

GUIDELINES FOR CERAMIC PROCESSING



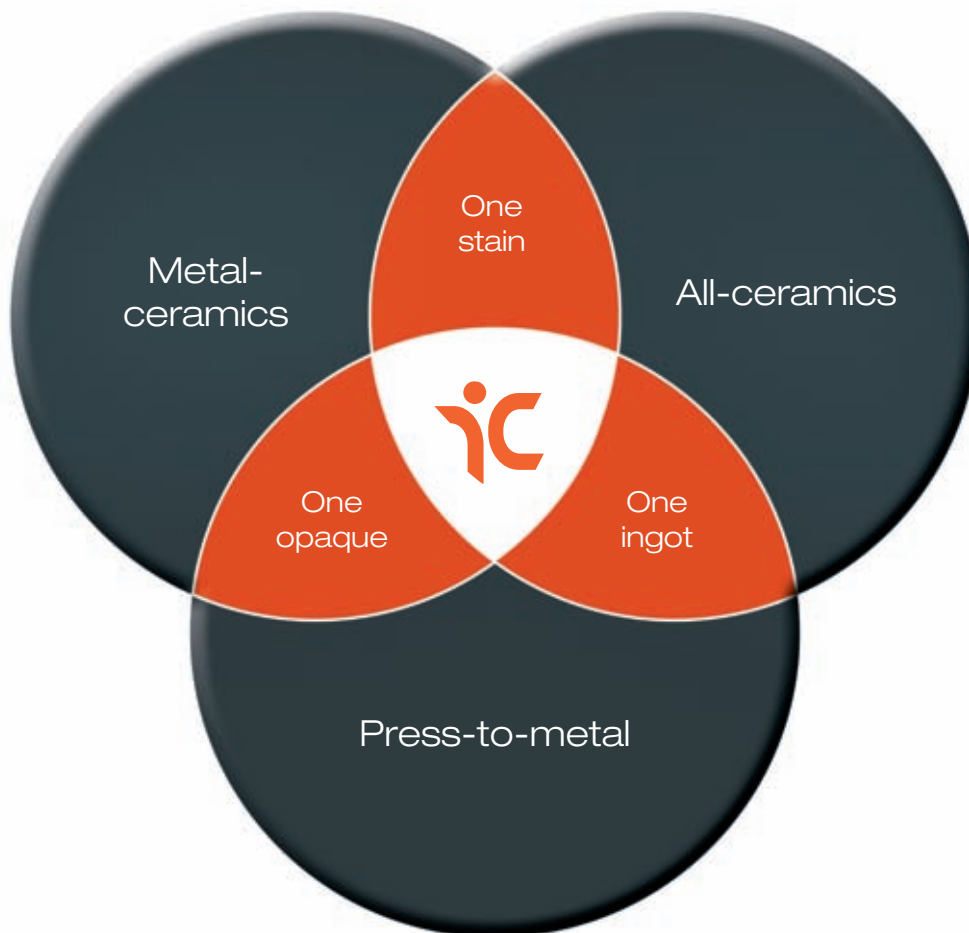
ceramco[®]ic
Integrated Ceramics

Guidelines for
ceramic processing



DENTSPLY

Achieving high-end aesthetics economically





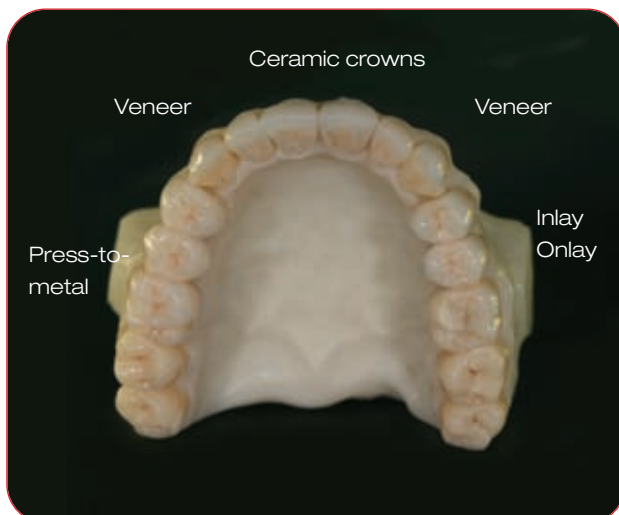
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These Guidelines for Ceramic Processing are intended to complement the Instructions for Use included with the kit.

Fascinatingly flexible

Ceramco iC, the integrated ceramic system, easily meets all your requirements in terms of flexibility, economy, reliability and aesthetic results.



It lets you realize high-quality restorations using the build-up, all-ceramic pressing and press-to-metal techniques with the same material.

Ceramco iC allows you to maximize your laboratory's production capacity and to increase its efficiency and flexibility.

- Metal ceramics: Crowns and bridges of any length with precious and non-precious alloy frameworks
- All-ceramics: Veneers, inlays, onlays, single crowns
- Press-to-metal: Crowns and bridges of any length



Fascinating possibilities with
leucite-reinforced feldspathic ceramics

All-ceramics

Veneer

Cut-back
build-up

Full contour

Veneers on
refractory
dies

Metal-
ceramics

Press-to-
metal or
ceramic
build-up

- Bridge
- Ceramics
- CAD/CAM
- Casting technique



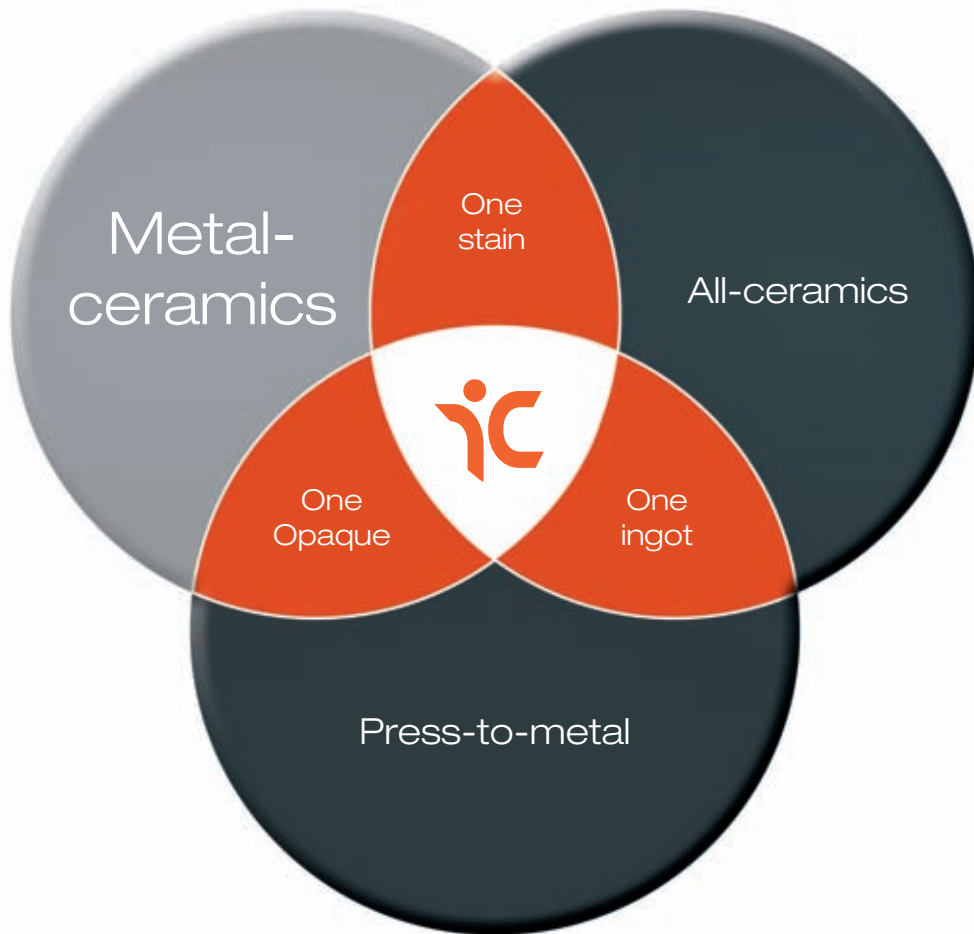
Pressing
Ceramics

Inlay/Onlay

Single crowns



Metal-ceramics



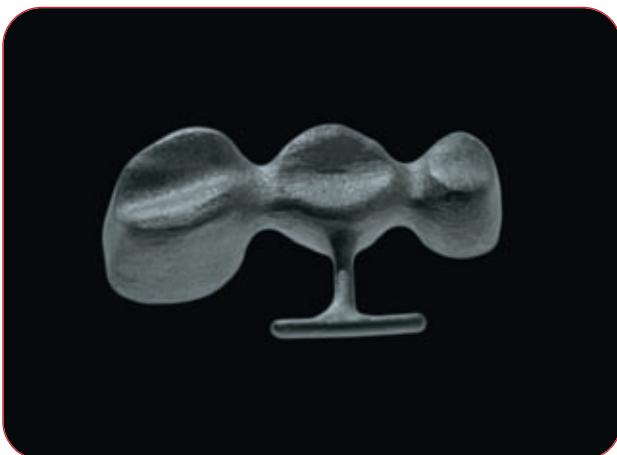


Framework preparation and oxidation



Framework preparation

After finishing with tungsten-carbide cutters, unless otherwise recommended by the alloy manufacturer, sandblast the metal frameworks with aluminium oxide (100–150 μm) at a pressure of 2 bars (non-precious alloys: 250 μm and up to 4 bars). For Compatis, use 250 μm and 4 bars.



Oxidation

Oxidize the finished frameworks as per the alloy manufacturer's instructions. The oxide is to remove by pickling or sandblasting, again depending on the alloy used and following the manufacturer's instructions.

Paste opaque and sprinkle crystals

Use a flat brush to uniformly apply the Paste Opaque to the prepared and dried metal framework. When preparing the metal framework, follow the alloy manufacturer's recommendations.

Gently tap the holding clasp to obtain an even surface.

To customize the appearance, you may mix Opaque Modifiers with the Paste Opaques before applying.

Use Ceramco iC Opaque Modifier Liquid (not water) to modify the consistency of the Paste Opaque.

Note: For Compartis CoCr the use of NE-Bonder is required prior to applying the paste opaque. For other non-precious frameworks, NE-Bonder is recommended but not obligatory.



When applying the opaque, make sure to cover the framework completely.



Vibrate slightly to condense the opaque applied. For smaller restorations, a single opaque firing step using sprinkle crystals may be sufficient.

Two opaque firings are recommended in all other cases.



Evenly scattered dry crystals on the surface. Remove excess crystals by tapping and fire as per the applicable firing recommendations.

Fire the first opaque layer without sprinkle crystals. For the second opaque firing, apply sprinkle crystals before firing.



Fire as per the applicable firing recommendations.

Note: Ceramco iC opaque crystals must NOT be used for the press-to-metal technique.

Margin

Die sealer/release

1. Mark the preparation margin.
2. Apply a thin even layer of DENTSPLY Prosthetics Die Sealer to the shoulder region of the stone cast. Remove excess material and allow to air-dry thoroughly.
3. Repeat the application of DENTSPLY Prosthetics Die Sealer and the drying steps several times.
4. Apply a thin even layer of DENTSPLY Prosthetics Die Release to the shoulder region. Remove excess material.
5. Repeat the application and drying steps several times until the die has a slightly glossy surface.

Applying the first margin layer

1. Dispense a small amount of Margin to a mixing pallet and mix with Ceramco iC Margin Opaque Correction Liquid to a rich pasty consistency. Add ceramic modifiers as appropriate.
2. Shape the margin material all the way to the preparation margin, avoid over contouring.
3. Allow the material to dry for at least 5 minutes. The ceramic surface should be firm and have a chalky texture.
4. Carefully remove the restoration from the die, then dry and fire at the recommended temperatures.

Applying the second margin layer

1. Reapply the die spacer and allow to dry.
2. Replace the framework on the die. Mix new margin material and apply.
3. Allow the material to dry for approximately 5 minutes. Remove the restoration from the die.



Use a tungsten-carbide cutter to reduce the crown margin by approximately 0.5–0.8 mm.



Opaque as applied and fired.



Applying the first margin layer.



The first margin layer as fired.



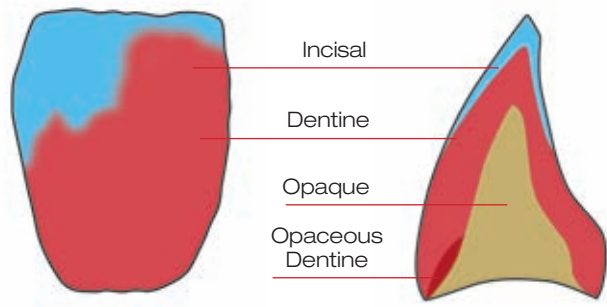
Applying the second margin layer.



Dry and fire at the recommended temperatures. The shoulder should have a matte finish. The second margin as fired.

Basic build-up

1. Apply the opaque.
2. Build up the dentine core.
3. Reduce the facial aspect of the incisal edge (do not reduce its height).
4. Add incisal to the basic dentine build-up.
5. In doing so, overcontour the incisal by 10%.



Opaque
(e.g. Paste Opaque)



Opaceous Dentine



Dentine



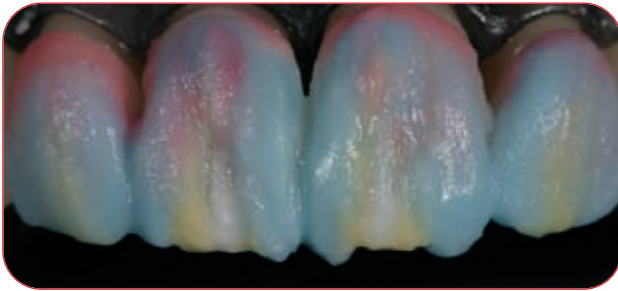
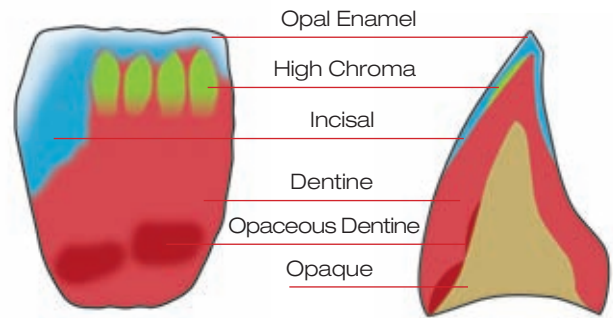
Transparent Incisals

The finished tooth

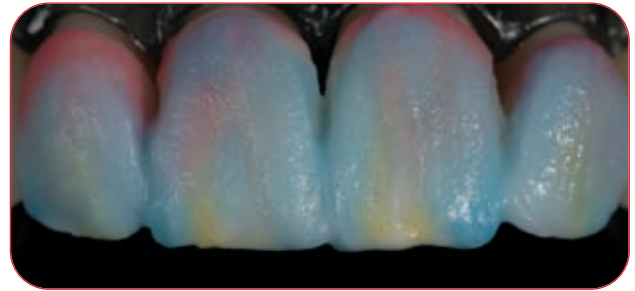


Custom build-up

The custom build-up technique using Ceramco iC makes replicating young teeth as easy as replicating middle-aged or older teeth. A number of modifiers and other materials are available for creating shade nuances.



Dentine Modifier is applied to the incisal region. An incisal margin is created with opal transparency.



The crown shape is completed in the incisal region using Incisal and Opal Transparency.

The final result



Dentine build-up

1. Wet those regions of the cast that may come in contact with ceramics using DENTSPLY Prosthetics Die Sealer.
2. Mix the ceramic materials to a paste-like consistency using Ceramco iC Modelling Liquid U or distilled water.
3. Build up dentine material or a mixture of Opaceous Dentine/Dentine Modifier around the cervical third. Condense slightly.

When building up pontics, first apply the dentine to the basal aspect, then place the framework on the cast. Continue applying the dentine. Condense slightly.

4. Cut back the incisal third if necessary to make room for the incisal material in order to replicate the shade and shape of natural teeth.

Custom build-up



Dentine build-up (continued)

5. If mamelons are required, apply a small amount of Mamelon material to the dentine core. Vary the individual mamelons' length to simulate the aesthetics of the natural tooth.

6. Apply Natural Enamel in the incisal or occlusal third, overcontouring to approximately 10%. If desired, build up the selected enamels in tightly placed mamelons above the incisal regions to recreate the enamel prisms of natural teeth. Apply Natural Enamel in different shades, translucent enamels or opalescent enamels in clearly distinguishable parallel stripes to achieve the impression of contrast. Vibrate slightly.

7. Remove the framework from the cast. Apply a small amount of enamel material to the mesial and distal contacts. Vibrate slightly and fire.



8. For multi-unit restorations, use an instrument with a thin blade and make slight incisions in the proximal regions.

9. Allow the build-up to dry carefully. For large restorations, extend the drying phase to ten minutes.

10. Fire at the recommended temperatures. The surface should have a slightly glossy surface while still displaying some texture.

Shaping and cleaning

1. After firing, finish using appropriate fine-grain diamond cutters and rubber polishing tips or cups. If no additional ceramic firing is required, the restoration can be thoroughly cleaned and subsequently glazed.

2. Before glazing, sandblast the ceramic surface using a disposable sandblasting tip and 50 µm aluminium oxide at approximately 2 bars. Steam-clean the restoration or clean in an ultrasonic bath with distilled water.

Second dentine and incisal application

Apply additional ceramic layers in the same manner as described above.

Custom build-up

Opaque Corrector

Should the metal surface become exposed during finishing, this can be remedied by using Opaque Corrector.

1. Air-abrade the surface to be repaired with approx. 110- μ m aluminium oxide at approx. 1.4 bar to increase surface roughness. Steam-clean or clean in and ultrasonic bath with distilled water.
2. Dispense a small quantity of opaque to a mixing pallet. Add a small amount of Ceramco

iC Margin and Opaque Corrector Liquid and mix to a pasty consistency.

3. Apply the opaque mix to the exposed metal and allow to dry for 5 minutes. The opaque should be firm and have a chalky texture.
4. Apply Ceramco iC Opaqueous Dentine, Dentine or additional ceramic materials and fire as per the applicable firing recommendations.

Additional ceramic material

Ceramco iC ceramics are additional available as translucent enamels for low, medium and dark dentine and for pink, reddish-pink, salmon or dark gingiva. These ceramic materials are used whenever lower firing temperatures are required. They are invariably fired in a vacuum.

1. Air-abrade the surface to be added to with approx. 110- μ m aluminium oxide at approx. 1.4 bar. Steam-clean or clean in and ultrasonic bath with distilled water.

2. Mix the ceramic materials to a paste-like consistency using Ceramco iC Modelling Liquid U or distilled water.

3. Apply the mix to the desired region.
4. Fire at the recommended temperatures.

Stain and glaze firing

1. To obtain a natural lustre, ensure that the ceramic surfaces are clean and follow the firing recommendations for glaze firing.
2. If glazing is required, mix Ceramco iC Glaze with Ceramco iC Stain & Glaze Liquid and apply a thin layer of the mixture to the ceramic surface.

3. Apply the stain to the desired region.
4. Check the tooth shade and add stains as needed. Then fire as per the applicable firing recommendations.

Custom build-up

Final Margin

Final Margin is used to make small corrections to a ceramic margin. It is fired at low temperatures. Follow the same procedure as for stain and glaze firing.

1. Dispense a small amount of Final Margin to a clean mixing pallet and mix with Margin Opaque Correction Liquid to a rich pasty consistency. (This mixture will air-harden within approximately 5 minutes.)

2. Apply the material to the desired region and build up all the way to the preparation margin. Do not overcontour the shoulder.

3. Allow the material to dry for at least 5 minutes. The ceramic surface should be firm and have a chalky texture.

4. Carefully remove the framework from the cast.

5. Dry and fire at the recommended temperatures.

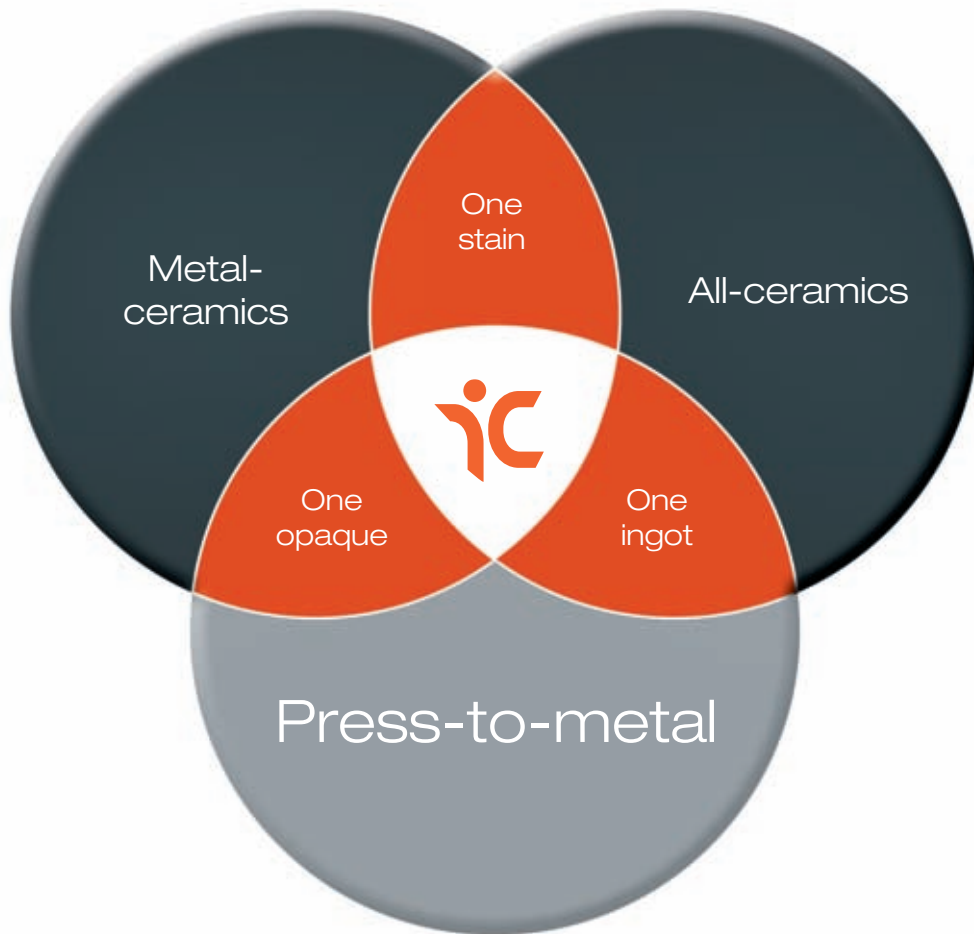
Note: Die sealer/release see page 9



Pressing ceramics



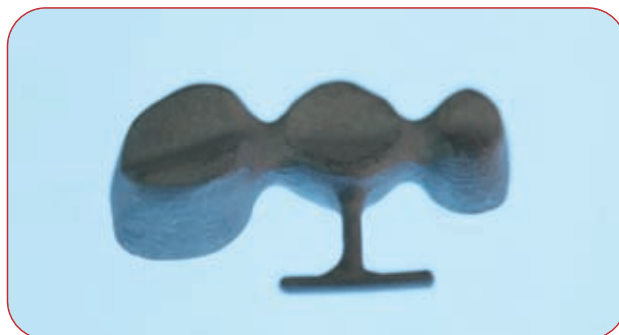
Press-to-metal





Press-to-metal

Framework design



1. Always follow the framework design recommendations for conventional metal-ceramic restorations:

- a. Make sure the framework has the recommended wall thickness.
- b. Do not provide for more than 2.5 mm of non-supported ceramics.

2. The ceramic margin can be pressed. However, the ingots used are more translucent than other dentines. This may cause the margins to be more translucent than desirable. Coverage can be provided by a special Ceramco iC margin material. The correspon-

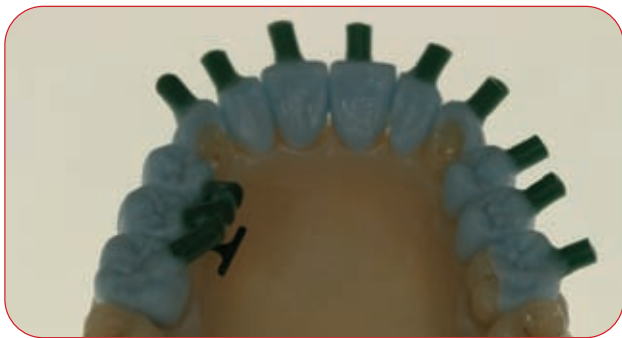
ding procedure call for an extra firing cycle to precede the regular modelling and pressing cycles.

3. Oxidized the alloy as per the alloy manufacturer's recommendations and clean.
4. Make sure all surfaces are completely dry.
5. Use a flat brush to lightly apply an even layer of Paste Opaque to the metal surface.

Note: Ceramco iC opaque crystals must NOT be used for the press-to-metal technique.

Press-to-metal

Wax-up to full contour



1. Use a wax suitable for use with pressable ceramics to avoid discolourations.
2. To achieve the best possible shade, it is recommended to apply a wax layer of 1.2 mm. The minimum wax thickness is 0.8 mm.

Note: Use an inlay wax that is free of contamination.

Attaching the sprues



1. All sprues should be 2 to 3 mm in diameter and 2 to 4 mm in length.
2. For anterior units, attach a single sprue directly to each incisal edge. For posterior units, attach a single sprue to the largest cusp tip at an angle of 45°.
3. Attach the sprues to the base former in the same manner.

4. Allow at least 3 mm of clearance between the wax-ups and 8–9 mm of clearance between any wax-up and exterior wall of the investment.
5. Allow at least 8 mm of clearance between the top of the wax-up and the levelling ring.

Investing technique



Note: This procedure requires a phosphate-bonded investment such as DENTSPLY Prosthetics Pressed Ceramic Investment Powder and Liquid.

1. Use 20 ml of investment liquid and 5 ml of distilled water for each 100-g bag of investment powder.
2. Add the liquid to a slightly moistened mixing bowl, followed by the powder.
3. Hand-mix the materials for 15 seconds.
4. Mix all materials in a vacuum mixer for 60 seconds.

Preparing the ring

1. Allow the investment to bench-set for at least 20 minutes.
2. Remove the silicone ring and sprue base from the investment.
3. Using a knife, carefully remove any rough investment from the top of the ring.
 - a. The top and bottom of the ring should be flat. Do not use a model trimmer. Do not reduce the height of the ring.

5. Carefully paint the restorations with the investment and pour the remaining investment into the silicone ring.

6. Place the levelling ring on top of the silicone ring. Excess investment will push through the top of the levelling ring. Make sure that the levelling ring is fully seated. This is important because this determines correct height and angle of the investment for subsequent pressing in the furnace.

Press as per the applicable recommendations and divest.

- b. Maintain a 90° angle between the end and the side of the ring.

4. Make sure that no investment or debris can enter the sprue hole.

Note: Make sure that the burnout furnace is clean to prevent particles from entering the sprue hole and appear in the press ceramic restoration in the form of small black specks.

Accelerated procedure (after bench-setting for 20 minutes)

1. Pre-heat the burnout furnace to 850°C.
2. Once the selected temperature has been attained, place the ring, sprues pointing down, on the corrugated floor of the burnout furnace.
3. Insert the aluminium oxide plungers in the burnout furnace.

Note: Do not pre-heat if you are using disposable refractory plungers.

4. Allow 100-g rings to soak for 45 minutes and 200-g rings to soak for 60 minutes.
5. Add 15 minutes of pre-heating time for each additional ring.

Conventional procedure (after bench-setting for 60 minutes)

1. Place the ring and plungers in a cold burnout furnace.

Note: Do not pre-heat if you are using disposable refractory plungers.

2. Heat the burnout furnace to 850°C at a rate of 15°C/minute.

3. Allow 100-g rings to soak for 45 minutes and 200-g rings to soak for 60 minutes.

4. Add 15 minutes of pre-heating time for each additional ring.

Pressing program

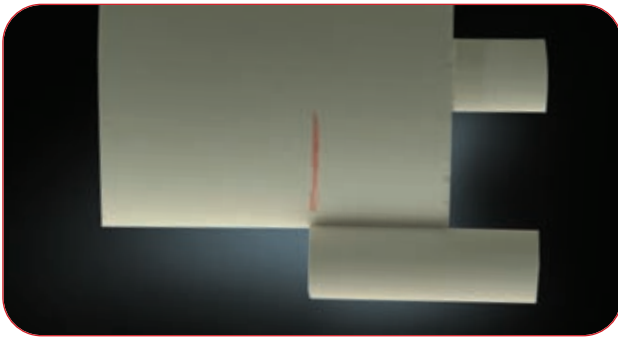


1. Remove the ring from the burnout furnace and place the ingots in the sprues.
2. Insert the preheated aluminium oxide plunger.

3. Remove one of the pre-heated aluminium oxide plungers from the burnout furnace or take a single-use plunger (non-preheated) and place above the ingot in the pressing sprue hole.

4. On completion of the pressing cycle, remove the ring from the furnace and allow to cool.

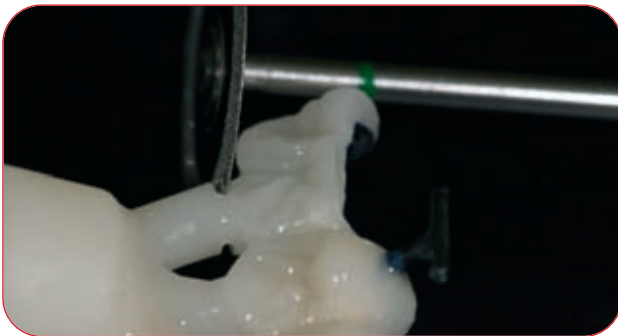
Divesting



1. Place an aluminium oxide plunger or an unused refractory plunger next to the pressed ring.
2. Use a pencil to mark the approximate length of the used plunger.
3. When using an aluminium oxide plunger, use a disc or 50- μm aluminium oxide to cut the investment down to the top of the plunger. Carefully remove the plunger.

4. Sandblast with 50- μm aluminium oxide at approximately 4 bars to remove the bulk of the investment. Do not sandblast the pressed ceramics at the same pressure.
5. Sandblast with 50- μm glass beads at approximately 1.3–1.4 bars to remove the remaining investment.

Separation



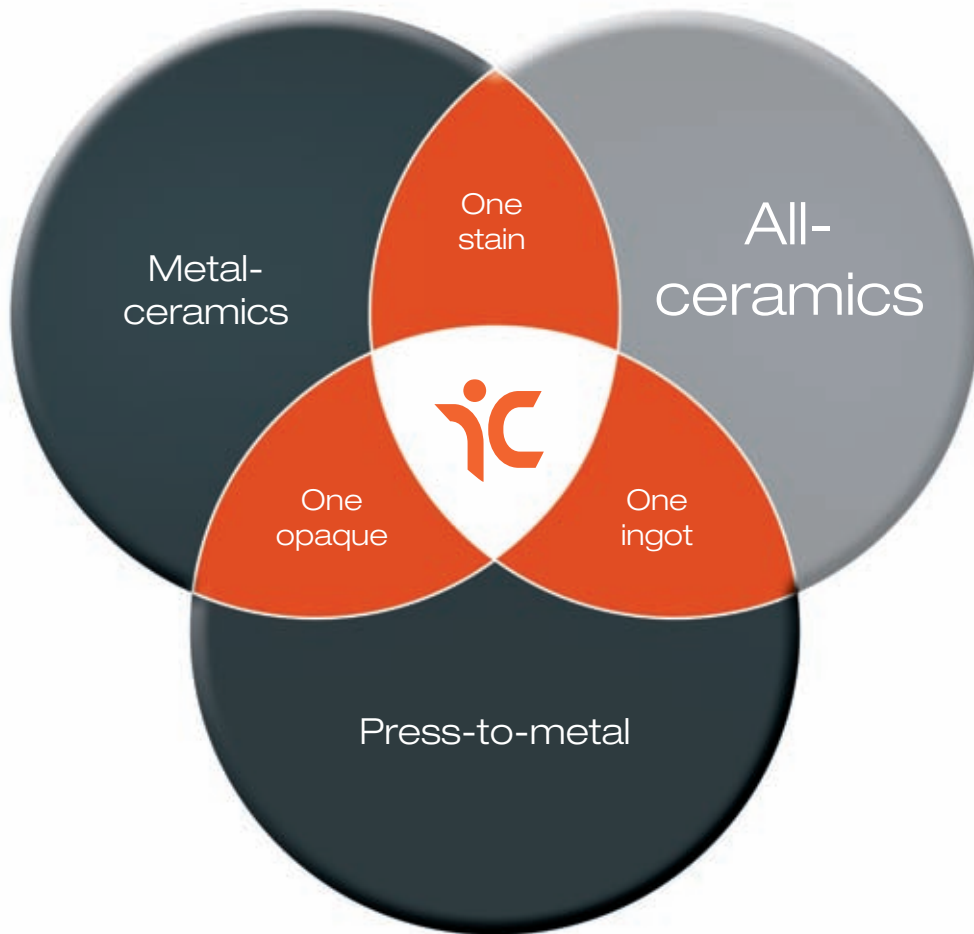
1. Cut the sprues with a thin diamond disc and clean/finish the edges.
2. Adjust the shape as appropriate.

Completed bridge,
stained and glazed

Note: see Page 25
Staining and glazing



All-ceramics





Veneering technique (pressed and stained)



Waxed-up to full contour



Wax-up with sprues



Pressed using translucent ingots

Waxing up to full contour

1. Use a wax suitable for use with pressable ceramics to avoid discolourations.
2. To achieve the best possible shade, it is recommended to apply a wax layer of 1.2 mm. The minimum wax thickness is 0.8 mm.

Note: Use an inlay wax that is free of contamination.

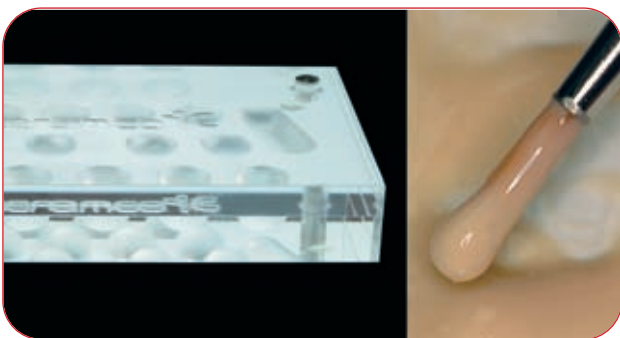
Note: Refractory materials should be used for both all-ceramic restorations and for ceramic veneers in combination with firing pins (see page 31).

Note: see page 27 „Wax-up“

Staining and glazing

Staining and glazing of Value series ingots (Stain & Glaze)

1. Sandblast the ceramic surface with 50- μ m aluminium oxide at approximately 1.4 bars. Steam-clean or clean in an ultrasonic bath with distilled water.
2. Place a small amount of dentine stain on the mixing pallet. Add Stain & Glaze Liquid and mix to a pasty consistency. Apply a generous quantity of the resulting mixture to the ceramic surface. Vibrate slightly while smoothing out the stain.
3. Place a small amount of incisal stain or glaze on the mixing pallet. Add Stain & Glaze Liquid and mix to a creamy consistency. Apply the mixture to the surface of the incisal region. Allow the mixture to taper off in a very thin layer towards the dentine. Vibrate slightly while smoothing.
4. You may use Ceramco iC stains for further customization.
5. Fire at the recommended temperatures.



Mix dentine stain to a pasty consistency



Apply incisal stain or glaze and condense



The completed veneers

Staining and glazing

Staining technique

This technique is highly productive. Due to its thicker core, the restoration appears more translucent. This technique is recommended for anterior and premolar restorations. The

1. Lightly sandblast the surface of the crown with 50- μ m aluminium oxide at approximately 1.4 bars.
2. Use a steam cleaner to clean the surfaces or put the restoration in an ultrasonic cleaner with distilled water for 10 minutes.
3. Only use the honeycomb trays with the DENTSPLY Prosthetics All-Ceramic firing pins.
4. If necessary, corrections may be made to the crown using Ceramco iC materials.
5. Place the pressed crown on the prepared DENTSPLY Prosthetics Composite Die material.
6. Dispense a small amount of the Dentine Shade Stain and Stain & Glaze Liquid to a mixing pallet. Mix to a creamy consistency. Apply a generous amount of the mixture to the ceramic surface and vibrate lightly. Apply the stain to the dentine area only until the desired effect is achieved.

crown is waxed up to full contour. Use the Ceramco iC Value series (VS) or the neutral (N) ingot type and finalize using Ceramco iC dentine stains.

7. Dispense a small amount of the Dentine Shade Stain and Stain & Glaze Liquid to a mixing pallet. Mix to a creamy consistency and apply to the incisal region. Allow the mixture to taper off in a very thin layer toward the dentine. Vibrate slightly to smooth out.
8. You may use Ceramco iC stains for further customization.
9. Remove the restoration from the composite die. To ensure proper fit, remove excess stain from the interior of the crown as well as the margin areas.
10. Fire as per the applicable firing recommendations

Note: The glazing cycle has a holding time of between 0.5 and 2.5 minutes. Shorter times are recommended for two applications of stain/overglaze.

Note: For a higher sheen, the firing temperature can be increased by 10°C.

Cutbacks and additions

Clinical case



After cutback



After coating with incisals and transparents in the incisal area



Structure



After glaze firing



Clinical outcome

Cutback and completion of the contour

Layered cutback technique

This technique yields excellent aesthetic results and makes for high productivity. In this technique, the restoration is wax up to full contour, and only the incisal region is cutback.

The crown is pressed from opaceous dentine ingots. Ceramco iC incisals are subsequently used for final contouring.

Preparing the cast

1. Class 4 dental stone should be prepared for pouring the cast, preferably in white or ivory.
2. To cover the die, two levels of die spacer are applied to within 1.0 mm from the prepared shoulder or preparation margin. This ser-

ves to provide 0.1 mm of clearance for the resin cement and compensates for undercuts.

3. Allow the die spacer to set completely.

Wax-up

1. Apply a thin layer of a standard separating agent.
2. Wax up the crowns using a wax suitable for pressable ceramics.

Note: Use an inlay wax that is free of contamination.

3. To completely cover the restoration, the thickness of the wax layer must be at least 0.8 mm. The thickness for veneers should be at least 0.5 mm.

Spruing the wax-up

1. All sprues should be 2 to 3 mm in diameter and 2 to 4 mm in length.
2. For anterior units, attach a single sprue directly to each incisal edge. For posterior units, attach a single sprue to the largest cusp tip at an angle of 45°.
3. Attach the sprues to the base former in the same manner.

4. Allow at least 3 mm of clearance between the wax-ups and 8–9 mm of clearance between any wax-up and the ring wall.
5. Allow at least 8 mm of clearance between the topmost point of the wax up and the levelling ring.

Cutback and completion of the contour

Investing technique

Note: This procedure requires a phosphate-based investment such as DENTSPLY Prosthetics Press Investment Powder.

1. Use the following mixing ratios for each 100-g bag of powder:

a. Crown/veneers: 22 ml of liquid and 3 ml of distilled water

b. Inlays/onlays: 16 ml of liquid and 9 ml of distilled water

Note: The suggested liquid/water ratio will normally give you the correct expansion.

2. Add the liquid to a slightly moistened mixing bowl, followed by the powder.

3. Hand-mix the materials for 15 seconds.

4. Mix all materials in a vacuum mixer for 60 seconds.

5. Carefully paint the restorations with the investment and pour the remaining investment into the silicone ring.

6. Place the levelling ring on top of the silicone ring. Excess investment will push through the top of the levelling ring. Make sure that the levelling ring is fully seated. This is important because this determines correct height and angle of the investment for subsequent pressing in the furnace.

Press as per the applicable recommendations and divest.

Preparing the ring

1. Allow the investment to bench-set for at least 20 minutes.

2. Remove the silicone ring and sprue base from the investment.

3. Using a knife, carefully remove any rough investment from the top of the ring.

a. The top and bottom of the ring should be flat. Do not use a model trimmer. Do not reduce the height of the ring.

b. Maintain a 90° angle between the end and the side of the ring.

4. Make sure that no investment or debris can enter the sprue hole.

Note: Make sure that the burnout furnace is clean to prevent particles from entering the sprue hole and appear in the press ceramic restoration in the form of small black specks.

Cutback and completion of the contour

Accelerated procedure (after bench-setting for 20 minutes)

1. Pre-heat the burnout furnace to 850°C.
2. Once the selected temperature has been attained, place the ring, sprues pointing down, on the corrugated floor of the burnout furnace.
3. Insert the aluminium oxide plungers in the burnout furnace.

Note: Do not pre-heat if you are using disposable refractory plungers.

4. Allow 100-g rings to soak for 45 minutes and 200-g rings to soak for 60 minutes.
5. Add 15 minutes of pre-heating time for each additional ring.

Conventional procedure (after bench-setting for 60 minutes)

1. Place the ring and plungers in a cold burnout furnace.

Note: Do not pre-heat if you are using disposable refractory plungers.

2. Pre-heat the burnout furnace to 850°C at a rate of 15°C/minute.

3. Allow 100-g rings to soak for 45 minutes and 200-g rings to soak for 60 minutes.

4. Add 15 minutes of pre-heating time for each additional ring.

Divesting

1. Place a plunger next to the ring.
2. Use a pencil to mark the approximate length of the used plunger.
3. When using an aluminium oxide plunger, use a disc or 50-µm aluminium oxide to cut the investment down to the top of the plunger.

4. Sandblast with 50-µm aluminium oxide at approximately 4 bars to remove the bulk of the investment. Do not sandblast the pressed ceramics at the same pressure.

5. Sandblast with 50-µm glass beads at approximately 1.3–1.4 bars to remove the remaining investment.

Finishing

1. Cut the sprues with a thin diamond disc and clean/finish the edges.
2. Adjust the shape as appropriate.
3. Check the basal surface of the restoration for bubbles and irregularities and remove if necessary.

4. Seat the restoration on the die(s).

5. Adjust the ceramic shoulders with a rubber polishing wheel or tip.

Note: Margins may be corrected using Ceramco iC Dentine or Ceramco iC Final Margin.

Cutback and completion of the contour

Composite die technique

DENTSPLY Prosthetics Composite Die material is designed to mimic the actual shade of the prepared tooth. When placed inside the pressed ceramic core, this material will assist in accurate shade reproductions. If the dentist did not take the shade of the prepared tooth, the composite die material may be used to verify to final shade. Select the proper composite die material from the appropriate table.

1. Apply DENTSPLY Prosthetics Die Release to the inside of the ceramic restoration and allow to dry.
2. Place a small amount of the DENTSPLY Prosthetics Composite Die material on the inside of the restoration and vibrate to remove

any voids. Immediately push a dowel pin into the uncured composite die material. Remove any excess composite.

3. Light-cure the composite for 1–2 minutes using a handheld light-curing unit or a Triad® 2000 curing unit (DENTSPLY/Trubyte). Remove the composite die material from the restoration and clean it using a steam cleaner or an ultrasonic cleaner with distilled water for 10 minutes.

Enamel-layered technique

1. Slightly sandblast the surface of the ceramic restoration with 50- μ m aluminium oxide at approximately 1.4 bars. Be careful not to harm the margins.
2. Use a steam cleaner to clean the surfaces or place the restoration in an ultrasonic cleaner with distilled water for 10 minutes.
3. Apply and fire the enamel. All the components of the Ceramco iC system may be used for modification.

4. Only use the honeycomb trays with the DENTSPLY Prosthetics All-Ceramic firing pins.
5. The final shade may be checked using the DENTSPLY Prosthetics Composite Die material.
6. To glaze the restoration, mix the Overglaze Paste with Stain & Glaze Liquid to a thin consistency and apply to the ceramic surface. Note the glazing cycle has a 2-minute hold time.

Additional instructions

Etching the completed restoration

The completed restoration must be etched before placement.

1. Use a steam cleaner to clean the completed crown or place the restoration in an ultrasonic cleaner with distilled water for 10 minutes.
2. Using a disposable brush or plastic instrument, apply a thin layer of Ceramco iC Etchant Gel to the basal surface of the restoration.
3. Allow the etchant to stay in place for 1–2 min.
4. Remove the bulk of the etchant with a brush or cotton-tip applicator.
5. Prepare DENTSPLY Prosthetics Neutralizer by mixing the package contents with 0.5 litres of water. Place the crown in the solution for at least 20 seconds.
6. Use a steam cleaner to clean the prepared surfaces or place in an ultrasonic cleaner with distilled water for 10 minutes.



7. Do not touch the prepared crowns (use a suitable instrument instead) or place them on a cast. This may contaminate the etched surface, which can reduce bond strength.

Support using refractory material

Due to varying firing characteristics of different furnaces, it may be necessary to give extra support to Ceramco iC all-ceramic restorations using the DENTSPLY refractory material.

This material should be used for both all-ceramic restorations and for ceramic veneers in combination with firing pins.

To do so, fill the inside of the restoration with refractory material and insert the firing pin.

Proceed to process the restoration as usual. The refractory material and pin are easily removed after firing.



Fascinating possibilities





Firing tables

General firing recommendations for Ceramco iC – Precious metal

General firing program	Drying	Close	Preheating	Vacuum	Vacuum	Heating	Firing	Holding		Cooling
	min.	min.	°C	on	off	°C/min.	°C	Vacuum min.	No Vacuum min.	min.
Powder opaque	3:00	3:00	650	650	960	55	960	-	2:00	-
Paste opaque Neutral*	5:00	5:00	500	500	930/910*	55	930/910*	-	2:00	-
Margin (built-up)	5:00	5:00	600	600	880	90	880	-	0:30	-
Margin (pressed)	5:00	5:00	600	600	870	90	870	-	-	-
Dentine 1	5:00	3:00	500	500	840	100	840	0:30	0:30	-
Dentine 2	3:00	3:00	500	500	830	100	830	-	0:30	-
Glaze firing (without Glaze)	3:00	3:00	500	-	-	100	820	-	0:30	-
Add-On	5:00	3:00	500	500	815	100	815	-	-	-
Stains (built-up) Glaze/Final Margin	3:00	3:00	500	-	-	100	805	-	0:30	-
Stains (pressed) Glaze/Final Margin	3:00	3:00	500	-	-	100	805	-	0:30-2:30	-

Firing recommendations for Ceramco iC – NEM (CoCr) and laser-sintered CoCr**

Firing program Non-precious (CoCr)	Drying	Closing	Preheating	Vacuum	Vacuum	Heating	Firing	Holding		Cooling
	min.	min.	°C	on	off	°C/min.	°C	Vacuum min.	No Vacuum min.	min.
Powder opaque	3:00	3:00	650	650	960	55	960	-	2:00	-
Paste opaque	5:00	5:00	500	500	930	55	930	-	2:00	-
Margin (built-up)	5:00	5:00	600	600	880	90	880	-	0:30	-
Margin (pressed)	5:00	5:00	600	600	870	90	870	-	-	-
Dentine 1	5:00	3:00	500	500	830	55	830	0:30	0:30	6:00
Dentine 2	3:00	3:00	500	500	820	55	820	-	0:30	6:00
Glaze firing (without glaze)	3:00	3:00	500	-	-	100	810	-	0:30	6:00
Add-On	5:00	3:00	500	500	805	55	805	-	-	6:00
Stains (built-up) Glaze/Final Margin	3:00	3:00	500	-	-	100	805	-	0:30	-
Stains (pressed) Glaze/Final Margin	3:00	3:00	500	-	-	100	805	-	0:30-2:30	-

* For bioalloys, use a neutral (such as StarLight Ceram) at 900°C, then fire paste opaque for shade at 910°C.

** Recommendation: For Compartis CoCr, use NE-Bonder at 980°C.

Additional firing tables

Firing recommendations for Ceramco iC – NEM (Multimat Touch & Press)*

Firing program Multimat Touch & Press	Preheating		Drying min.	Heating °C/min.	Firing		Vacuum		Cooling level
	°C	min.			°C	min.	(hPa)	min.	
NE-Bonder (powder/paste)	575	1	6:00/8:00	55	980	2:00/3:00	50	1:00	-
Paste opaque 1+2	500	4	6:00	55	930	2:00	50	1:00	-
Powder opaque 1+2	650	3	3:00	55	960	2:00	50	1:00	-
Margin 1 (built-up)	600	5	5:00	55	880	0:30	50	0:10	-
Margin 2 (pressed)	600	5	5:00	55	870	0:30	50	0:10	-
Dentine 1	500	5	3:00	55	830	0:30	50	0:30	1
Dentine 2	500	5	3:00	55	820	0:30	50	0:10	1
Glaze	500	4	2:00	55	810	0:30	-	-	1
Add-On	500	3	5:00	55	805	0:30	50	0:10	-
Final Shoulder (F SM)	500	3	3:00	55	790	0:30	50	0:10	-

Firing recommendations for Ceramco iC – NEM (Cergo Compact/Press)*

Firing program Cergo Compact/Press	Drying		Closing min.	Preheating		Vacuum			Heating °C/min.	Firing °C	Vacuum min.	Holding min.	Tempering		Cooling min.
	°C	min.		°C	min.	cont./off	on	off					°C	min.	
NE-Bonder (powder/paste)	575	4:00/6:00	2:00	575	1:00	cont.	575	980	55	980	-	2:00/3:00	-	-	-
Paste opaque 1+2	135	5:00	4:00	500	1:00	cont.	500	930	55	930	-	2:00	-	-	-
Powder opaque 1+2	135	3:00	3:00	650	-	cont.	650	960	55	960	-	2:00	-	-	-
Margin 1 (built-up)	135	5:00	5:00	600	-	cont.	600	880	55	880	-	0:30	-	-	-
Margin 2 (pressed)	135	5:00	5:00	600	-	cont.	600	870	55	870	-	0:30	-	-	-
Dentine 1	135	5:00	3:00	500	-	cont.	500	830	55	830	0:30	0:30	-	-	6:00
Dentine 2	135	3:00	3:00	500	-	cont.	500	820	55	820	-	0:30	-	-	6:00
Glaze	135	3:00	3:00	500	-	off	-	-	55	810	-	0:30	-	-	6:00
Add-On	135	5:00	3:00	500	-	cont.	500	805	55	805	-	0:30	-	-	-
Final Shoulder (F SM)	135	3:00	3:00	500	-	cont.	500	790	55	790	-	0:30	-	-	-

Firing recommendations for Ceramco iC – NEM (Profire)*

Firing program Profire	Drying		Closing min.	Preheating		Vacuum			Heating °C/min.	Firing °C	Vacuum min.	Holding min.	Tempering		Cooling min.
	°C	min.		°C	min.	cont./off	on	off					°C	min.	
NE-Bonder (powder/paste)	575	4:00/6:00	2:00	575	1:00	cont.	575	980	55	980	-	2:00/3:00	-	-	-
Paste opaque 1+2	135	5:00	4:00	500	1:00	cont.	500	930	55	930	-	2:00	-	-	-
Powder opaque 1+2	135	3:00	3:00	650	-	cont.	650	960	55	960	-	2:00	-	-	-
Margin 1 (built-up)	135	5:00	5:00	600	-	cont.	600	880	55	880	-	0:30	-	-	-
Margin 2 (pressed)	135	5:00	5:00	600	-	cont.	600	870	55	870	-	0:30	-	-	-
Dentine 1	135	5:00	3:00	500	-	cont.	500	830	55	830	0:30	0:30	-	-	6:00
Dentine 2	135	3:00	3:00	500	-	cont.	500	820	55	820	-	0:30	-	-	6:00
Glaze	135	3:00	3:00	500	-	off	-	-	55	810	-	0:30	-	-	6:00
Add-On	135	5:00	3:00	500	-	cont.	500	805	55	805	-	0:30	-	-	-
Final Shoulder (F SM)	135	3:00	3:00	500	-	cont.	500	790	55	790	-	0:30	-	-	-

Firing tables

Firing recommendations for iC – NEM (Programat P 90/ P 95)*

Firing program Programat P 90/P 95	Standby °C	Closing min.	Heating °C/min.	Firing °C	Holding min.	Vacuum on °C	Vacuum off °C	Long-term cooling L °C
NE-Bonder (powder/paste)	575	7:00/9:00	55	980	2:00/3:00	575	980	-
Paste opaque 1+2	500	10:00	55	930	2:00	500	929	-
Powder opaque 1+2	500	6:00	55	960	2:00	500	959	-
Margin 1 (built-up)	500	11:00	55	880	0:30	500	879	-
Margin 2 (pressed)	500	11:00	55	870	0:30	500	869	-
Dentine 1	500	8:00	55	830	1:00	500	829	580
Dentine 2	500	6:00	55	820	1:00	500	819	580
Glaze	500	5:00	55	810	0:30	-	-	580
Add-On	500	8:00	55	805	0:30	500	804	-
Final Shoulder (F SM)	500	6:00	55	790	0:30	500	789	-

* The values listed here are intended for orientation only and should be regarded only as guidelines. Your firing results may differ. All firing results depend on the performance of the furnace used, which in turn depends on the make, model and age of the furnace. Therefore, the guideline values will have to be adapted individually for each firing. We recommend running a test firing cycle to evaluate the performance of the furnace used. We have compiled and checked all values and other data with great care. However, we cannot be liable for your results under any circumstances.

For laser-sintered frameworks we recommend the use of NE-Bonder.

Ingot types

The Ceramco iC system offers three different types of pigmented ingots.

1. Dentine-shaded ingots are available in all Vita Lumin[®], 3DMaster[®] and bleached shades. They are slightly higher in opacity and are generally used with an enamel add-on technique for either press-to-metal or all-ceramic applications.
2. Value series ingots have a higher translucency, are available in 6 shades and can also be used for either press-to-metal, or all-ceramic applications. They are usually pressed to full contour. Subsequently, a dentine shade stain is applied and fired.
3. Neutral ingots are monochromatic and available in 6 types of ingots with different opacity/translucency. They are used for all-ceramic applications and pressed to full contour. Subsequently, a dentine shade stain is applied and fired.

Selecting the right ingots

The Ceramco iC system has two different shading formulations, dentine-shaded ingots and Value series ingots.

- The 46 dentine-shaded ingots are designed to be pressed and then veneered with Ceramco iC Enamel.
- The six Value series ingots are designed to be pressed to full contour and then stained to achieve the final shade.



Ingots


Ingot type	Colour	Technology	Indications	Size
18 Dentine-series	16 A-D 2 Bleach	Press-to-Metal or all-ceramics. High opacity	Excellent for demanding anterior aesthetics. Additional vitality for cutback and enamel layering.	2 g · Ø 10 mm
6 Value-series	VS0, VS1, VS2, VS3, VS4, VS5	Press-to-Metal or all-ceramics. Higher translucency	Excellent choice for high posterior aesthetics. Pressed to full contour and subsequently stained.	2 g · Ø 10 mm
6 Neutral-series	CC-OC1, CC-O1, CC-O2, CC-O3, CC-T1, CC-T2	All-ceramics. Monochrome	Various opaque and translucent ingots for all-ceramic veneers, inlays and onlays for subsequent staining.	2 g · Ø 10 mm

Ingot shade assignment table

	Translucent Pellets/Value Series						Neutral Pellets	
Ceramco iC	VS0	VS1	VS2	VS3	VS4	VS5	CC-T1	CC-T2
Shade	Bleach	A1, B1, B2, C1	A2, A3, A3,5 B3, D3	C2, C3, C4, D2, D4	B4	A4	Higher Trans- lucency > Darker Effect	Lower Trans- lucency > Lighter Effect
	Inlay/onlay/veneer/crowns						Veneer	

Ingot types

Ingot type – Neutral series

Opacity	Ingot type	Recommended Application	Indications
Greater Opacity 	Higher-translucency ingots		
	CC-T1	Inlays and onlays	Patients with high-translucency Teeth
	CC-T2	Inlays and onlays	Patients with lower-translucency Teeth
	Low-translucency ingots		
	CC-OC1	Crowns and veneers	Patients with average-translucency teeth
	CC-O1	Crowns and veneers	Both ingots: CC-OC1 and CC-O1 have the same opacity . CC-OC1 is somewhat more strongly coloured for patients with more highly chromatic teeth.
	CC-O2	Crowns and veneers	For patients with higher-opacity teeth.
CC-O3	Crowns and veneers	For patients with high-opacity teeth or for bleached shades.	

Ingot selection and pressing recommendations

1. Weigh the sprue base and the opaqued metal substructure.
2. Wax the case and then attach it to the sprue base and reweigh the sprue base.
3. The difference between the two is the weight of the wax. For 4-unit bridges and longer, add 0.2 g.
4. Use the following table for ingot size and selection.

Ingot size	Ingot diameter	Ingot typ
2 g	10 mm	Dentine-shaded, Value series

Wax weight	Ingot size	Number of ingots
0,0-0,60 g	2 g	1
0,61-1,40 g	2 g	2

Ring size	Number of ingots	Ingot sizes
100 g	1 oder 2	2 g, 10 mm Ø
200 g	1 oder 2	2 g, 10 mm Ø

The following ring/ingot combinations are possible:

Pressing recommendation

	Preheating °C	Heating °C/min.	End temp. °C	Vacuum	Holding min.	Pressing min.	Cooling min.
Celsius	700	60	890	voll	20	20	-
Fahrenheit	1292	108	1634	voll	20	20	-

Notes

Notes section containing 13 horizontal lines for text entry.

Fascination Prosthetics

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The DENTSPLY logo, featuring the word 'DENTSPLY' in a bold, blue, sans-serif font. The 'D' is significantly larger and more stylized than the other letters.