CZR

NAOKI HAYASHI

- Excellent compatibility and bonding with all pure zirconia substructures.
- Ideal stability with outstanding resistance to fractures and chipping.
- Prefectly matched coefficient to pure zirconia substructures
- Ease of handling.
- Natural-looking cervicals are easily achieved with CZR Margin Porcelain. Eliminating the high value at the margins.
- CZR restorations layered to zirconia are indicated in both posterior and anterior regions due to high flexural strength and inherent fracture toughness..

CZR PRESS

H-Ingots (High Translucency) for Staining Method
L-Ingots (Low Translucency) for Layering Method

CZR PRESS Ingots are both fluorescent and opalescent, available in 24 shades and 2 translucencies.

- Indicated for use in fabricating crowns and bridges in the anterior and posterior regions.
- Consistent precise and predictable fit with superior marginal integrity.
- Ideal for use with pure zirconia framework.
- Natural opalescence and translucency for true-to-life restorations.
- Provides an esthetically perfect balance of choroma and value.
- Ideal stability with outstanding resistance to fractures and chipping.

CZR PRESS LF

- CZR PRESS LF is indicated for layering CZR PRESS All-ceramic inlays, onlays, veneers and full crowns, as well as **CZR PRESS-to-Zirconia** crowns, bridges, inlay bridges and implant restorations.
- CZR PRESS LF's lower fusing temperature (840°C) affords greater stability with repeated firings when layering CZR All-ceramic and **CZR PRESS-to-Zirconia** restorations.

PROVEN ZIRCONIA SOLUTIONS

CZR KATANA Zirconia Crowns & Bridges - Reliable Fit. Exceptional Esthetics. Proven Results.

Noritake Dental Supply Co., Limited sponsored a study to evaluate and compare the clinical success of single posterior porcelain-fused-to-zirconia and porcelain-fused-to-metal crowns in private practice.

Survival Analysis of PFZ (with CZR) and PFM (with EX-3) Crowns

Group	Total # Crowns	Mean Survival in Days	Probability of Survival in %
PFZ Total	1944	1583.6	98.1
PFM Total	691	1570.0	95.8

Twenty-two dentists and over two thousand patients participated.
The results of the study were presented at IADR 2010 Barcelona.
For complete details, visit www.noritake-dental.co.jp

CERABIEN ZR

CZR（Cerabien ZR）is a porcelain specifically developed for making all ceramic crowns in use with zirconia frameworks. Crown and Bridge made from CZR with zirconia can be used in the posterior as well as anterior due to its extremely high flexural strength and excellent fracture toughness. The combination of CZR and zirconia will give you enhanced esthetics and fit with maximum strength for an overall superior restoration.

Products

Features

①Replication of the natural tooth shades

Due to Luster's exceptionally fine particle size, it can achieve the selective reflection that assures the opalescence seen in the natural tooth. Because of the consistently smaller particle size found with CZR Luster Porcelain, CZR exhibits minimal wear in the mouth, resulting in less deterioration of the opposing dentition.

②Excellent compatibility and bonding with zirconia frameworks

③Exceptional Easy of Use

④Ideal stability with outstanding resistance to fractures and chipping

■Coefficient of Thermal Expansion（50−500°C10^{-6} K^{-1}）

CZR	9.1
Cerabien	6.8
Super Porcelain EX-3	12.4

The thermal expansion of CZR is entirely different from those of other porcelains. Therefore, mixing or using with other porcelains is not recommended.

Recommended Zirconia frameworks

NORITAKE Dental CAD/CAM System KATANA

Nobel Biocare NobelProcera™

Nobel Biocare and NobelProcera are trademarks of Nobel Biocare Services AG.

Working Procedures

Procedure A

Please proceed with

1 ► 2 ► 3 ► 4 ► 5 ► 8 · · ·

steps in case of using colored zirconia frameworks（Katana KT11～KT18）with high translucency.

Procedure B

Please proceed with

1 ► 2 ► 3 ► 6 ► 7 ► 8 · · ·

White zirconia frameworks（KT10）covered with Shade Base Porcelain and/or Shade Base Stain（Refer to the instruction of EX-3 PRESS）.

1 Zirconia framework trimming

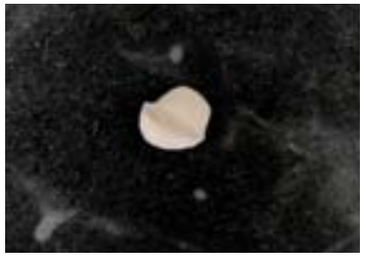
Checking the framework if it is suitable to the die form. Adjusting the finishing line and the thickness in the margin area with Noritake Meister Point SC-51 or SD-61, carefully trimming them by using a diamond point under running water. After trimming, please check if there are any cracks on the zirconia framework with Noritake Crack Finder.

2 Alumina sandblasting on zirconia framework surface

Create a matt-finish surface by sandblasting with 50 μm alumina sand under 29psi（<0.2MPa）.

3 Cleaning the framework

Clean the framework ultrasonically in acetone solution for 5 minutes, to avoid contamination on the surface. After cleaning, please refrain from touching it with bare fingers.



Procedure A

1 ► 2 ► 3 ► 4 ► 5 ► 8 · · ·

4 1st Opacious Body application

To increase the bonding strength between zirconia framework and CZR, apply a very thin layer of Opacious Body Porcelain mixed with Noritake Meister Liquid or Forming Liquid. For the 1st Opacious Body baking, please refer to the baking schedule, page 28.

5 2nd Opacious Body application

Apply Opacious Body in about 0.3mm thickness with considering the mamelon structure. It is recommended to bake it without other porcelain at this stage. For the 2nd Opacious Body baking, please refer to the baking schedule, page 28.

Procedure B

1 ► 2 ► 3 ► 6 ► 7 ► 8 · · ·

6 1st Shade Base application

To increase the bonding strength between zirconia framework and CZR, apply a very thin layer of Shade Base Porcelain mixed with Noritake Meister Liquid or Forming Liquid. Using an instrument is recommended to apply porcelain easily. For the 1st Shade Base baking, please refer to the baking schedule, page 28.

7 2nd Shade Base Porcelain application

Apply 2nd Shade Base in about 0.2mm thickness. Repeat the same baking at the 1st Shade Base.

8 Body / Cervical application

Apply Body and mixture Body and Cervical Porcelains at the neck. Please refer to page 31 for its mixture ratio. Match the dimension and form of the symmetric tooth in order to recreate the shape precisely.

9 Cut Back

Cut Back one-third top of labial surface and the proximal area. After cut buck, please make sure if the thickness of Body Porcelain should be necessarily at least 0.8mm.

10 Enamel application

Apply Enamel on the incisal area. If necessary, Translucent and Luster Porcelains can be overlayerd Enamel Porcelain. Layering excess Enamel Porcelain causes the whiter shade than expected. Therefore please pay attention to layering thickness.

11 Body／Enamel baking

For the Body/Enamel baking, please refer to the baking schedule, page 28. If porcelain does not have a definite shininess, rebake with higher temperature.

12 1st and 2nd Internal Stain（IS） application

CZR IS must be used with only CZR and its application must be done after baking Body and Enamel. 1st application of IS should be in a horizontal direction. And 2nd application of IS in a vertical direction. The 1st and 2nd baking of IS should follow the baking schedule, If applying IS in a horizontal direction and a vertical direction on the surface of crown at the same time, the cross-area is blurred. Therefore, it is recommended to bake them separately.

13

Translucent and Luster Porcelain application

Translucent and Luster Porcelain should be overlayerd by approximately 10 percent bigger than a target shape allowing for their shrinkage.

14

Translucent and Luster Porcelain baking

For the Translucent/Luster baking, please refer to the baking schedule, page 28.

15

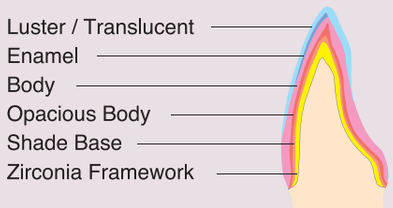
Morphological Correction, Glazing and Final polishing

Noritake Meister Point and Meister Cones are recommended for the morphological correction. After the morphological correction, please make a next steps to steam cleaning and self glaze baking. For final polish, using Noritake Pearl Surface is recommended. Due to the translucency of the zirconia framework, it can be fabricated an All-ceramic crown which is more closely to natural dentition than porcelain fused to metal crown.

16

Completion

Layering



Using Margin Porcelain

For adjusting margin area of zirconia framework

①**Magic Separator application**
Apply Noritake Magic Separator to the margin area of the die in order to avoid of adhering Margin Porcelain to the die.

②**Margin Porcelain application**
Apply the adequate amount of mixture of Margin Porcelain with Noritake Magic Former to the gingival part. If Margin Porcelain is too thick, this area tends to look artificial. Apply the Margin Porcelain in a triangular structure.

③**Baking of Margin Porcelain**
Follow the baking schedule on page 28. If additional Margin Porcelain is required, bake again according to schedule.

For adjusting margin area after glazing

In case of adjusting margin area after glazing, Margin Repair Porcelain (MRP) should be used.

①**MRP application**
Before setting a crown on the die, layer MRP slightly to the margin area of the restoration.

②**Remove the Excess MRP**
After re-seating the restoration on the die, remove the excess MRP with a brush and take the crown from the die carefully. Then, bake it according to the baking schedule.

③**Morphological Correction**
Polish the rough surface at the margin with silicone point such as Meister Point (SF-41).

CZR PRESS

CZR PRESS is an innovative breakthrough in ceramic nano-technology which consists of the marriage of two time-proven technologies, oxide ceramics and pressable ceramics. This synergy combines the strength, fracture toughness and cementability of pure zirconium oxide copings with the marginal integrity, versatility and beauty of pressable ceramics. Add opalescence and fluorescence to the ingot and the result ...simply imPRESSive !

Products

Features

①CZR PRESS can be used with pure zirconia framework.

②Unlike traditional metal frameworks, Zirconia frameworks used in CZR PRESS facilitate light transmission into the root and papillae area, thus creating a natural, vital-looking smile.

③CZR PRESS offers 24 shades of fluorescent ingots, each in 2 translucencies:
H-Ingot — for use when utilizing the "Staining Method" & "LF Layering Method"
L-Ingot — for use when utilizing the "Layering Method" & "LF Layering Method"
EW-Ingot (4 whitening shades) — for creating whiter shades than the conventional bleach shades.

④CZR PRESS features a "never before seen" opalescent quality which exhibits an exceptional vitality and luster similar to nature.

⑤CZR PRESS may be used for single unit All-ceramic restorations without frameworks.

⑥Noritake CZR layering porcelain perfectly compliments CZR PRESS L-Ingot to provide unsurpassed esthetic results.

⑦Noritake CZR PRESS LF porcelain can be used for single unit restorations without frameworks after pressing.

⑧CZR PRESS may be pressed in any conventional press furnace.

Physical Properties

■Ceramic Ingots

Flexural Strength (MPa)	92.7
Coefficient of Thermal Expansion (50-500°C $10^{-6}K^{-1}$)	10.1
Transformation Temperature (°C)	615

Beautiful Opalescent of CZR PRESS Ingot. (Photo by Mr. Brian Lindke)

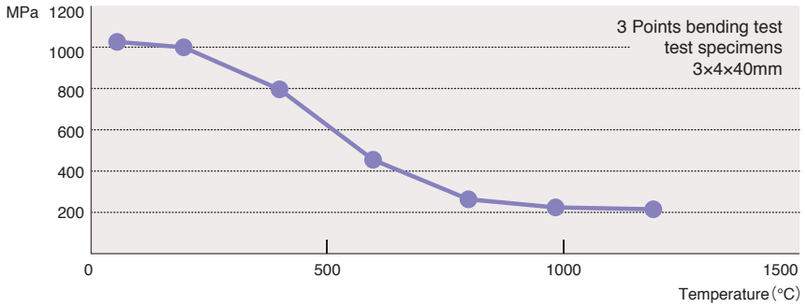
Working Procedures

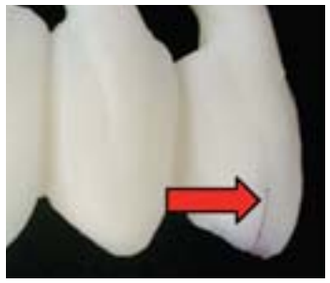
CZR PRESS with the zirconia framework

①Zirconia materials for CZR PRESS

The most popular dental zirconia materials available on the market are the "3YTZP" type. This is made by including a minute amount of Yttoria(Y_2O_3) into solid-soluted Zirconia(ZrO_2) and it is called partial stabilized zirconia. As feature of zirconia, it has a high-strength in a room temperature but low-strength in a high-temperature such as 1000°C and its strength will return to the original high-strength when it is cooled to the room temperature. The graph below shows the relationship between its strength and temperatures. Pressable ceramic ingots are pressed at a high temperature on a zirconia frameworks. If the framework design is not proper, zirconia framework may crack when ingots are pressed. Therefore, framework design is one of very important issues.

■Flexural Strength at High Temperature





Crack that is made during pressing

②Preparation guidelines and framework design:

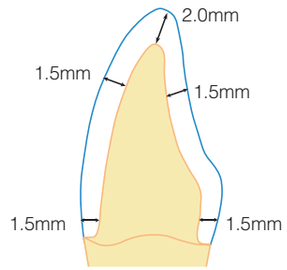
To ensure a strong and esthetic restoration, please follow the guideline:

❶The basic preparation is to allow the pressed ceramic to cover a 360 degrees shoulder with rounded edge or chamfer.

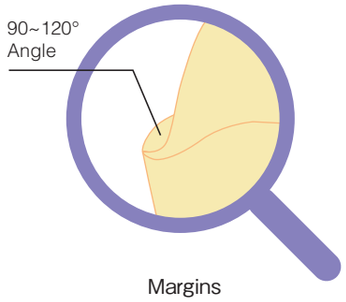
❷The thickness of the zirconia framework should be **at least 0.4 mm.**

❸The thickness of the connectors of the zirconia bridge, please follow the manufacturer's instruction.

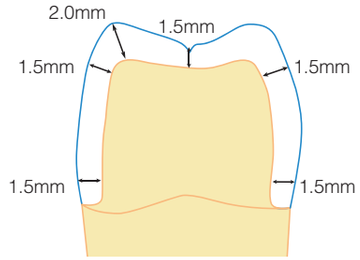
Preparation



Anterior Tooth



Margins



Posterior Tooth

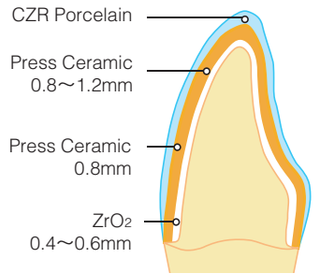
Framework Design

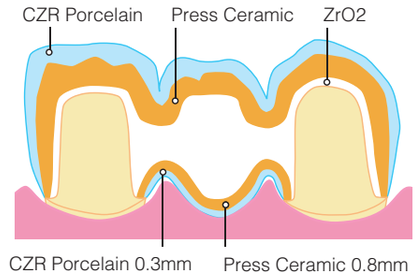
❶Single Crowns:

Maintain **0.8mm** Thickness of pressed ceramic in all areas.

❷Bridges:

Maintain 0.8mm Thickness of pressed ceramic on abutments, embrasures, pontic tissue area and at the papillae.





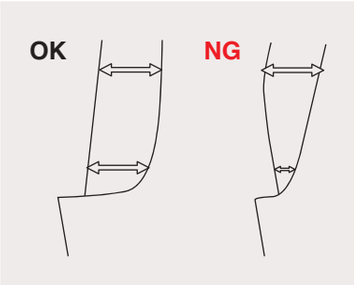
Note

This technique is not suited to a severely discolored tooth.

③Trimming of the zirconia framework

The thickness of zirconia framework in all area should be 0.4mm at least to obtain a successful CZR pressing. And at this stage, please weigh the framework and record it. This weight information may be utilized later as a reference to determine how many ingots are used for pressing.

Ideal margin design



Knife edge margin is not recommended.

Note

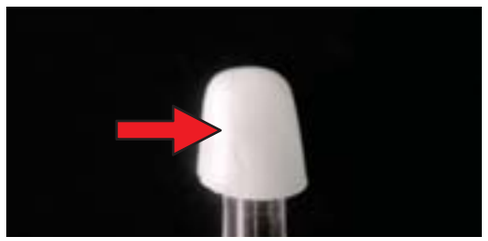
①Secure more than 0.4mm thickness in all area of the zirconia framework. In case of less than 0.4mm, cracks may be happened.
②The thickness of Margin area should also be 0.4mm at least. (Refer to the upper right illustration) So, such shoulder as Knife-edge is not acceptable.
③The margin line should be smooth.

Correct smoothed margin line

Serrated margin line is should be corrected.

④When grinding zirconia framework, it is recommended to use burs/discs with minute diamond particles such as Noritake Meister Points SC-51 and SD-61. If using tools with rough diamond particles, it may cause sharp scratch on the surface and/or cracks into the framework. In addition, cooling the framework with water is necessary to avoid heat generation caused during grinding.

Meister Points SC-51 and SD-61



Crack is happened during grinding

④Checking of cracks in zirconia framework

In order to check if there are any cracks in the zirconia framework after grinding, apply Noritake Crack Finder all over the inside and the outside of zirconia framework and one minute later, rinse it with water to wipe off the extra liquid on the suaface. If there are cracks, the liquid penetrates into the cracks, and make it easy to find them.

Note

Never use the cracked zirconia framework

However small a crack is in a framework, please do not use such cracked framework. Because, a tiny crack can become bigger and wider during pressing and the strength of the framework can be lowered.

⑤Alumina Sandblasting of zirconia framework surface

Create a matt-finish surface by sandblasting with 50μm alumina at 2 bars pressure.

⑥Cleaning of the zirconia framework

Clean the framework ultrasonically for 5 minutes in an acetone solution to remove residual zirconia dust and other debris.

⑦1st Shade Base Stain application

■The differences between CZR Shade Base Porcelain and CZR PRESS Shade Base Stain

		CZR Shade Base Porcelain	CZR PRESS Shade Base Stain
Baking temperature	1st.	930°C(1,706°F)	1090°C(1,994°F)
	2nd.	930°C(1,706°F)	1080°C(1,976°F)
Grain size		25μm	4μm
Build-up thickness	1st.	0.2mm	0.15mm
	2nd.	0.2mm	0.15mm
Combination with CZR Porcelain		Good	Good
Combination with CZR PRESS		Not acceptable	Good
Recommended Liquid		Meister Liquid	IS Liquid

Mix the shade base stain with Internal Stain Liquid

Shade Base Stain Color Guide

Application of the Shade Base Stain

Mix the shade base stain with **IS Liquid**. The viscosity of the mixture should be like “Maple Syrup”, so that the mixture does not slip down from the framework or puddle at the margins. Apply the mixture evenly and thinly, covering the zirconia framework in 0.15mm thickness, which is slightly thicker than conventional external stain. Shade Base Stain is a necessary step to produce the basic one for color. For the 1st Shade Base Stain baking, please refer to the baking schedule, page 28.

Note

IS Liquid should never be mixed with water. If mixed, the color will not be clear and the applied mixture will detach from the zirconia framework during drying process. The application brush should be cleaned with IS Liquid only. Never use water for cleaning.

⑧2nd Shade Base Stain application

Apply the Shade Base Stain again in a thickness of about 0.15 mm. To produce an even basic color, be sure to perform the 2nd application and baking. For the 2nd Shade Base Stain baking, please refer to the baking schedule, page 28. Also refer to the Shade Base Stain Color Guide for checking the shades. If applied too thinly, the shade will be low in chroma. If applied too thickly, the shade will be high in chroma.

After baking of the Shade Base Stain

Thin Application of Shade Base Stain

Thick Application of Shade Base Stain

⑨Wax-up

❶Layering Method

The 90% size of restored crown should be formed with wax-up. Margin area should be formed with wax-up as well. But, forming of mamelon structure is not necessary at this wax-up stage. Mamelon structure will be formed after pressing ingot.

Before pressing, please make sure of the sufficient thickness of wax for the pressed ceramic. Please refer to the picture on page 12.

❷Stain Method

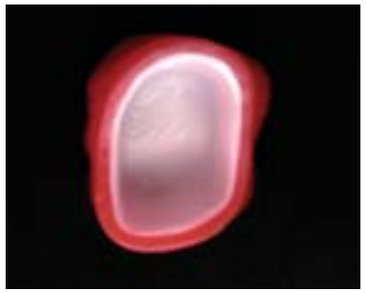
Almost 100% full-contour of restored crown should be formed with wax-up. Margin area should be formed with wax-up as well.

Note

Do not make sharp angles or deep under cuts. After wax-up, check if there is any wax left inside of the framework. If there is, carefully wipe off the wax. Also, confirm that there is no space between the
If there is, wax and the margin line of die model fill in the space with wax.

Wax-up for “Layering Method”

Wax-up for “Staining Method”



Wax thickness at the shoulder

⑩Spruing, attaching to the pedestal base and ring preparation

Use 8 gauge（3.3mm diameter） and 2～3mm long sprues. Attach sprues to wax patterns and position it on pedestal base to facilitate a smooth flow of the pressable ceramic. If some parts of the wax pattern are thin, pressable materials may not reach those areas during pressing. So, more than one sprue may be used.

❶Single crowns:

For larger posterior teeth, position one sprue on convexity area, closer to the proximal wall so that pressed ceramic may flow smoothly. Spruing in this way preserves delicate wax contours and little morphological correction is needed.（See Ⓐ, page 17）.

❷Bridges:

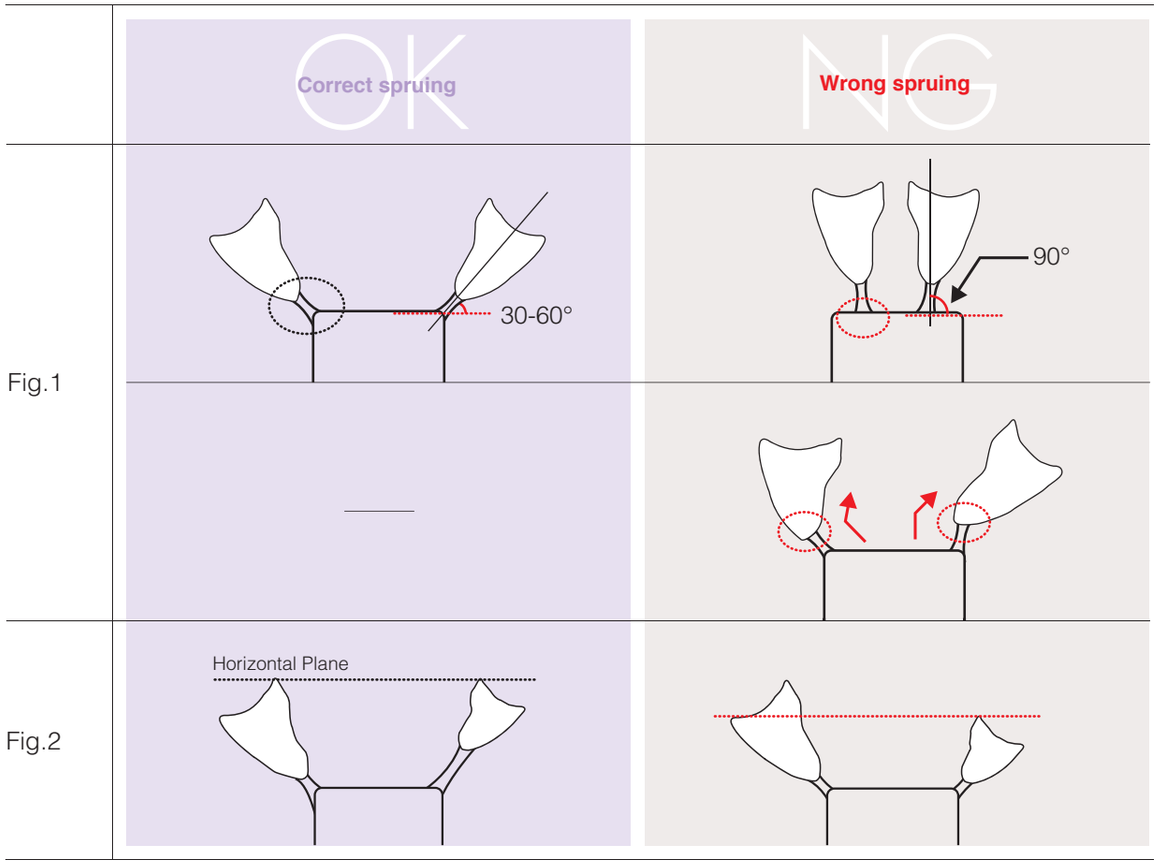
Place each sprue on each abutment and each pontic. Make the sprue as short as possible: approximately 2～3 mm in length（See Ⓑ, page 17）.

After attaching the sprue

Ⓐ

Ⓑ

After attaching sprues, weigh the waxed restoration and then deduct the weight of the zirconia framework recorded previously to find the net wax weight which is a guideline to determine later how many ingot to use. When attaching wax pattern to the pedestal base, place wax pattern where it should be apart by 8mm from the inner wall of the ring and by 10mm from the top-leveling cap. When attaching more than 2 wax patterns, the distance between each wax pattern should be 5mm at least. The ideal angle for attaching wax pattern to the pedestal base is 30～60 degree.(fig.1) When attaching wax patterns in different size to the same pedestal base, those margins should be at the same height. (Fig.2) Then, spray dry Teflon r-Silicone to the inside of the ring, ring-gauge(leveling cap) and ring former(pedestal base) of Noritake Ring Former to prevent investment from sticking to their surfaces.



⑪Investing

Referring to manufacturer's instructions, prepare for press investment. Then, mix the investment mechanically for 1 minute under vacuum and fill the investment in the ring without producing any bubbles.

Mix with Vacuum

Mixer Investing

Bench set 1/2 hour

⑫Preparation before burn-out

After investing, the ring should leave as it is at room temperature until the investment is concreted for around a half hour. And, remove the concreted investment from the ring former and ring gauge and cut the investment button created by the leveling cap with a dry knife. Before baking, make sure if the angle of ring top & bottom surfaces and the side should be 90 degrees.

Remove the button of investment created by leveling cap

Carefully level the ring so that the top and bottom are perpendicular to the sides of the ring.

Burn-out

⑬Burn-out of investment ring

Preheat the burn-out furnace to 850°C(1562°F). Place the investment ring in the center of the furnace. Preheating of the ceramic ingot and the plunger is not required.

Do not burn-out press rings with other rings
(e.g. soldering models, casting ring, etc)

⑭Selection of CZR PRESS ingots

Select ingots dependent upon the method. For the Layering method, select L-Ingot with low transparency and for the Stain method, select H-Ingot with higher transparency.

⑮Inserting ingot and plunger

One piece of ingot is to create up to two crowns and two pieces of ingots are to create three or more crowns, however, if the wax pattern(s) weight is 0.6g or less, use one piece of ingot and if the weight is between 0.7g and 1.4g, use two pieces of ingots. Pay special attention not to insert any foreign debris or not to adhere anything to the ingots or to the plunger. In addition, the plunger should be inserted into the pressing canal vertically.


Insertion of the Ingots


Insertion of the plunger

■Relation of Wax Weight and Number of Ingot

Wax Weight	Number of 2g ingots
0.6g or less	1
0.7g up to 1.4g	2


Pressing cycle completed

⑯Pressing in the press furnace

Insert the ingots and press plunger into the ring, then place the ring on the center of pressing platform. The pressing schedule may differ depending upon the press furnace manufacturer. Adjust the schedule so as that pressing will stop once the ceramic is fully pressed into the cavity. Excessive press time may cause various problems including split rings, porosity, value shift and brittle or fractured restorations. Follow the pressing schedule according to the pages 33～35. After pressing, immediately remove the investment ring from the furnace and cool it down at room temperature until the ring is cool enough to be held.

⑰Removal of plunger

Mark the top position of the plunger, and cut the investment ring with a separating disk. Separate the ring with a plaster nipper. Be careful not to damage the plunger. When removing the ceramic attached to the plunger, use with alumina sand blaster.


Marking the top position of the plunger


Section with a separating disk


Final removal with a plaster nipper

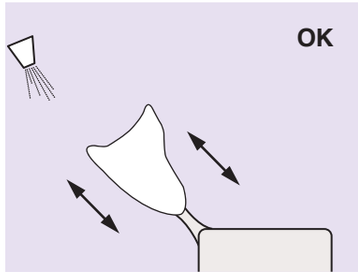
⑱Divesting

Carefully divest the ring to avoid breaking the pressed ceramic. At first, remove the bulk of the investment material using sand blaster with 50μm alumina sands at a pressure of 58～87psi (0.4MPa～0.6MPa). Once the pressed ceramic is exposed, lower the sandblasting pressure to less than 29psi (0.2MPa) and continue alumina sandblasting carefully so as not to chip the thin areas such as the margins or incisal edge. Glass beads are recommended for the thin areas such as the margin and the incisal edge. When divesting patterns, the direction of sandblasting spray should be parallel to the long axis of each crown.

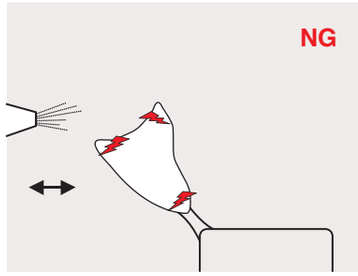

Roughly remove the investment


Exposing the pressed ceramic


After completion



Correct sandblasting



Wrong sandblasting

When divesting the pressed ceramic, blast from the direction indicated in the drawings on the left.


Sprue separation

⑲Cutting off the sprue

Using a diamond disk for sprue separation, 1st score a line around the sprue, at 2mm from the crown, then carefully cut through the sprue at low speed. In this way, even if the cracks are founded in the sprue, they will not spread into the crown. Next, eliminate the remaining sprue-button on the crown with a diamond point. During this process, do not generate excessive heat. Noritake Meister Points are recommended for sprue cutting and morphological correction of the crown.

⑳Morphological correction of pressed ceramic

Place the pressed restoration on the model and check the fit at the margin under magnification. The depends on which technique is chosen: For the “Layering Method”, create the mamelon structure with Noritake Meister Points. Special care should be taken to maintain a minimum thickness of entire pressed restoration no less than 0.8mm. For the “Staining Method”, refine the surface and delicately. After the contours have been finalized, smooth the surface of the pressed ceramic by sandblasting with 50μm alumina at 2 bars pressure.

“Layering Method”
Pressed ceramic prior to cut-back

“Layering Method”
Cut-back to create mamelon structure

“Staining Method”
After morphological correction

㉑Cleaning

Clean the pressed ceramic for 5 minutes in an acetone solution using an ultrasonic cleaner.

Layering Method

L1. Build-up and baking of CZR Porcelain

Build-up CZR Enamel and Translucent over the pressed ceramic. The pressed ceramic will not “self-glaze” at the glaze temperature of CZR Porcelain, so be sure to cover the entire surface of the pressed ceramic with CZR Porcelain. The baking schedule for layering porcelain is the same as for CZR Porcelain. Refer to CZR baking schedule at page 28. If creating characterizing or adjusting chroma-up, apply CZR Internal Stain on the pressed ceramic and bake it before building-up Enamel, Translucent and Luster Porcelains.

Note

Refer to page 5～9 for the build-up techniques for CZR Porcelain .

Completed crown after glaze bake

L2. Morphological correction

After baking the layering porcelains, perform morphological correction as usual. When additional layering porcelains are required, apply the porcelains again and follow the baking schedule of CZR.

L3. Stain and glaze

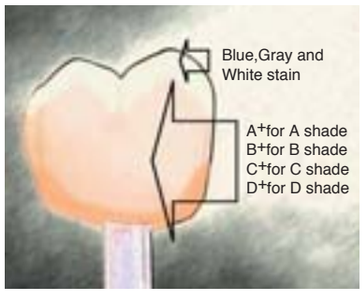
If putting characterizations or glazing are required, apply the CZR External Stain(ES) or Glaze power and bake them. Refer to the baking schedule at page 28.

Stain Method

S1. Application and baking of CZR ES

Mix CZR ES with ES Liquid. The viscosity of the mixture is the same as ordinary stains. If too much liquid is used, since the stain will move easily after application, a certain viscosity is necessary. For creating A shades, apply ES stain A^+ over the area except the incisal edge or occlusal surface, apply ES stains such as Blue, Gray and White. When creating characterization with more than two ES, it is recommended not to bake simultaneously.

Application of ES



Example of ES

After ES baking

S2. 1st Glazing with CZR PRESS Glaze Powder

Mix CZR PRESS Glaze Powder with **IS Liquid** to create a “cold honey-like” glaze paste. Do not wet the surface of the restoration with IS Liquid prior to glaze-application, otherwise, application is not even on entire surface of the crown. For even-application, its thickness should be 0.2mm. After check if the entire surface is covered with glaze, please bake it refer to the baking schedule, page 28.

After dry out

After 1st glazing

S3. Adjusting the contact area and Morphological Correction

Using a rubber wheel such as the Meister Point SF-41, adjust the contact area of glaze layer. If necessary, make morphological correction. Finally, clean the restoration for 5 minutes in an aceton solution using an ultrasonic cleaner.

Adjusting the contact area

S4. 2nd Glazing and Completion

If applying diluted glaze mixture on the crown and bake it, the baked crown surface are variation in brightness because the mixture is running down during baking. In case of this, apply the glaze again and bake it.

Completed crown after second glaze baking

Completion

CZR PRESS LF

Noritake CZR PRESS LF is low fusing porcelain to build up an enamel layer after pressing CZR PRESS ingot. By using this porcelain with CZR Press ingot and without a zirconia framework, you can make an anterior single crown, a porcelain laminate veneer, an inlay and an onlay.

Products — LF Porcelain

Features

①CZR PRESS LF has an excellent match in CTE with CZR PRESS ingot.

②CZR PRESS LF enables you to create All-ceramic restoration without a zirconia framework.

③CZR PRESS LF has a sufficient strength in oral.

④A wide variety of shades including aesthetic shades are available.

⑤An ideal opalescence has been realized in Luster Porcelain.

⑥CZR PRESS LF can also be used for correcting shades of CZR pressed ceramic and CZR Porcelain.

Products — LF Stains

Features

①**Outstanding Resistance to Bubbles**

CZR PRESS LF IS is specially formulated to have a similar coefficient of thermal expansion to CZR pressed ceramic and CZR PRESS LF Porcelain. CZR PRESS LF IS has outstanding resistance to bubbling and fractures. CZR PRESS LF ES has minimal risk of separation even after long term intraoral function.

②**Assortment of shades**

The shades were line-uped after server check for replicating colors shown in natural teeth. Accurate color reproduction can be easily done by applying those stains.

③**Easy Reproduction of shades**

By applying internal stains, characterization and chroma-up on the crown can be realized like painting a picture.

④**Controlling Reflectivity**

By applying stain on the CZR pressed ceramic, excessive reflectivity can be easily controlle.

Working Procedures

Fabrication of a stand-alone single crown

①Wax- up

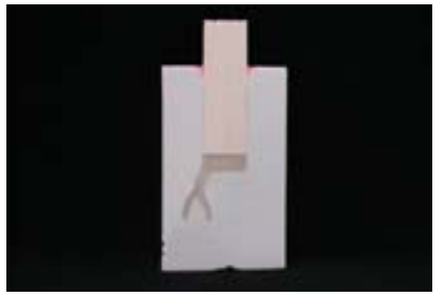
In case a zirconia framework is not used, directly wax-up to the dentin shape with about 90% size of a targeted restoration. Do not make a mamelon structure. The thickness in the margin area should be more than 1.0mm in order to avoid chipping.

★Refer to page 16

②Spruing and investing

Perform Spruing and investing.

★Refer to pages 16～18



③Preheating of investment ring

After half an hour from investing, place the investment ring into the preheated burn-out furnace at 850°C（1,562°F） and hold for an hour.

★Refer to page 18

④Pressing of CZR PRESS Ingot

Place the investment ring with the inserted ceramic ingot in the PRESS Furnace and heat-press at the specified temperature .

★Refer to pages 33～35

⑤Divesting and sprue-cutting

Carefully devest the ring to avoid breaking the pressed ceramic. Using a diamond disk for sprue separation.

★Refer to page 20

⑥Morphological correction of pressed ceramic

Securing enough space for the Enamel, Translucent（Luster）Porcelains that are built-up later. Before layering those porcelains, adjust the thickness of labial surface and make the mamelon structure.

⑦Alumina sandblasting

Blow Alumina sandblasting all over the surface of the pressed ceramic at the pressure of 0.2MPa（29psi）.

⑧Cleaning

Clean the pressed ceramic for 5 minutes in acetone with an ultrasonic cleaner or steam cleaner.

Note This is a low fusing porcelain. In case any fiber such as tissue paper remains after baking, it should be removed.

⑨LF Enamel application

Apply LF Enamel on the incisal area. If necessary, LF Translucent and LF Luster Porcelain can be overlayerd LF Enamel. Therefore please pay attention to layering thickness.

⑩LF Internal Stain（LF IS） application（if necessary）

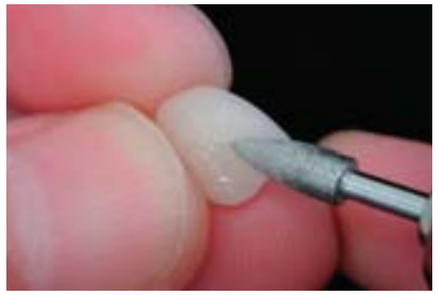
When ever using IS, mix it with Noritake IS Liquid. 1st application of LF IS should be in a horizontal direction. And 2nd application of LF IS in a vertical direction. If apply LF IS in a horizontal direction and a vertical direction on the surface of crown at the same time, the cross-area is blurred. Therefore, it is recomended to bake them separately.

⑪LF Translucent and LF Luster Porcelain application

LF Translucent and LF Luster Porcelain should be overlayerd by approximately 10 percent bigger than a target shape allowing for their shrinkage. Please bake at the designate temperature in the baking schedule, page 28.

⑫Baking

Bake the built up crown according to the baking schedule, page 28.



⑬**Morphological Correction**

Noritake Meister Point and Meister Cones are recommended for the morphological correction.

⑭**Cleaning**

Clean the restoration for 5 minutes in acetone with an ultrasonic cleaner.

⑮**LF External Stain（LF ES） application and Glaze baking**

A In case of layering on the entire surface of the crown.（CZR pressed ceramic can not be seen.）

B In case of layering on the surface of the crown partially.（CZR pressed ceramic can be seen partially.）

Stain and Glaze Method for A

Bake the crown according to baking schedule, page 28. If necessary, Mix the LF Glaze Powder or LF ES with ES Liquid. Its viscosity is the same as ordinary stains. Then apply and bake it.

Stain and Glaze Method for B

B1. Application of Stain and Baking

Mix LF ES with Noritake ES Liquid. If too much liquid is used, the stain will move after the application. Apply the mixture over the surface of the restoration for the final shades. Then, bake it according to the baking schedule, page 28. This procedure is not required in the clinical cases which stain is not needed. Please proceed to the next step B2.

B2. Glaze Baking

Mix LF Glaze Powder with ES Liquid to create a “honey-like” glaze paste. Do not wet the surface of the restoration with ES Liquid prior to glaze application. Otherwise, application is not even on entire surface of the crown. After mixing, apply glaze thinly on the surface is covered with glaze, bake it in accordance with the baking schedule. In case of making more glossy on the surface where CZR PRESS LF is not baked, apply glaze again and bake.

⑯**Completion**

Baking Schedule

CERABIEN CZR

	Dry-Out Time	Low Temperature		Start Vacuum		Heat Rate		Vacuum Level	Release Vacuum		Hold Time with vacuum	Hold Time in the air	High Temperature		Cool Time
	min.	°C	°F	°C	°F	°C/min.	°F/min.	kPa	°C	°F		min.	°C	°F	min.
Margin porcelain 1st and 2nd	5	600	1112	600	1112	50	90	96※1	1000	1832	1	1	1000	1832	4
Shade Base Porcelain 1st and 2nd	5	600	1112	600	1112	45	81	96※1	930	1706	-	1	930	1706	4
Shade Base Stain 1st (CZR Press)	5	700	1292	700	1292	65	117	96※2	1090	1994	-	1	1090	1994	4
Shade Base Stain 2nd (CZR Press)	5	700	1292	700	1292	65	117	96※1	1080	1976	-	1	1080	1976	4
Body / Enamel / Translucent	7~10	600	1112	600	1112	45	81	96	930~940	1706~1724	-	1	930~940	1706~1724	4
Internal Stain 1st and 2nd	5	600	1112	-	-	50	90	0	-	-	-	-	900	1652	4
Minor Adjustment	7	600	1112	600	1112	45	81	96	930	1706	-	0.5	930	1706	4
Self Glaze	5	600	1112	-	-	50	90	0	-	-	-	0.5	930	1706	4
Glazing Powder and External Stain	5	600	1112	-	-	50	90	0	-	-	-	-	930	1706	4
MRP and AD-T/AD-B	5	600	1112	-	-	45	81	0	-	-	-	-	880	1616	4

CERABIEN CZR PRESS

	Dry-Out Time	Low Temperature		Start Vacuum		Heat Rate		Vacuum Level	Release Vacuum		Hold Time in the air	High Temperature		Cool Time
	min.	°C	°F	°C	°F	°C/min.	°F/min.	kPa	°C	°F	min.	°C	°F	min.
Shade Base Stain 1st	5	700	1292	700	1292	65	117	96※1	1090	1994	1	1090	1994	4
Shade Base Stain 2nd	5	700	1292	700	1292	65	117	96※1	1080	1976	1	1080	1976	4
ES stain (Staining Method)	5	600	1112	600	1112	50	90	87※2	850	1562	-	850	1562	4
CZR Press Glaze 1st and 2nd	5	600	1112	600	1112	65	117	96※1	850	1562	1	900	1652	4

CERABIEN CZR PRESS LF

	Dry-Out Time	Low Temperature		Start Vacuum		Heat Rate		Vacuum Level	Release Vacuum		Hold Time in the air	High Temperature		Cool Time
	min.	°C	°F	°C	°F	°C/min.	°F/min.	kPa	°C	°F	min.	°C	°F	min.
Internal Stain 1st and 2nd	5	600	1112	-	-	45	81	-	-	-	-	800	1472	4
LF Porcelain 1st and 2nd	7	600	1112	600	1112	45	81	96※1	840	1544	1	840	1544	4
Self Glaze and External Stain	5	600	1112	-	-	45	81	-	-	-	1	840	1544	4
Glaze with Glazing Powder	5	600	1112	600	1112	45	81	96※1	800	1472	1	840	1544	4
AD-T / AD-B	5	500	932	500	932	45	81	96※1	750	1382	1	750	1382	4

Note The above program is only a guideline. Baking Temperature may be varied with the peculiarities of different furnace.

※1. 96kPa=72cmHg（29inchesHg） ※2. 87kPa=65cmHg（26inchesHg）

Products

CZR CERABIEN

	10g	50g	200g											
Shade Base	●	●	●	SBA_1	SBA_2	SBA_3	$SBA_{3.5}$	SBA_4	SBB_1	SBB_2	SBB_3	SBB_4	SBC_1	SBC_2
				SBC_3	SBC_4	SBD_2	SBD_3	SBD_4	$SBNW_0$	$SBNW_{0.5}$	$SBNP_{1.5}$	$SBNP_{2.5}$	SBWhite	
Margin	●			MA_1	MA_2	MA_3	$MA_{3.5}$	MA_4	MB_2	MB_3	MB_4	MC_2	MC_4	MD_3
				MD_4	MNW_0	$MNW_{0.5}$	$MNP_{1.5}$	$MNP_{2.5}$	M Clear	M Orange	M Peach	MDL	MRP	
Opacious Body	●	●	●	OBA_1	OBA_2	OBA_3	$OBA_{3.5}$	OBA_4	OBB_1	OBB_2	OBB_3	OBB_4	OBC_1	OBC_2
				OBC_3	OBC_4	OBD_2	OBD_3	OBD_4	$OBNP_{1.5}$	$OBNP_{2.5}$	OB Pale Pink	OB White	OB Orange	OB Enamel
Body	●	●	●	A_1B	A_2B	A_3B	$A_{3.5}B$	A_4B	B_1B	B_2B	B_3B	B4B	C_1B	C_2B
				C_3B	C_4B	D_2B	D_3B	D_4B	NW_0B	$NW_{0.5}B$	$NP_{1.5}B$	$NP_{2.5}B$	$EW_{00}B$	EW_0B
				EWB	EWYB									
Cervical	●	●	●	CV-1	CV-2	CV-3	CV-4	CCV-1	CCV-2	CCV-3	CCV-4			
Enamel	●	●	●	E_1	E_2	E_3	$SilkyE_1$	$SilkyE_2$						
Translucent	●	●	●	T_X	T_0	T_1	T_2							
Luster	●	●	●	LT_0	LT_1	T Bule	Aqua Blue1	Aqua Blue2	LT Natural	LT Super Gray	Creamy Enamel	Sun Bright	Incisal Aureola	Creamy White
				LT Yellow	ELT_1	ELT_2	ELT_3							
Modifier	●	●		White	Gray	Blue	Yellow	Light Orange	Orange	Brown	Pink	Dark Pink	Coral Pink	Mamelon 1
				Mamelon 2	Green									
Add-on	●	●		AD-T	AD-B									
Tissue	●	●		Tissue 1	Tissue 2	Tissue 3	Tissue 4	Tissue 5	Tissue 6	Tissue 7				
External Stain	3g			A^+	B^+	C^+	D^+	Gray	Black	Blue	Green 1	Green 2	Yellow	Orange 1
				Orange 2	Cervical 1	Cervical 2	Cervical 3	Earth Brown	Reddish Brown	Pure White	Pink	Salmon Pink	Red	
	10g、30g			Glaze										
Internal Stain	3g			A^+	B^+	C^+	D^+	Incisal Blue 1	Incisal Blue 2	Mamelon Orange 1	Mamelon Orange 2	Reddish Brown	Earth Brown	Cervical 1
				Cervical 2	Cervical 3	White	Red	Salmon Pink	Gray	Bright	Fluoro			

- Forming Liquid ····· 100ml
- Meister Liquid ····· 100ml
- ES Liquid ····· 10ml
- IS Liquid ····· 10ml

CZR CERABIEN PRESS

	2g	5g											
Shade Base Stain	6g		SS A_1	SS A_2	SS A_3	SS $A_{3.5}$	SS A_4	SS B_1	SS B_2	SS B_3	SS B_4	SS C_1	SS C_2
			SS C_3	SS C_4	SS D_2	SS D_3	SS D_4	SS $NP_{1.5}$	SS $NP_{2.5}$	SS NW_0	SS $NW_{0.5}$	SS White	
Shade Base Stain Modifier	3g		A^+	B^+	C^+	D^+	Cervical Orange	Incisal Blue1	Incisal Blue2	Gray	Salmon Pink	Earth Brown	Fluoro
Press Ingots Low Translucency 5 Ingots per pkg	●	●	L A_1	L A_2	L A_3	L $A_{3.5}$	L A_4	L B_1	L B_2	L B_3	L B_4	L C_1	L C_2
			L C_3	L C_4	L D_2	L D_3	L D_4	L NW_0	L $NW_{0.5}$	L $NP_{1.5}$	L $NP_{2.5}$		
Press Ingots High Translucency 5 Ingots per pkg	●	●	H A_1	H A_2	H A_3	H $A_{3.5}$	H A_4	H B_1	H B_2	H B_3	H B_4	H C_1	H C_2
			H C_3	H C_4	H D_2	H D_3	H D_4	H NW_0	H $NW_{0.5}$	H $NP_{1.5}$	H $NP_{2.5}$		
Press Ingots 5 Ingots per pkg	●	●	EW_{00}	EW_0	EW	EWY							

- **CZR PRESS Glaze** ····· **10g**
- Crack Finder ····· 20ml×2 per pkg.
- Ring（Flexible rubber for mold） ····· 100g,200g,300g type
- Ring Former（with Ring gauge） ····· 100g,200g,300g type
- Plunger（Alumina Oxide） ····· 3 pieces per pkg.
- Dispo Plunger／2G（for 2g ingots） ····· 50 pieces per pkg.
  5G（for 5g ingots） ····· 50 pieces per pkg.

CZR CERABIEN PRESS LF

	10g	50g	200g											
LF H Body & EW Body	●	●	●	EW_0B	EWB	EWYB	H A_1B	H A_3B	H A_4B	H B_2B	H C_2B	H D_2B	H NW_0B	
LF Enamel	●	●	●	E_1	E_2	E_3	Silky E_1	Silky E_2						
Margin Retouching	●			MRP										
LF Clear Cervical	●	●	●	CCV-1	CCV-2	CCV-3	CCV-4							
LF Translucent	●	●	●	T_X	T_0	T_1	T_2							
LF Luster	●	●	●	LT_0	LT_1	T Bule	Aqua Blue1	Aqua Blue2	LT Natural	LT Super Gray	Creamy Enamel	Sun Bright	Incisal Aureola	Creamy White
				LT Yellow	ELT_1	ELT_2	ELT_3							
LF Mamelon	●	●		Mamelon 1	Mamelon 2									
Add-on	●	●		AD-T	AD-B									
LF Tissue	●	●		Tissue 1	Tissue 2	Tissue 3	Tissue 4	Tissue 5	Tissue 6	Tissue 7				
LF External Stain	3g			A^+	B^+	C^+	D^+	Gray	Black	Blue	Green 1	Green 2	Yellow	Orange 1
				Orange 2	Cervical 1	Cervical 2	Cervical 3	Earth Brown	Reddish Brown	Pure White	Pink	Salmon Pink	Red	
	10g、30g			Glaze										
LF Internal Stain	3g			A^+	B^+	C^+	D^+	Incisal Blue 1	Incisal Blue 2	Mamelon Orange 1	Mamelon Orange 2	Reddish Brown	Earth Brown	Cervical 1
				Cervical 2	Cervical 3	White	Red	Salmon Pink	Gray	Bright	Fluoro			

Color Combination Table

CZR CERABIEN

Layering Method

	A_1	A_2	A_3	$A_{3.5}$	A_4	B_1	B_2	B_3	B_4
Shade Base (Shade Base Stain)	SBA_1 (SSA_1)	SBA_2 (SSA_2)	SBA_3 (SSA_3)	$SBA_{3.5}$ ($SSA_{3.5}$)	SBA_4 (SSA_4)	SBB_1 (SSB_1)	SBB_2 (SSB_2)	SBB_3 (SSB_3)	SBB_4 (SSB_4)
Margin	MA_1	MA_2	MA_3	$MA_{3.5}$	MA_4	MB_1 ※1	MB_2	MB_3	MB_4
Opacious Body	OBA_1	OBA_2	OBA_3	$OBA_{3.5}$	OBA_4	OBB_1 ※1	OBB_2	OBB_3	OBB_4
Body	A_1B	A_2B	A_3B	$A_{3.5}B$	A_4B	B_1B	B_2B	B_3B	B_4B
Cervical	-	CV-1	CV-1 ※3	CV-1 ※3	CV-1 ※4	-	CV-2 ※3	CV-2 ※4	CV-2
Enamel	E_2	E_2	E_3	E_3	E_3	E_1	E_2	E_3	E_3
Translucent (Luster)	T_1 (LT_1)								

	C_1	C_2	C_3	C_4	D_2	D_3	D_4
Shade Base (Shade Base Stain)	SBC_1 (SSC_1)	SBC_2 (SSC_2)	SBC_3 (SSC_3)	SBC_4 (SSC_4)	SBD_2 (SSD_2)	SBD_3 (SSD_3)	SBD_4 (SSD_4)
Margin	MC_1 ※1	MC_2	MC_3 ※1	MC_4	MD_2 ※1	MD_3	MD_4
Opacious Body	OBC_1 ※1	OBC_2	OBC_3 ※1	OBC_4	OBD_2	OBD_3	OBD_4
Body	C_1B	C_2B	C_3B	C_4B	D_2B	D_3B	D_4B
Cervical	-	CV-3 ※3	CV-3 ※4	CV-3	CV-4 ※3	CV-4 ※4	CV-4
Enamel	E2	E_3	E_3	E_3	E_2	E_3	E_3
Translucent (Luster)	T_1 (LT_1)						

	$NP_{1.5}$	$NP_{2.5}$	NW_0	$NW_{0.5}$	EW_{00}	EW_0	EW	EWY
Shade Base (Shade Base Stain)	$SBNP_{1.5}$ ($SSNP_{1.5}$)	$SBNP_{2.5}$ ($SSNP_{2.5}$)	$SBNW_0$ ($SSNW_0$)	$SBNW_{0.5}$ ($SSNW_{0.5}$)	SBWhite ※5 (SSWhite)	SBWhite ※5 (SSWhite)	SBWhite ※5 (SSWhite)	SBB_1 (SSB_1)
Margin	$MNP_{1.5}$	$MNP_{2.5}$	MNW_0	$MNW_{0.5}$	MDL	MDL	MNW_0 ※1	MNW_0 ※2
Opacious Body	$OBNP_{1.5}$	$OBNP_{2.5}$	-	-	-	-	-	-
Body	$NP_{1.5}B$	$NP_{2.5}B$	NW_0B	$NW_{0.5}B$	$EW_{00}B$	EW_0B	EWB	EWYB
Cervical	-	CV-1	-	-	-	-	-	-
Enamel	E_2 ※3	E_2	SilkyE2	SilkyE2	$SilkyE_1$	$SilkyE_1$	SilkyE2	SilkyE2
Translucent (Luster)	T_1 (LT_1)		T_1 (LT_1)		ELT_2		ELT_1	

※1 To acquire shades of B_1,C_1,C_3,D_2 & EW, dilute B_2,C_2,C_4,D_3 & NW_0 with MDL. The diluting ratio is 1:1.
※2 To acquire shades of EWY, dilute MNW_0 with MDL at the ratio 2:1.
※3 Mix Body with Cervical at the ratio of 2:1.
※4 Mix Body with Cervical at the ratio of 1:1.
※5 As needed.

CZR CERABIEN PRESS

Layering Method

	A_1	A_2	A_3	$A_{3.5}$	A_4	B_1	B_2	B_3	B_4	C_1	C_2	C_3	C_4
Shade Base Stain	SS A_1	SS A_2	SS A_3	SS $A_{3.5}$	SS A_4	SS B_1	SS B_2	SS B_3	SS B_4	SS C_1	SS C_2	SS C_3	SS C_4
Press Ingot	L A_1	L A_2	L A_3	L $A_{3.5}$	L A_4	L B_1	L B_2	L B_3	L B_4	L C_1	L C_2	L C_3	L C_4
Body	A_1B	A_2B	A_3B	$A_{3.5}B$	A_4B	B_1B	B_2B	B_3B	B_4B	C_1B	C_2B	C_3B	C_4B
Enamel	E_2	E_2	E_3	E_3	E_3	E_1	E_2	E_3	E_3	E_2	E_3	E_3	E_3
Translucent	T_1 (LT_1)												

	D_2	D_3	D_4	NW_0	$NW_{0.5}$	$NP_{1.5}$	$NP_{2.5}$
Shade Base Stain	SS D_2	SS D_3	SS D_4	SS NW_0	SS $NW_{0.5}$	SS $NP_{1.5}$	SS $NP_{2.5}$
Press Ingot	L D_2	L D_3	L D_4	L NW_0	L $NW_{0.5}$	L $NP_{1.5}$	L $NP_{2.5}$
Body	D_2B	D_3B	D_4B	NW_0B	$NW_{0.5}B$	$NP_{1.5}B$	$NP_{2.5}B$
Enamel	E_2	E_3	E_3	E_1	E_1	E_2	E_2
Translucent	T_1 (LT_1)						

Staining Method

	A_1	A_2	A_3	$A_{3.5}$	A_4	B_1	B_2	B_3	B_4	C_1	C_2	C_3	C_4
Shade Base Stain	SS A_1	SS A_2	SS A_3	SS $A_{3.5}$	SS A_4	SS B_1	SS B_2	SS B_3	SS B_4	SS C_1	SS C_2	SS C_3	SS C_4
Press Ingot	H A_1	H A_2	H A_3	H $A_{3.5}$	H A_4	H B_1	H B_2	H B_3	H B_4	H C_1	H C_2	H C_3	H C_4
External Stain	A+	A+	A+	A+	A+	B+	B+	B+	B+	C+	C+	C+	C+
Glaze Powder	CZR PRESS Glaze Powder												

	D_2	D_3	D_4	$NP_{1.5}$	$NP_{2.5}$	NW_0	$NW_{0.5}$
Shade Base Stain	SS D_2	SS D_3	SS D_4	SS $NP_{1.5}$	SS $NP_{2.5}$	SS NW_0	SS $NW_{0.5}$
Press Ingot	H D_2	H D_3	H D_4	H $NP_{1.5}$	H $NP_{2.5}$	H NW_0	H $NW_{0.5}$
External Stain	D+	D+	D+	A+	A+	B+	A+
Glaze Powder	CZR PRESS Glaze Powder						

Staining Merhod (EW shades)

	EW_{00}	EW_0	EW	EWY
Shade Base Stain	SS White			SS B_1
Body/Press Ingot	EW_{00}	EW_0	EW	EWY
Enamel	Silky E_1		Silky E_2	
Luster Translucent	ELT_2		ELT_1	
External Stain	-			B+
Glaze Powder	CZR PRESS Glaze Powder			

CZR CERABIEN PRESS LF

LF Layering Method without framework

	A_1	A_2	A_3	$A_{3.5}$	A_4	B_1	B_2	B_3	B_4	C_1	C_2	C_3	C_4
Ingot L	L A_1	L A_2	L A_3	L $A_{3.5}$	L A_4	L B_1	L B_2	L B_3	L B_4	L C1	L C_2	L C_3	L C_4
LF Enamel	LF E_2	LF E_2	LF E_3	LF E_3	LF E_3	LF E_1	LF E_2	LF E_3	LF E_3	LF E_2	LF E_3	LF E_3	LF E_3
LF Translucent	LFT_1 / $LFLT_1$												

	D_2	D_3	D_4	$NP_{1.5}$	$NP_{2.5}$	NW_0	$NW_{0.5}$	EW_{00}	EW_0	EW	EWY
Ingot L	L D_2	L D_3	L D_4	L $NP_{1.5}$	L $NP_{2.5}$	L NW_0	L $NW_{0.5}$	EW_{00}	EW_0	EW	EWY
LF Enamel	LF E_2	LF E_3	LF E_3	LF E_2	LF E_2	LF E_1	LF E_1	Silky E_1	Silky E_1	Silky E_2	Silky E_2
LF Translucent	LFT_1 / $LFLT_1$										

Staining Method without a framework

	A_1	A_2	A_3	$A_{3.5}$	A_4	B_1	B_2	B_3	B_4	C_1	C_2	C_3	C_4
Ingot H	H A_1	H A_2	H A_3	H $A_{3.5}$	H A_4	H B_1	H B_2	H B_3	H B_4	H C_1	H C_2	H C_3	H C_4
LF External Stain	A+	A+	A+	A+	A+	B+	B+	B+	B+	C+	C+	C+	C+
Glaze Powder	LFT_1 / $LFLT_1$												

	D_2	D_3	D_4	$NP_{1.5}$	$NP_{2.5}$	NW_0	$NW_{0.5}$
Ingot H	H D_2	H D_3	H D_4	H $NP_{1.5}$	H $NP_{2.5}$	H NW_0	H $NW_{0.5}$
LF External Stain	D+	D+	D+	A+	A+	B+	A+
Glaze Powder	LF Glaze						

Staining Merhod without framework (EW shades)

	EW_{00}	EW_0	EW	EWY
Ingot H	EW_{00}	EW_0	EW	EWY
LF External Stain	-			B+
Glaze Powder	LF Glaze			

Pressing Parameters

Recommendation of "Pressing at low pressure" during CZR Pressing

The press furnace pressure for the pressable technique is usually set at 4 bar(0.4MPa) to 5 bar(0.5MPa). However, in the case of pressing of CZR PRESS ingots, this pressure is too high and often cause the following problems.

❶Cracks on the zirconia frameworks after pressing ❷Breaking on the investment ring after pressing

In order to avoid such problems, we would like you to tower the pressing pressure during CZR PRESS pressing. This is strongly recommended as well as the notes for the zirconia framework thickness and shape. Please adjust the pressing schedule referring to the following tables. As a general rule, longer pressing time is required at low pressure. Adjust the pressure regulator in the manufacture's Schedule.

CERABIEN CZR PRESS

EP500 (Ivoclar)

Pressing in a 100g ring 2g×1 Ingot Ring Size=wt.100g

B	t↑	T	H	V1	V2	Pressure	N
700°C	60°C	1045°C	15min.	700°C	1045°C	4.5bar	—
1292°F	108°F	1913°F	15min.	1292°F	1913°F	4.5bar	—

Pressing in a 200g ring 2g×1 Ingot／2 Ingots Ring Size=wt.200g

B	t↑	T	H	V1	V2	Pressure	N
700°C	60°C	1065°C	20min.	700°C	1065°C	4.5bar	—
1292°F	108°F	1949°F	20min.	1292°F	1949°F	4.5bar	—

Pressing in a 300g ring 5g×1 Ingot Ring Size=wt.300g

B	t↑	T	H	V1	V2	Pressure	N
700°C	60°C	1075°C	30min.	700°C	1075°C	4.5bar	—
1292°F	108°F	1967°F	30min.	1292°F	1967°F	4.5bar	—

In case of EP500, set the pressure at 4.5 bar.

EP600 (Ivoclar)

Pressing in a 100g ring 2g×1 Ingot Ring Size=wt.100g

B	t↑	T	H	E
700℃	60℃	1045℃	15min.	300μm／min.
1292°F	108°F	1913°F	15min.	300μm／min.

Pressing in a 200g ring 2g×1 Ingot／2 Ingots Ring Size=wt.200g

B	t↑	T	H	E
700°C	60°C	1065°C	20min.	300μm／min.
1292°F	108°F	1949°F	20min.	300μm／min.

Pressing in a 300g ring 5g×1 Ingot Ring Size=wt.300g

B	t↑	T	H	E
700°C	60°C	1075°C	30min.	150-300μm/min.
1292°F	108°F	1967°F	30min.	150-300μm/min.

In case of EP600, set the stopping speed at 300μm／min. and adjust the press cycle. The above pressing times are recommended only as our guide. Please find the best pressing times that suit your furnace depending upon the size and number of the patterns.

Multimat2 Touch & Press (Dentsply DeTrey)

Pressing in a 100g ring 2g×1 Ingot Ring Size=wt.100g

Start temp.	Vacuum Level	Heat Rate	Press Temp.	Hold Time	Press Time	Pressure
700°C	50HPa	60°C／min.	1045°C	15min.	4min.	2.7bar
1292°F	50HPa	108°F／min.	1913°F	15min.	4min.	2.7bar

Pressing in a 200g ring 2g×1 Ingot Ring Size= wt.200g

Start temp.	Vacuum Level	Heat Rate	Press Temp.	Hold Time	Press Time	Pressure
700°C	50HPa	60°C／min.	1065°C	20min.	5min.	2.7bar
1292°F	50HPa	108°F／min.	1949°F	20min.	5min.	2.7bar

Pressing in a 200g ring 2g×2 Ingots Ring Size=wt.200g

Start temp.	Vacuum Level	Heat Rate	Press Temp.	Hold Time	Press Time	Pressure
700°C	50HPa	60°C／min.	1065°C	20min.	6min.	2.7bar
1292°F	50HPa	108°F／min.	1949°F	20min.	6min.	2.7bar

Please check the latest parameters in our up-dated web-site at :
http://www.noroitake.co.jp/dental

Pro-Press100 (Whip Mix Intra Tech)

Pressing in a 100g ring 2g×1 Ingot Ring Size=wt.100g

Entry temp.	Vacuum Level	Heat Rate	Final Temp.	Hold Time	Press Time(Note)	Cool Time	Pressure
700°C	Full	60°C／min.	1045°C	15min.	4min.	0.2min.	3.5bar
1292°F	Full	108°F／min.	1913°F	15min.	4min.	0.2min.	3.5bar

Note In case Special Function Button has been selected, enter "0min." for Re-Press time.

Pressing in a 200g ring 2g×1 Ingot Ring Size= wt.200g

Entry temp.	Vacuum Level	Heat Rate	Final Temp.	Hold Time	Press Time(Note)	Cool Time	Pressure
700°C	Full	60°C／min.	1065°C	20min.	6min.	0.2min.	3.5bar
1292°F	Full	108°F／min.	1949°F	20min.	6min.	0.2min.	3.5bar

Note In case Special Function Button has been selected, enter "2min." for Re-Press time.

Pressing in a 200g ring 2g×2 Ingots Ring Size=wt.200g

Entry temp.	Vacuum Level	Heat Rate	Final Temp.	Hold Time	Press Time(Note)	Cool Time	Pressure
700°C	Full	60°C／min.	1065°C	20min.	8min.	0.2min.	3.5bar
1292°F	Full	108°F／min.	1949°F	20min.	8min.	0.2min.	3.5bar

Note In case Special Function Button has been selected, enter "4min." for Re-Press time.

The above pressing times are recommended only as our guide. Please find the best pressing times that suit your furnace depending upon the size and number of the patterns.

Ceram Press Qex (Dentsply NeyTech)

Pressing in a 100g ring 2g×1 Ingot Ring Size=wt.100g

Start temp.	Heat Rate	Vacuum	Press Temp.	Hold	Press	Pressure
700°C	60°C/min.	ON	1045°C	15min.	8min.	3.5bar
1292°F	108°F/min.	ON	1913°F	15min.	8min.	3.5bar

Pressing in a 200g ring 2g×1 Ingott Ring Size= wt.200g

Start temp.	Heat Rate	Vacuum	Press Temp.	Hold	Press	Pressure
700°C	60°C/min.	ON	1065°C	20min.	11min.	3.5bar
1292°F	108°F/min.	ON	1949°F	20min.	11min.	3.5bar

Pressing in a 200g ring 2g×2 Ingotst Ring Size=wt.200g

Start temp.	Heat Rate	Vacuum	Press Temp.	Hold	Press	Pressure
700°C	60°C/min.	ON	1065°C	20min.	14min.	3.5bar
1292°F	108°F/min.	ON	1949°F	20min.	14min.	3.5bar

Auto Press Plus (Pentron Lab)

Pressing in a 200g ring 2g×1 Ingot Ring Size= wt.100g

T1	T2	Rate	H1	H2	Vacuum	Pressure
700°C	1045°C	60°C/min.	15min.	6min.	Max Vac.	3.5bar
1292°F	1913°F	108°F/min.	15min.	6min.	Max Vac.	3.5bar

Pressing in a 200g ring 2g×1 Ingott Ring Size=wt.200g

T1	T2	Rate	H1	H2	Vacuum	Pressure
700°C	1065°C	60°C/min.	20min.	7min.	Max Vac.	3.5bar
1292°F	1949°F	108°F/min.	20min.	7min.	Max Vac.	3.5bar

Pressing in a 200g ring 2g×2 Ingots Ring Size=wt.200g

T1	T2	Rate	H1	H2	Vacuum	Pressure
700°C	1065°C	60°C/min.	20min.	8min.	Max Vac.	3.5bar
1292°F	1949°F	108°F/min.	20min.	8min.	Max Vac.	3.5bar

The above pressing times are recommended only as our guide. Please find the best pressing times that suit your furnac depending upon the size and number of the patterns.

Note For the pressing at low pressure, we have tested many times and decided the pressing schedule. But, please note that the pressing at lower pressure Is recommended.

CERABIEN PRESS

V.I.P. UNIVERSAL X-PRESS (Jelrus)

Pressing in a 100g ring 2g×1 Ingot Ring Size=wt.100g										
Predry Time	Low Temp	Vac.Level	Start Vac.	Heat Rate	Press Temp	Hold Time	Press Time	Repress Time	Cool Time	Pressure
0min	700°C	71	700°C	60°C	1045°C	15min.	4min.	0min.	0min.	3.5bar
0min	1292°F	71	1292°F	108°F	1913°F	15min.	4min.	0min.	0min.	3.5bar

Pressing in a 200g ring 2g×1 Ingot Ring Size=wt.200g										
Predry Time	Low Temp	Vac.Level	Start Vac.	Heat Rate	Press Temp	Hold Time	Press Time	Repress Time	Cool Time	Pressure
0min	700°C	71	700°C	60°C	1065°C	20min.	7min.	0min.	0min.	3.5bar
0min	1292°F	71	1292°F	108°F	1949°F	20min.	7min.	0min.	0min.	3.5bar

Pressing in a 200g ring 2g×2 Ingots Ring Size=wt.200g										
Predry Time	Low Temp	Vac.Level	Start Vac.	Heat Rate	Press Temp	Hold Time	Press Time	Repress Time	Cool Time	Pressure
0min	700°C	71	700°C	60°C	1065°C	20min.	10min.	0min.	0min.	3.5bar
0min	1292°F	71	1292°F	108°F	1949°F	20min.	10min.	0min.	0min.	3.5bar

Pressing in a 300g ring 5g×1 Ingot Ring Size=wt.300g										
Predry Time	Low Temp	Vac.Level	Start Vac.	Heat Rate	Press Temp	Hold Time	Press Time	Repress Time	Cool Time	Pressure
0min	700°C	71	700°C	60°C	1065°C	30min.	17min.	0min.	0min.	3.5bar
0min	1292°F	71	1292°F	108°F	1949°F	30min.	17min.	0min.	0min.	3.5bar

AUSTROMAT 3001 press-i-dent (DEKEMA)

Pressing in a 100g ring 2g×1 Ingot / 2 Ingots Ring Size=wt.100g											
L9	C700	V9	T060·C1045	T900	L94	T480	L9	V0	C0	L6	T5

Pressing in a 200g ring 2g×1 Ingot / 2 Ingots Ring Size=wt.200g											
L9	C700	V9	T060·C1065	T1200	L97	T900	L9	V0	C0	L6	T5

Pressing in a 380g ring 2g×1 Ingot / 2 Ingots Ring Size=wt.380g											
L9	C700	V9	T060·C1065	T2400	L99	T1680	L9	V0	C0	L6	T5

Precautions for Handling — CZR

①This porcelain is for zirconia frameworks.
②To avoid heat-shock of the framework, when grinding the framework, do not use excessive pressure or speed.
③Follow the manufacturer's instructions for handling the zirconia framework.
④Do not mix with any other porcelain, including another Noritake Porcelain or another manufacturers' porcelain.
⑤Before applying the wash-bake of Shade Base, steam clean the framework.
⑥Use Cerabien Forming Liquid, Meister Liquid or distilled water with CZR powder.
⑦For adequate bond strength as well as to achieve proper value, it is necessary that the 1st layer of Shade Base is a wash-bake layer.
⑧CZR is baked properly when the surface has a slight luster after baking. Please adjust your furnace to achieve this result.
⑨Observe the recommended cool time. Do not cool CZR too quickly.
⑩Do not use metal baking pegs. The metal may stain the inside of the framework. The peg must be clean: leftover porcelain may fuse to the inside of the framework.
⑪Keep all liquids in a dry and cool place, avoiding direct sunlight.

Read the instructions carefully, keep them in a safe place for future reference.

Precautions for Handling — CZR PRESS

Press Ceramic and Stain

①The only method for fabricating a single anterior crown and inlay or onlay without a zirconia framework is by the "Staining Technique" or "LF Layering Technique". CZR PRESS is not indicated for bridges without a zirconia framework.
②Use only CZR External Stain (ES) and CZR PRESS Glaze Powder for staining technique.
③If a CZR PRESS restoration is made without a zirconia framework and then layered with normal CZR Porcelain, the crown will deform. Please use CZR PRESS LF in this case.
④CZR Porcelain and CZR PRESS LF is precisely matched to CZR PRESS. Do not use other manufacturers' zirconia porcelains, metal porcelains and alumina porcelains.
⑤CZR PRESS cannot be used on alumina frameworks and metal frameworks.
⑥Do not use other manufacturers' Shade Base Stain.
⑦Due to lower baking temperature, CZR Shade Base Porcelain must not be used for CZR PRESS. CZR PRESS Shade Base Stain must be used for CZR PRESS restorations.
⑧To prevent contamination from foreign materials in the pressed ceramic, always use new wax which does not contain impurities and burns-out without leaving ash and other residues. Be sure that the framework surface is clean before wax-up.
⑨Ceramic ingots cannot be re-used. Re-using ingots will cause certain restoration failure.
⑩Never use hydrofluoric acid when it becomes necessary to remove the pressed ceramic from the zirconia framework. The acid will melt the zirconia framework and its strength will be reduced.
⑪If the pressed ceramic needs to be removed after pressing over a zirconia framework, re-use of the zirconia framework should be limited to two times.
⑫Secure more than 0.4mm thickness in all parts of the zirconia framework If the thickness is less than 0.4mm in any parts, there is a greater chance of cracks that will grow longer and wider. Secure at least more than 0.4mm thickness evenly with a rounded shoulder in frame margin area. (Refer to the illustration) Knife-edge design toward the margin end is not acceptable as the thickness will gradually be less than 0.4mm. The frame margin line should be finished very smoothly. Do not give the margin line serration-finish.
⑬Carefully grind the zirconia framework to use grinding burs/discs with minute diamond particles. Noritake Meister Points SC-51 and SD-61 are ideal. Grinding by tools with rough particles will produce sharp scratches on the surface of the zirconia framework and eventually cause cracks to the framework. Excessive pressure during grinding may also cause cracks due to heat generation. Cooling with water is necessary to avoid heat generation during grinding.
⑭From the characteristic of zirconia, even a very minute crack in the zirconia framework may be a cause for more cracks that grow bigger and wider after pressing. And then, the framework strength wil greatly lowered. Naturally, it does not have the strength that can be fit in the mouth. If even a crack can be found, never use the cracked framework.
⑮Improper furnace parameters for the pressing cycle may lead to the problems such as an incomplete pressing, a split investment ring, movement and absorption of the Shade Base Stain into the pressed ceramic, porosity, brittleness and value or shade changes. Every manufacturer's press furnace is slightly different: therefore, observe the most appropriate heat-pressing schedule with your press furnace. If excessive pressing time or pressure is maintained too long even after the ceramic is pressed into the cavity, the zirconia framework may crack.
⑯On occasion, when tooth reduction is inadequate, less than ideal space is available for pressable thickness over the zirconia framework: consequently, the space created for pressable material is constricted and this in turn, creates resistance against the flow of ingot material. Due to this circumstance, the Shade Base Stain may be carried away into the flow of pressed ceramic. Special care should be taken when waxing to provide adequate space for the subsequent flow of ingot material.
⑰The best thickness at the margin area of the CZR PRESS ceramic, not including the thickness of the zirconia framework, is less than 1.0 mm. If it is thicker than 1.0mm, there may be deformation at the margin area after baking of the CZR Porcelain.
⑱To prevent flash on the pressings, be sure to observe the above mentioned instructions during spruing and investing.
⑲Noritake Plungers must be used for CZR PRESS technique. Never use other manufacturer's plungers.
⑳Be sure to use dual-cured, not light cured adhesive resin cement for a crown or inlay without a zirconia framework. This adhesive resin cement is also recommended for a crown with a zirconia framework.

Investment

■Spruing
①The distance from the top of the wax pattern to the top of the ring should be at least 10mm, and the distance from the wax pattern to the inside wall of the ring should be at least 8mm.

②Always use the new wax which does not contain impurites. Be sure that the framework surface is clean before wax-up.
③Always keep the sprue former very clean to avoid mixing any dust particles into pressings.

■Mixing
①Referring to manufacturer's instructions, prepare for press investment. Then, mix the investment mechanically for 1 minute under vacuum and fill the investment in the ring without producing any bubbles.
②The physical properties of phosphate-bonded investment change according to the temperature of the materials and equipment used in investing: therefore, maintain a constant temperature of approximately 23°C(73°F) for the powder, liquid, water and the mixing bowl.
③Use only distilled water for dilution of "special liquid", but do not dilute more than specified.
④Use a separate mixing bowl for mixing phosphate- bonded investment. Never use the same mixing bowl for the gypsum-bonded investment or gypsum stone.
⑤Properly dispose of the excess investment material. Always use a plaster trap.

■Baking
①After investing, leave the ring to bench-set(undisturbed) at room temperature for at least 30 min, then place it into the center of the burn-out furnace at 850°C(1562°F).
②If the ring is left more than 12 hours after investing, soak it in water for 3-5 minutes, then place it into a preheated furnace at 850°C (1562°F).
③Burn-out of the investment ring needs to be done at sufficient oven temperature in order to prevent insufficient wax elimination and to burn-out the remaining ammonia gases from the investment ring.
④Do not proceed with the pressing process if cracks appear in the ring after burning-out.

■Divesting
Divesting must be carefully carried out to avoid any breaking the pressed ceramic.

■Storage
①Keep in a dry, cool place.
②After opening the investment package, reseal the package tightly as the investment easily absorbs moisture. Never store investment in plastic bags or containers.
③To prevent the special liquid from being frozen, never store liquid at temperatures below 0°C(32°F). Do not use frozen(and then thawed) liquid.
④Press Investment may be stored until the expiration date if the package has never been opened. Always use before the expiration date. Once the package has been opened, use the investment immediately.

Precautions for Handling — CZR PRESS LF

Porcelain
①The only restorations that can be made by CZR PRESS ingot and LF Porcelain without using a zirconia framework are an anterior single crown, a porcelain laminate veneer, an inlay and an onlay. Do not make a bridge without a zirconia framework.
②Do not use CZR PRESS LF for the clinical cases where the thickness of the pressed ceramic cannot be more than 0.8mm, cross bite and attrition of the tooth. The restoration receives unexceptionally strong pressure.
③In order to avoid chipping, the best thickness at the margin area of the framework should be more than 1.0mm.
④Be sure to read this technical instructions from wax-up to divesting and Sprue-cutting and follow the instructions.
⑤As to the investment powder／liquid ratio, refer to the baking schedule of manufacturer's Instructions.
⑥For inserting CZR PRESS ingot, Noritake Disposable Plunger is recommended as it has a perfect matching CTE.
⑦Carefully grind the pressed ceramic not to produce cracks and chipping.
⑧Do not mix with other porcelain, including other Noritake Porcelain or other manufacturer's porcelain.
⑨When without a zirconia framework, CZR Enamel, Translucent and Luster Porcelain cannot be used on the CZR pressed ceramic. Use CZR PRESS LF Porcelain only.
⑩Use only Noritake LF Liquid or distilled water.
⑪CZR PRESS LF is baked properly when the surface has a slight luster after baking. Please adjust your furnace to achieve this result.
⑫CZR PRESS LF is a low fusing porcelain. In case any fiber such as tissue paper remains after baking, it should be removed.
⑬For porcelain separation, please use Noritake Magic Separator that can be used for low fusing porcelain.
⑭Observe the recommended cool time. Do not cool CZR PRESS LF too quickly.
⑮Do not use metal baking pegs. The metal may stain the inside of the framework. The pegs must be clean. Leftover porcelain may fuse to the inside of the framework.
⑯Keep all liquids in a dry cool place, avoiding direct sunlight.
⑰Be sure to use adhesive resin cement for bonding.

Resin Cement Examples

Product Name	Manufacturer
Panavia F2.0	Kuraray
Panavia 21	Kuraray
Relyx Unicem	3M

Stain
①Be sure to use CZR PRESS LF Internal Stain(IS) or External Stain (ES) for staining and glazing powder. Other stains cannot be used.
②There is a risk of blackening when using the stain liquid of other manufacturers. It is very important to use IS Liquid or ES Liquid exclusively.
③CZR PRESS LF IS is made exclusively for internal staining.
④IS Liquid should not be mixed with water, use as is without diluting.
⑤After mixing Internal Stain with IS Liquid on the palette, avoid letting it sit for a long time and avoid making repeated additions to the original mixture. Using stain from which too much moisture has evaporated will result in bubbles.
⑥If different colored stains are applied over on the same area without baking between applications, they may blend unpredictably. To avoid this, divide the staining process into two parts and bake between applications.
⑦IS Liquid contains ingredients that dissolve some plastics. Please handle with extreme caution in the presence of plastic materials.

Notes on Safety — CZR

①When grinding porcelain use an approved dust mask and a vacuum air filter to protect the lungs from breathing dust.
②When grinding porcelain, wear safety glasses.
③It is non-edible. Keep it out of the reach of children.
④Avoid eye contact with all Liquids. In the event of eye contact, immediately rinse with a copious amount of water and consult a physician.
⑤Do not touch items heated by the furnace with your bare hands.
⑥Keep IS Liquid and ES Liquid away from flames and high temperatures. They are flammable.
⑦This porcelain is for dental use only. Do not use for other purposes.
⑧For use only by dentists and dental technicians.

All Noritake products mentioned in this manual except KATANA Noritake Magic Set, Forming Liquid, Noritake Meister Liquid and Noritake Meister Point are part of the CZR system and are covered by its registered trademark.

Notes on Safety — CZR PRESS & CZR PRESS LF

①Work in a well-ventilated room during firing porcelain.
②LF Porcelain contains Silica. Avoid inhaling the dust. Use a dust collector and an approved dust mask. Over exposures may cause delayed lung injury.
③Avoid exposure to eyes. Wear the goggles for eye protection during cutting or polishing works. In case of contact with eyes, flush eyes with copious amounts of water and consult an eye-doctor.
④Avoid eye contact with Noritake LF Liquids. In case of contact with eyes, flush eyes with copious amounts of water and consult an eye-doctor.
⑤Do not touch items heated by the furnace with your bare hand.
⑥Noritake IS Liquid away from flames and high temperatures. They are flammable.
⑦Some people are sensitive to skin contact. Wear rubber gloves to protect your skin.
⑧Avoid ingesting. Keep out of the reach of children.
⑨This material is for dental application only. Do not use for any purpose not specified in the instruction manual.

■SYMBOLS USED IN A LABEL

SYMBOL	MEANING	SYMBOL	MEANING
	MANUFACTURER	LOT	BATCH CODE
	USE BY	REF	CATALOGUE NUMBER
	CONSULT INSTRUCTIONS FOR USE		
EC REP	AUTHORISED REPRESENTATIVE IN THE EUROPEAN COMMUNITY		

· Contraindications
If the patient is hypersensitive to Dental Porcelain or any of the other components, this medical product should not be used. Or it should be only used under the strict supervision of the patient's doctor/dentist.

· EU Authorized Representative
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