Spray can not shaken sufficiently – Spray can not held upright during spraying	 Insufficient application of IPS e.max CAD Crystall./ Glaze Spray.	 Insufficient gloss or incomplete glaze layer.
Problem: **Too much Glaze Spray** on the restoration **Possible cause:** – Distance between the spray can and the restoration too small – Too much Glaze Spray applied	 Too much IPS e.max CAD Crystall./Glaze Spray was applied.	 Loss of texture and too glossy surface.

SPEED CRYSTALLIZATION

- 1. Will shorten crystallization to ~15 minutes instead of ~25 minutes
- 2. Only use the small firing tray for this program (#3)
- 3. Only fire 2 restorations at a time
- 4. Only use IPS emax CAD Crystall./Glaze spray
- 5. Or can self glaze on this program too



Requirements for Speed Crystallization

Speed Crystallization is independent of the translucency and indication. The following table must be observed:

IPS e.max CAD	Indication	**max. 2 units** with IPS e.max CAD Crystall./Glaze Spray
HT High Translucency	Thin veneers, veneers, inlays, onlays, partial crowns, crowns	✓
MT Medium Translucency	Thin veneers, veneers, inlays, onlays, partial crowns, crowns	✓
LT Low Translucency	Veneers, inlays, onlays, partial crowns, crowns	✓
	Hybrid abutment crowns, 3-unit bridges	–

CRYSTALLIZATION AND STAIN/GLAZE PASTE ON BLUE CROWN

OPTION 3

Staining and glazing with IPS e.max CAD Crystall./ Shades, Stain and Glaze spray on the "blue" restoration followed by crystallization.

PREPARATION FOR FIRING

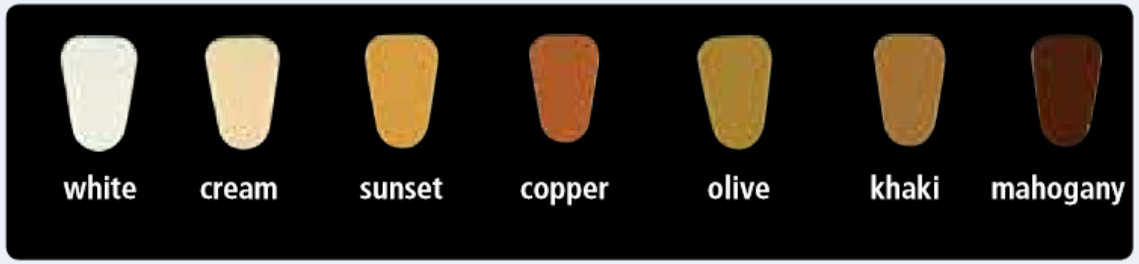
- 1. Pre-crystallization finishing (see slide #1)
- 2. Apply Object Fix Putty (see slide #2)
- 3. Extrude Emax CAD Glaze Paste from syringe and mix
- 4. If slight thinning is needed, the ready-to-use glaze can be mixed with a little Glaze liquid. Do not dilute too much or it will flow in an uncontrollable manner.
- 5. Apply glaze evenly to the entire restoration using a small brush. Move the brush horizontally not vertically so that glaze will be less likely to get under the margins.
- 6. Avoid pooling, especially on the occlusal surface.
- 7. Apply stains directly to the unfired glaze layer using the fine brush.

Characterization guide

With the IPS e.max CAD Crystall./Shades and IPS e.max CAD Crystall./Stains, it is possible to characterize the restoration whilst it is in the "blue" state prior to Crystallization. The following Shades and Stains are available for characterization:

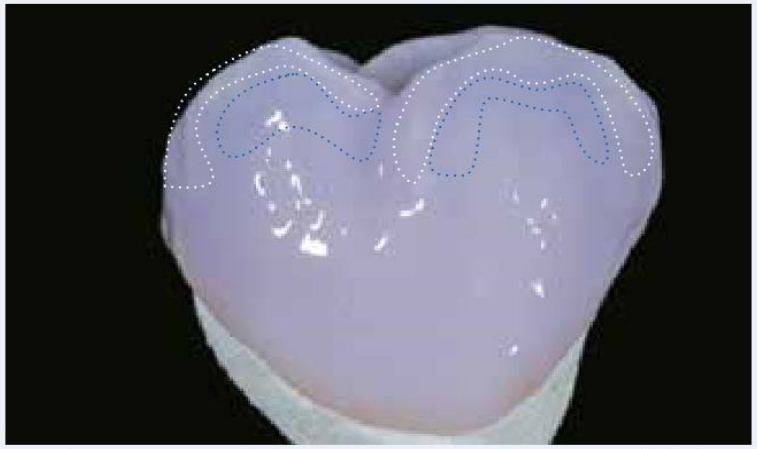
IPS e.max CAD Crystall./Shades

IPS e.max CAD Crystall./Stains

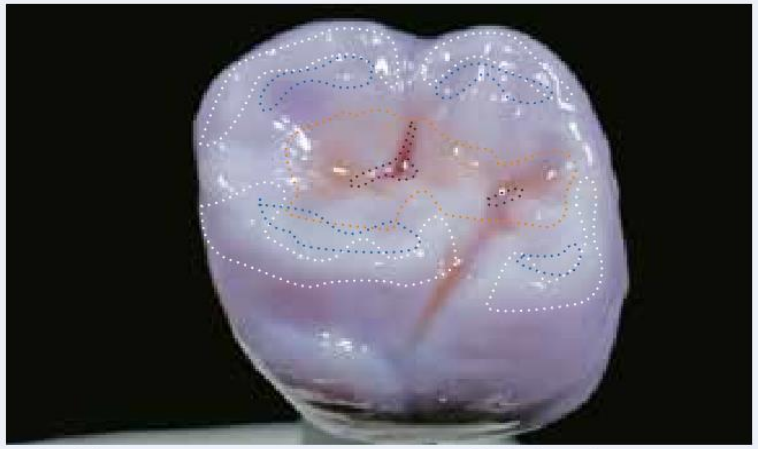


Extrude IPS e.max CAD Crystall./Shades and Stains from the syringe and mix thoroughly. If required, thin with IPS e.max CAD Crystall./Glaze Liquid.

Apply mixed Shades and Stains directly on the blue restoration.



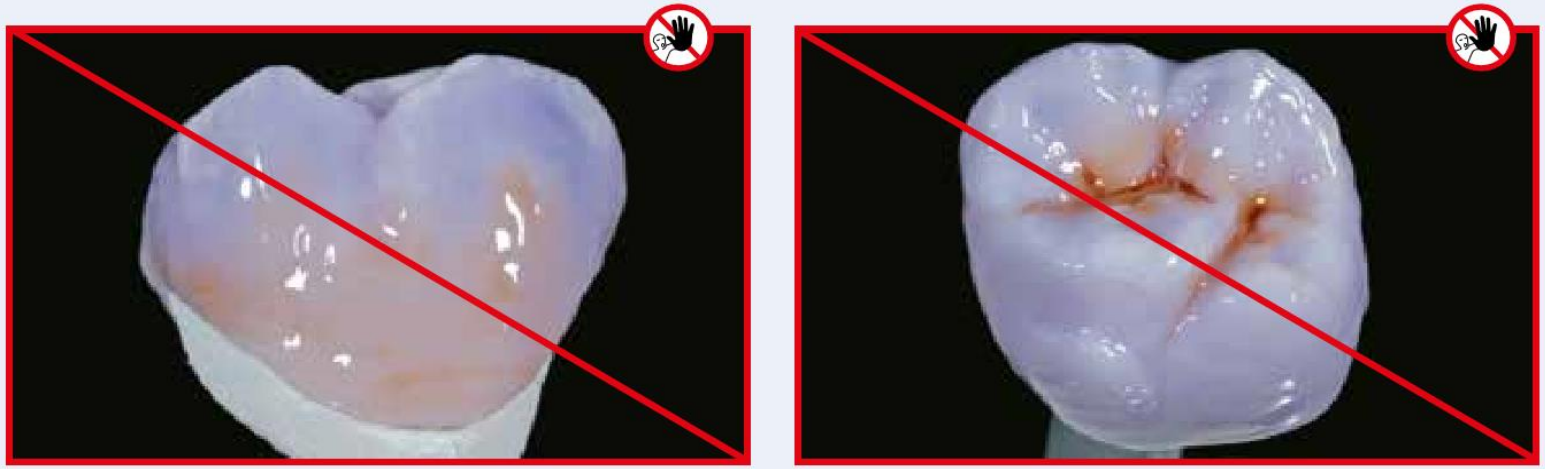
Minor characterizations on the buccal surface using IPS e.max CAD Crystall./Shade Incisal and Stains.



Occlusal characterizations using IPS e.max CAD Crystall./Shades and Stains.

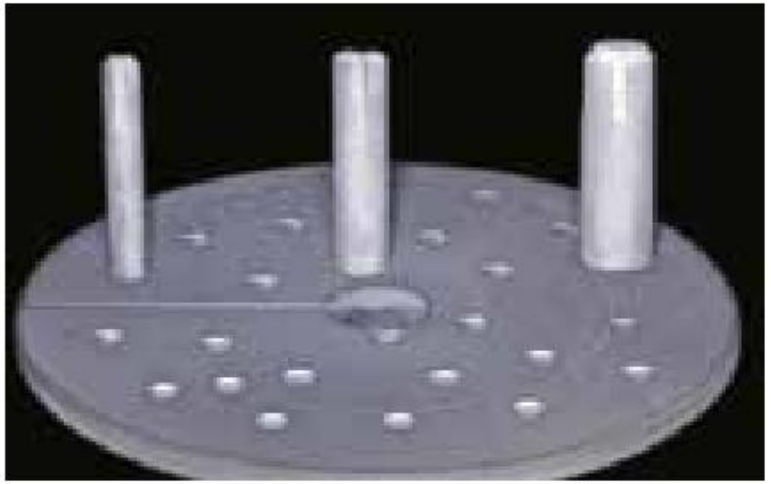
- Cusp inclinations: Shade Incisal I1
- Fissures: Stains mahogany
- Cusps, marginal ridges: Stains white/cream
- Enhancing the chroma: Stains sunset/copper

Example of IPS e.max CAD Crystall./Shades and Stains applied too thickly



Too thick a layer of IPS e.max CAD Crystall./Shades and Stains

SLOWER / FASTER TRAYS
GLAZE PASTE / GLAZE SPRAY



IPS e.max CAD Crystallization Pins in threes sizes S, M, L on the IPS e.max CAD Crystallization Tray

Place the restoration in the centre of the IPS e.max CAD Crystallization Tray and crystallize using the stipulated firing parameters.

Crystallization LT, MT, HT

with or *without* application of **IPS e.max CAD Crystall./ materials**


Furnaces Programat	Stand-by temperature B [°C/°F]	Closing time S [min]	Heating rate t_1 [°C/°F/min]	Firing temperature T_1 [°C/°F]	Holding time H_1 [min]	Heating rate t_2 [°C/°F/min]	Firing temperature T_2 [°C/°F]	Holding time H_2 [min]	Vacuum 1 1_1 [°C/°F] 1_2 [°C/°F]	Vacuum 2 2_1 [°C/°F] 2_2 [°C/°F]	Long-term cooling L [°C/°F]	Cooling rate t_l [°C/°Fmin]
P300 P500 P700	403/757	6:00	90/162	820/1508	0:10	30/54	840/1544	7:00	550/820 1022/1508	820/840 1508/1544	700/1292	0
P310 P510 P710	403/757	6:00	90/162	830/1526	0:10	30/54	850/1562	7:00	550/830 1022/1526	830/850 1526/1562	710/1310	0
CS/CS2/CS3	**Program 1**											

Speed Crystallization

Small tray /spray glaze

A maximum of 2 units *with* or *without* application of **IPS e.max CAD Crystall./Glaze Spray** on an IPS e.max CAD **Speed** Crystallization Tray


Furnaces Programat	Stand-by temperature B [°C/°F]	Closing time S [min]	Heating rate t_1 [°C/°F/min]	Firing temperature T_1 [°C/°F]	Holding time H_1 [min]	Heating rate t_2 [°C/°F/min]	Firing temperature T_2 [°C/°F]	Holding time H_2 [min]	Vacuum 1 1_1 [°C/°F] 1_2 [°C/°F]	Vacuum 2 2_1 [°C/°F] 2_2 [°C/°F]	Long-term cooling L [°C/°F]	Cooling rate t_l [°C/°Fmin]
P300 P500 P700	403/757	1:00	110/198	800/1472	0:00	50/90	850/1562	3:00	690/800 1274/1472	800/850 1472/1562	700/1292	40/72
P310 P510 P710	403/757	0:30	120/216	850/1562	0:00	70/126	870/1598	3:30	690/850 1274/1562	850/870 1562/1598	705/1301	0
CS/CS2/CS3	**Program 3**											

FOR CUSTOMIZED STAINING AFTER CRYSTALLIZATION

*USE THIS FURNACE

*THINGS TO REMEMBER

- 1. Porcelain has a Coefficient of Thermal Expansion (CTE) always be sure the correct glaze or porcelain add on is being used for that particular ceramic. Using the wrong CTE material will cause fracture.
- 2. No more than 6 units on large tray/2 on small tray.
- 3. Spray glaze on small tray/ speed crystallization (program 3)
- 4. Glaze paste/stains only fired on large tray slow cycle (program 1)
- 5. Always keep the putty syringe closed and after use rolled in a damp paper towel and stored in a baggie
- 6. Always close the crystallization furnace lid and turn off at end of day.
- 7. Please do not drop the firing pegs or trays, they will break!