

Noritake CZR PRESS

Noritake CZR PRESS consists of the following components:

- 1) Ceramic Ingots to be heated & pressed onto a pure zirconia framework
- 2) Shade Base Stain to be applied on a framework & baked to produce the basic shade of the restoration.

I. Features

- 1) CZR PRESS may be used with any pure zirconia framework
- 2) Two types of ingots with different translucencies are available:
H Ingots- for use when utilizing the “Staining Method”
L Ingots- for use when utilizing the “Layering Method”
- 3) CZR Porcelain is the best match for CZR PRESS, but CZR Shade Base Porcelain must not to be used!
- 4) CZR PRESS may be used to create both the dentin and margin areas.
- 5) So long as a zirconia framework is used, there is no deformation of the pressed ceramic after baking the CZR Porcelain.
- 6) CZR PRESS may be used for single unit restorations without a zirconia framework, but only using the staining technique. The fit will be excellent.
- 7) CZR PRESS may be pressed in any conventional press furnace.

II. Physical Properties

Table 1 Ceramic Ingots

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



Fig.1



Fig.2



Fig.3

CZR PRESS with the zirconia framework

III. Working Procedures

1. Preparation Guidelines and Frame Design:

To ensure a strong and esthetic restoration, the following preparation guidelines should be observed:

In this technique, the basic preparation is to allow the pressed ceramic to cover a **360 degrees** shoulder with rounded edge or chamfer. If the thickness of the pressed ceramic is not sufficient, make the zirconia framework thinner a little. However, please note that the thickness of the zirconia framework is **at least 0.4 mm**. As to the thickness of the connectors of the zirconia bridge, please follow the manufacturer's instruction.

(Note)

This technique is not suited to a severely discolored tooth.

Preparation

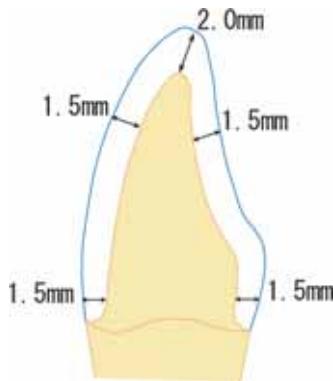


Fig.4 Anterior Tooth

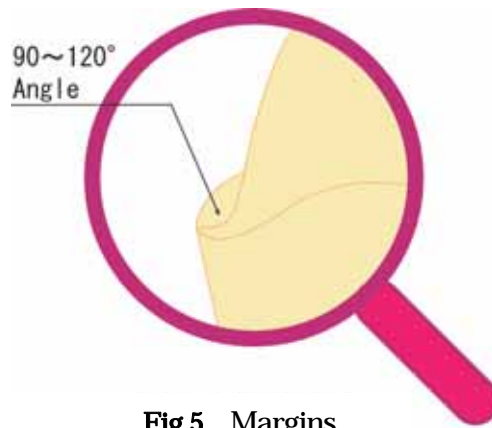


Fig.5 Margins

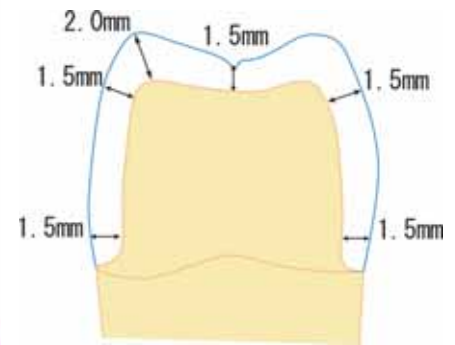


Fig.6 Posterior Tooth

Frame Design

(1) Single Crowns:

Maintain a **minimum 0.8mm** thickness of pressed ceramic in all areas.

(2) Bridge Restorations:

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

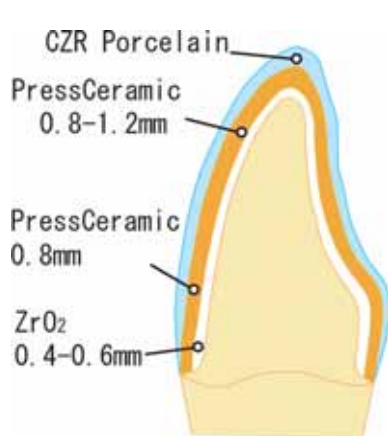


Fig.7

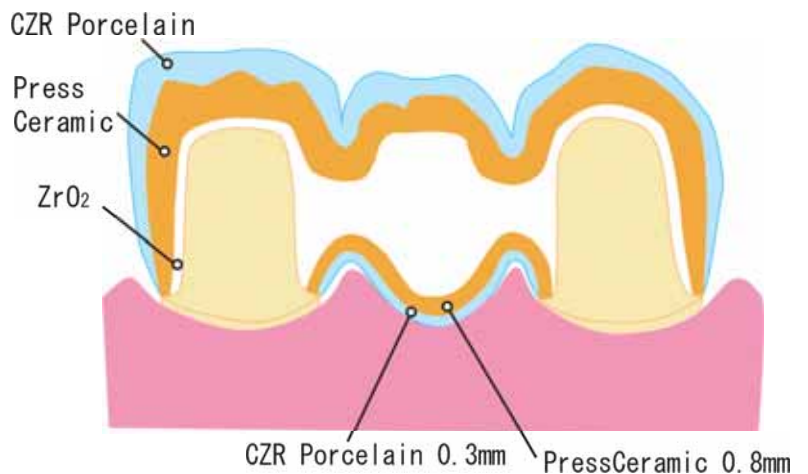


Fig.8

2. Morphological Correction of the Zirconia Framework

If some parts of the zirconia framework are too thick, carefully reduce them using a diamond bur and water. However, the zirconia framework should measure a minimum of 0.4mm thickness in all area to obtain a successful CZR pressing. Additionally, weigh the zirconia framework and record this weight, so that the information may be utilized later as a reference to determine the required number of ingots for pressing.



(Note)

To prevent breakage of the framework during pressing cycle, do not reduce the thickness of the framework to less than 0.4mm.

Fig.9 Coping design at the margin

3. Alumina Sandblasting of Zirconia Framework Surface

Create a matt-finish surface by sandblasting with 50µm alumina at 44psi(=0.3MPa).

4. Cleaning of the Zirconia Framework

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

5. First Application and Baking of Shade Base Stain

Table 2

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

	CZR Shade Base Porcelain	CZR PRESS Shade Base Stain
Baking temperature	1 st . 930°C (1,706°F) 2 nd . 930°C (1,706°F)	1 st . 1,090°C (1,994°F) 2 nd . 1,080°C (1,976°F)
Grain size	25µm	4µm
Build-up thickness	1 st . 0.2mm 2 nd . 0.2mm	1 st . 0.15mm 2 nd . 0.15mm
Combination with CZR Porcelain	Good	Good
Combination with CZR PRESS	Not acceptable	Good

Mix the shade base stain with IS liquid. The consistency 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 with 0.15mm thickness, which is slightly thicker than for conventional external stain. Shade Base Stain is a necessary step to produce the basic foundation color. For the first baking of Shade Base Stain, please refer to Table 5, Page 18.

(Note)

IS liquid should never be mixed with water. If mixed, the color will be not 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!



Fig.10 Mix the shade base stain with IS liquid



Fig.11 Shade base stain color guide



Fig.12 Application of the Shade Base Stain

6. Second Application and Baking of Shade Base Stain

Apply the shade base stain mixture again in a thickness of about 0.15 mm. To produce an even color saturation, be sure to perform the second application and baking. For the second baking, refer to the attached Second Baking Schedule Table 5, Page 18. Also refer to the attached Shade Base Stain Color Guide for the color shades. If applied too thinly, the shade will be low in chroma. If applied too thickly, the shade will be high in chroma.



Fig.13 After baking of the Shade Base Stain



Fig.14 Thin Application of Shade Base Stain



Fig.15 Thick Application of Shade Base Stain

7. Wax-up

(1) Layering Method

Wax-up of the abutment should be done so that there is no space between the framework and wax in all margin-shoulder areas of the abutment. Then wax-up to the dentin shape with 90% size of the completed restoration. Mamelon structure is not needed at this wax-up since it is formed later by cutting after pressing ingots. Be sure to secure the sufficient thickness for the pressed ceramic. Please refer to the Fig. 7 and 8 on Page 2.

(2) Stain Method

Wax-up so that there is no space between the framework and wax in all margin-shoulder areas of the abutment. Then wax-up to the shape of the final restoration.

(Note)

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



Fig.16 Wax-up for “Layering Method”



Fig.17 Wax-up for “Staining Method”



Fig.18 Wax thickness at the shoulder

8. Spruing, Attaching to the Pedestal Base and Ring Preparation

Use 8 gauge (3.3mm diameter) sprues of 2-3 mm in length. Attach sprues to wax patterns and position sprues on pedestal base to facilitate a smooth flow of the press ceramic to all areas of the patterns. If the wax pattern is thin in some areas, more than one sprue may be used.

(1) Single crowns:

For larger posterior teeth, position one sprue on each marginal ridge, closer to the proximal walls so that pressed ceramic may flow smoothly. Spruing this way preserves delicate wax contours and little morphological correction is needed. (Fig.20 on Page 5).

(2) Bridges:

Place one sprue each on each abutment and each pontic. Make the sprue length as short as possible; approximately 2-3 mm in length (Fig. 21 on Page 5).

After attaching sprues, weigh the waxed restoration and then deduct previously recorded weight of the zirconia framework—this is the net wax weight.

Position the wax patterns at the same height in the ring and maintain a minimum distance of 5mm between wax patterns. The distance between the wax pattern and the ring inner wall must be at least 8mm. Use Noritake Ring Former (pedestal base), Ring and Ring Gauge (leveling cap) for the best results. Apply a dry Teflon®-Silicone spray to the inside of the ring, Ring Former (pedestal base) and Ring Gauge (leveling cap) to prevent investment from sticking to the surface.



Fig.19 After attaching the sprue



Fig.20



Fig.21

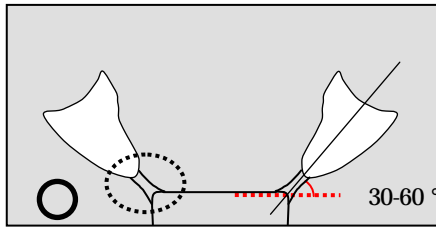


Fig.22 Correct spruing

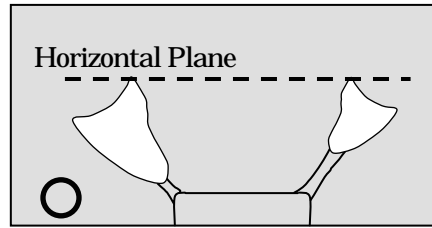


Fig.23 Correct spruing

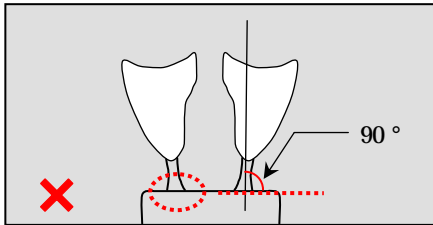


Fig.24 Wrong spruing

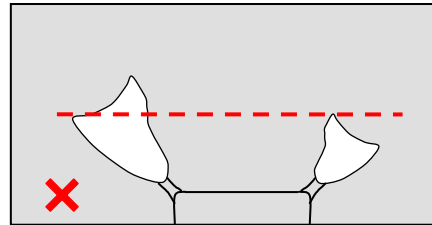


Fig.25 Wrong spruing

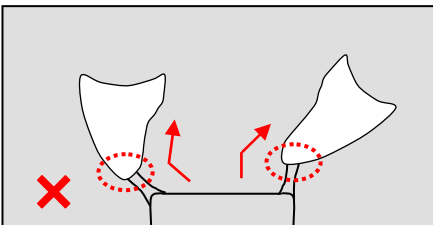


Fig.26 Wrong spruing

Attach the wax sprue to the edge of the Ring Former (pedestal base) at an angle of 30-60 ° (Fig. 22). When spruing two crowns of different lengths, position the margins of the crowns at the same height (Fig. 23, Page 6).

9. Investing

Mix 100g of Noritake Press Investment powder with 24ml of the special liquid in the mixing bowl or 200g of powder and 48ml of special liquid in the mixing bowl. Make sure the measurement of powder and liquid is accurate. Do not dilute the special liquid with water. Next, mechanically mix the investment for 1 minute under vacuum and then carefully fill the wax pattern(s) and ring without producing any bubbles. After investing, the ring must bench set for a minimum of a half hour. When transporting the ring, hold from the pedestal base, not the sides of the ring.



Fig.27 Mix with Vacuum Mixer



Fig.28 Investing



Fig.29 Bench set 1/2 hour

10. Preparation before Burn-out

After bench setting for half an hour or more at room temperature, remove the ring from the Ring Former and Ring Gauge. Remove the investment button created by the leveling cap with a dry knife. The ring top surface and the side, and the bottom surface and the side should be kept at 90 degrees angle respectively. When a paper ring is used

for investing, a vertical seam line is produced where the paper overlaps itself. This must be smoothed with a knife.



Fig.30 Remove the button of investment created by leveling cap

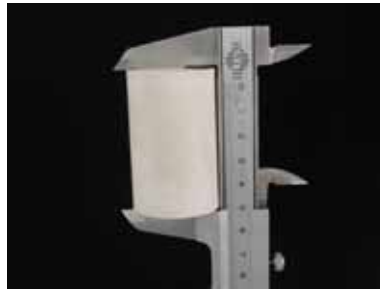


Fig.31 Carefully level the ring so that the top and bottom are perpendicular to the sides of the ring.

11. Burn-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)



Fig.32 Burn-out

12. Selection of Ceramic 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 of the specified shade.

13. Inserting Ceramic Ingot and Plunger.

Table 3 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

After heating the investment ring at 850°C (1562 °F) for an hour, insert the Ceramic ingot of the desired shade and the plunger into the canal of the investment ring. Be sure to use clean tweezers, used exclusively for picking up ingots. Use one ingot for up to two crowns and two ingots for three or more crowns; however, if the wax pattern(s) weight is 0.6 g or less, use one ingot, and if the weight is between 0.7 g and 1.4 g, use two ingots. Pay special attention during this procedure so that no foreign debris attaches itself to the ingots or to the plunger. Note that the plunger is to be inserted vertically into the pressing canal.



Fig.33 Insertion of the Ingots

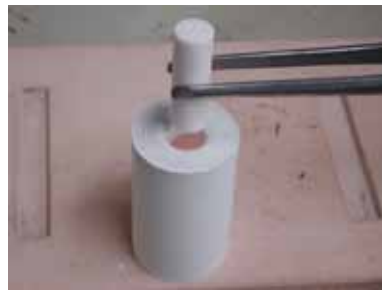


Fig.34 Insertion of the Noritake Alumina Oxide Plunger

14. Pressing in the Press Furnace

Insert the ceramic ingots and press plunger into the ring, then center the ring on the pressing platform. The pressing schedule may differ depending upon the press furnace manufacturer. Adjust the schedule so 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 18&19. After pressing, immediately remove the investment ring from the furnace and leave it to cool at room temperature until the ring is cool enough to be held.



Fig.35 Pressing cycle completed

15. Removal of Noritake 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. Using alumina sands, carefully remove the ceramic attached to the plunger.



Fig.36 Marking the top position of the plunger



Fig.37 Section with a separating disk



Fig.38 Final removal with a plaster nipper

16. Divesting

Carefully divest the ring to avoid breaking the pressed ceramic. First, remove the bulk of the investment material (without exposing the pressed ceramic patterns) using 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 (Fig. 42).



Fig.39 Roughly remove the investment



Fig.40 Exposing the pressed ceramic



Fig.41 After completion

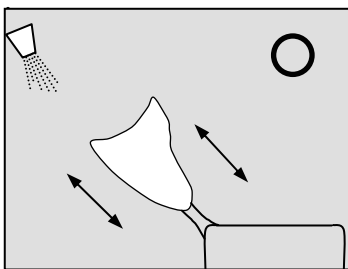


Fig.42 correct sandblasting

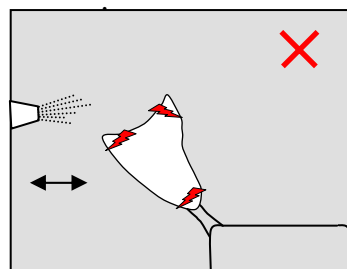


Fig.43 Incorrect sandblasting

When divesting the pressed ceramic, blast from the direction indicated in the schematic at the left

17. Cutting off the Sprue

Using a diamond disk for sprue separation, first score a line around the sprue, 2mm from the crown at a low speed, then carefully section through the sprue. In this way, even if the cracks are created within the sprue, they will not spread into the crown. Next, using a diamond point at a low speed, reduce the remaining sprue button on the crown. During this process, do not generate excessive heat or vibration as it may propagate cracks. Noritake Meister Points are recommended for sprue reduction and morphological correction of the porcelain.



Fig.44 Sprue separation

18. Morphological Correction of Pressed Ceramic

Place the pressed restoration on the model and check the fit at the margin under magnification. The cut-back process depends on which technique is chosen: For the "Layering Method", create the mamelon structure with Meister Points. Special care should be taken to maintain a minimum thickness no less than 0.8 mm. For the "Staining Method", refine the delicate surface morphology & texture. After the contours have been finalized, prepare the surface of the pressed ceramic by

sandblasting with 50µm alumina at a maximum 29psi(0.2MPa).



Fig.45 “Layering Method”
Pressed ceramic prior
to cut-back



Fig.46 “Layering Method”
cut-back to create mamelon
structure



Fig.47 “Staining Method”
after morphological correction

19. Cleaning

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

The following are instructions for the “Layering Method”.

For instructions of the “Staining Method”, please see Page 11.

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 certain 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. See CZR technical instructions at P13. If required, apply CZR Internal Stain on the pressed ceramic and bake it before building-up enamel, translucent and luster porcelains.

Note: Refer to the CZR technical instructions for the build-up techniques and baking schedule for CZR Porcelain (pages 10-13).

L2. Morphological Correction

Perform morphological correction as usual. If required, perform second build-up of CZR Porcelain and bake according to baking schedule.

L3. Stain & Glaze

If necessary, apply the CZR ES (External Stain) to characterize restoration. Perform glaze bake according to the “Self Glaze” or “Glaze Powder & External Stain Bake” schedule as outlined in the CZR technical instructions on page 13.



Fig.48 Completed crown after
glaze bake

Stain Method

S1. Application of Stain and Baking

Mix CZR ES(External Stain) with ES liquid. Mix ES to the same consistency as with ordinary stains. If too much liquid is used, the stain will move after the application.

For A shades, first apply A+ ES stain over the area except the incisal edge or occlusal surface of the entire crown. Similarly, apply B+ ES stain for B shade, C+ for C shade, D+ for D shade. For incisal edge or occlusal surface, apply ES stains such as Blue, Gray and White (Fig 50 on page 11). Considering aesthetics, apply the mixture over the surface of the restoration for the final shades. Then, bake according to the baking schedule on Table 6, Page 18. Perform characterization, if necessary, and bake again by the same baking schedule. If characterization is overlapped by more than two stains, separate baking is recommended.



Fig.49 Application of ES

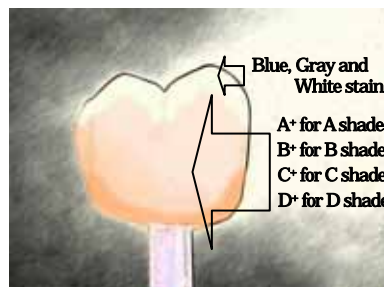


Fig.50 Example of ES



Fig.51 Before baking

S2. First Glazing

Using IS (Internal Stain) Liquid, mix with CZR Press Glaze Powder to create a “cold honey-like” glaze paste. Do not wet the surface of the restoration with **IS liquid prior to glaze application, otherwise inconsistent coverage may result.** Apply liberally and evenly over the restoration in a 0.2mm thickness. Inspect restoration to verify complete coverage. Perform the first glaze baking according to the baking schedule on Table 7, Page 18.



Fig.52 After dry out



Fig.53 After first 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 in an ultrasonic cleaner as in Step 19, Page 10.



Fig.54 Adjusting the contact area

S4. Second Glazing and Completion

Dilute the glaze mixture used in the first glaze application to a little runnier consistency. Apply the glaze over the entire surface of the restoration and bake again according to the baking schedule Table 7, Page 18 to complete the staining method.



Fig.55 Completed crown after second glaze baking



Fig.56 Completed crown using "Staining Method"

IV. Precautions for Handling

Press Ceramic and Stain

- 1) The only method for fabricating a single crown and inlay or onlay without a zirconia framework is by the “Staining Technique”. CZR PRESS is not indicated for bridges without a zirconia framework.
- 2) Use only CZR ES (External Stain) and CZR Press Glaze Powder for staining technique.
- 3) If a CZR PRESS restoration is made without a zirconia framework and then layered with CZR Porcelain , the crown will deform.
- 4) CZR Porcelain is precisely matched to CZR PRESS. Do not use other manufacturers’ zirconia porcelains, metal porcelains and alumina porcelains.
- 5) CZR PRESS cannot be used on alumina frameworks and metal frameworks.
- 6) Do not use other manufacturers’ shade base stain.
- 7) Due 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.
- 8) To 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.
- 9) Ceramic ingots cannot be re-used. Re-using ingots will cause certain restoration failure.
- 10) Never 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.
- 11) If 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.
- 12) Insufficient thickness of the zirconia framework may cause fracturing of the framework during pressing process. Please follow the manufacturer’s instructions and maintain the minimum thickness. According to Noritake’s testing, the minimum necessary thickness to prevent the framework fracture during pressing is at least 0.4 mm.
- 13) Improper 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.

- 14) On 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.
- 15) The 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.
- 16) To prevent flash on the pressings, be sure to observe the above mentioned instructions during spruing and investing.
- 17) Noritake Press Investment has been scientifically formulated especially for the CZR PRESS technique. Never use other manufacturers' investments.
- 18) Noritake Plungers must be used for CZR PRESS technique. Never use other manufacturers' plungers.
- 18) Be 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.

Table 4 Resin Cement Examples

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

Investment

Spruing

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

Mixing

- 4) Accurately measure and mix 24ml of liquid (or dilute liquid with water) with 100g of investment powder. Refer to **Noritake PRESS INVESTMENT INSTRUCTIONS**, page 2.

- 5) The 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 (73°F) for the powder, liquid, water and the mixing bowl.
- 6) Use only distilled water for dilution of “special liquid”, but do not dilute more than specified.
- 7) Use a separate mixing bowl for mixing phosphate-bonded investment. Never use the same mixing bowl for the gypsum-bonded investment or gypsum stone.
- 8) Properly dispose of the excess investment material. Always use a plaster trap.

Baking

- 9) After 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).
- 10) If 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 (1562°F).
- 11) Burn-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.
- 12) Do not proceed with the pressing process if cracks appear in the ring after burning-out.

Divesting

- 13) Divesting must be carefully carried out to avoid any breaking the pressed ceramic.

Storage

- 14) Keep in a dry, cool place.
- 15) After opening the investment package, reseal the package tightly as the investment easily absorbs moisture. Never store investment in plastic bags or containers.
- 16) To 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.
- 17) Press 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.

V. Products

Type and Shades

CZR PRESS / Shade Base Stain (20 shades) 3g each

SS A1	SS A2	SS A3	SS A3.5	SS A4	SS NW0	SS NW0.5
SS B1	SS B2	SS B3	-	SS B4	SS NP 1.5	SS NP 2.5
SS C1	SS C2	SS C3	-	SS C4	-	
-	SS D2	SS D3	-	SS D4		

CZR Shade Base Stain Color Guide

CZR PRESS / Press Ingots 2g Ingot , 5 Ingots per pkg

Low Translucency (20 shades)

LA1	LA2	LA3	LA3.5	LA4	LNW0	LNW0.5
LB1	LB2	LB3	-	LB4	LN1.5	LN2.5
LC1	LC2	LC3	-	LC4	-	
-	LD2	LD3	-	LD4		

High Translucency (20 shades)

HA1	HA2	HA3	HA3.5	HA4	HNW0	HNW0.5
HB1	HB2	HB3	-	HB4	HN1.5	HN2.5
HC1	HC2	HC3	-	HC4	-	
-	HD2	HD3	-	HD4		

CZR PRESS / Glaze Powder 10g

CZR PRESS / Plunger 3 pieces each

CZR PRESS / Ring (Flexible rubber for mold) 100g type, 200g type

CZR PRESS / Ring Former (with Ring gauge) 100g type, 200g type

Press investment powder 100g × 100 per pkg.

Press investment liquid 800ml

Color Combination Table

Layering Method

	A1	A2	A3	A3.5	A4	B1	B2	B3	B4	C1	C2	C3	C4
Shade Base Stain	SSA1	SSA2	SSA3	SSA3.5	SSA4	SSB1	SSB2	SSB3	SSB4	SSC1	SSC2	SSC3	SSC4
Press Ingot	LA1	LA2	LA3	LA3.5	LA4	LB1	LB2	LB3	LB4	LC1	LC2	LC3	LC4
Body	A1B	A2B	A3B	A3.5B	A4B	B1B	B2B	B3B	B4B	C1B	C2B	C3B	C4B
Enamel	E2	E2	E3	E3	E3	E1	E2	E3	E3	E2	E3	E3	E3
Translucent	Luster LT1/Translucent T1												

	D2	D3	D4	NW0	NW0.5	NP1.5	NP2.5
Shade Base Stain	SSD2	SSD3	SSD4	SSNW0	SSNW0.5	SSNP1.5	SSNP2.5
Press Ingot	LD2	LD3	LD4	LNW0	LNW0.5	LNP1.5	LNP2.5
Body	D2B	D3B	D4B	NW0B	NW0.5B	NP1.5B	NP2.5B
Enamel	E2	E3	E3	E1	E1	E2	E2
Translucent	Luster LT1/Translucent T1						

Staining Method

	A1	A2	A3	A3.5	A4	B1	B2	B3	B4	C1	C2	C3	C4
Shade Base Stain	SSA1	SSA2	SSA3	SSA3.5	SSA4	SSB1	SSB2	SSB3	SSB4	SSC1	SSC2	SSC3	SSC4
Press Ingot	HA1	HA2	HA3	HA3.5	HA4	HB1	HB2	HB3	HB4	HC1	HC2	HC3	HC4
External Stain	A+	A+	A+	A+	A+	B+	B+	B+	B+	C+	C+	C+	C+
Glaze Powder	CZR Press Glaze Powder												

	D2	D3	D4	NW0	NW0.5	NP1.5	NP2.5
Shade Base Stain	SSD2	SSD3	SSD4	SSNW0	SSNW0.5	SSNP1.5	SSNP2.5
Press Ingot	HD2	HD3	HD4	HNW0	HNW0.5	HNP1.5	HNP2.5
External Stain	D+	D+	D+	B+	A+	A+	A+
Glaze Powder	CZR Press Glaze Powder						

Baking Schedule for Shade Base Stain

Table 5

	1 st bake		2 nd bake	
Dry-Out Time	5min		5min	
Low Temperature	700°C	1292°F	700°C	1292°F
Start Vacuum	700°C	1292°F	700°C	1292°F
Heat Rate	65°C/min	117°F/min	65°C/min	117°F/min
Vacuum Level	96kPa ¹		96kPa ¹	
Release Vacuum	1090°C	1994°F	1080°C	1976°F
High Temperature	1090°C	1994°F	1080°C	1976°F
Hold Time (in the air)	1min		1min	
Cool Time	4min		4min	

Baking Schedule for ES Stain

Table 6 Staining method

Dry-Out Time	5min	
Low Temperature	600°C	1112°F
Start Vacuum	600°C	1112°F
Heat Rate	50°C /min	90°F/min
Vacuum Level	87kPa ²	
Release Vacuum	850°C	1562°F
High Temperature	850°C	1562°F
Hold Time (in the air)	-	
Cool Time	4min	

Baking Schedule for CZR Press Glaze Powder

Table 7 Staining method

	1 st bake and 2 nd bake	
Dry-Out Time	5min	
Low Temperature	600°C	1112°F
Start Vacuum	600°C	1112°F
Heat Rate	65°C /min	117°F/min
Vacuum Level	96kPa ¹	
Release Vacuum	850°C	1562°F
High Temperature	900°C	1652°F
Hold Time (in the air)	1min	
Cool Time	4min	

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)

Programming of the General Pressing Parameters

Table 8

Start Temperature		700°C	1292°F
Heat Rate		60°C/min	108°F/min
Vacuum Hold Time (to end of the press)	Small ring 1Ingot	19min	19min
	Large ring 1Ingot	25min	25min
	Large ring 2Ingots	26min	26min
High Temperature	Small ring 1Ingot	1045°C	1913°F
	Large ring 1Ingot	1065	1949°F
	Large ring 2Ingots	1065	1949°F
Vacuum Level		Full	Full
Hold Time	Small ring 1Ingot	15min	15min
	Large ring 1Ingot	20min	20min
	Large ring 2Ingots	20min	20min
Press Temperature	Small ring 1Ingot	1045°C	1913°F
	Large ring 1Ingot	1065	1949°F
	Large ring 2Ingots	1065	1949°F
Press Time	Small ring 1Ingot	4min	4min
	Large ring 1Ingot	5min	5min
	Large ring 2Ingots	6min	6min
Pressure Level		5bar	5bar
Cool Time		0min	0min

Small Ring Size= wt.100g Large Ring Size= wt.200g

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.

Press Parameters for the EP500/600 (IVOCLAR)

Table 9 Pressing in a Small ring 1Ingot Ring Size= wt.100g

B	t	T	H	V1	V2	Pressure	N
700°C	60°C	1045°C	15min	700°C	1045°C	5bar	-
1292°F	108°F	1913°F	15min	1292°F	1913°F	5bar	-

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

B	t	T	H	V1	V2	Pressure	N
700°C	60°C	1065°C	20min	700°C	1065°C	5bar	-
1292°F	108°F	1949°F	20min	1292°F	1949°F	5bar	-

Press Parameters for the Multimat Touch & Press (Dentsply)

Table 10 Pressing in a Small ring 1Ingot Ring Size= wt.100g

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

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

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

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

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

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.

Press Parameters for the Pro-Press 100 (Whip Mix IntraTech)

Table 11 Pressing in a Small ring 1Ingot Ring Size= wt.100g

Entry temp	Vacuum Level	Heat Rate	Final Temp	Hold Time	Press Time (Note)	Cool Time	Pressure
700°C 1292°F	Full Full	60°C/m 108°F/m	1045°C 1913°F	15min 15min	4min 4min	0.2min 0.2min	4.25bar 4.25bar

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

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

Entry temp	Vacuum Level	Heat Rate	Final Temp	Hold Time	Press Time (Note)	Cool Time	Pressure
700°C 1292°F	Full Full	60°C/m 108°F/m	1065°C 1949°F	20min 20min	5min 5min	0.2min 0.2min	4.25bar 4.25bar

Note: In case Special Function Button has been selected, enter “1min” for Re-Press time.

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

Entry temp	Vacuum Level	Heat Rate	Final Temp	Hold Time	Press Time (Note)	Cool Time	Pressure
700°C 1292°F	Full Full	60°C 108°F	1065°C 1949°F	20min 20min	6min 6min	0.2min 0.2min	4.25bar 4.25bar

Note: In case Special Function Button has been selected, enter “2min” 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.



【REMARKS ON SAFETY】

- Work in a well-ventilated room during mixing and firing investment.
- Investment and ceramic material contains Silica. Avoid inhaling the dust. Use a dust collector and an approved dust mask. Over exposures may cause delayed lung injury.
- Avoid 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.
- Avoid eye contact with all CZR PRESS liquids. In case of contact with eyes, flush eyes with copious amounts of water and consult an eye-doctor.
- Do not touch items heated by the furnace with your bare hand.
- Keep IS Liquid and ES Liquid away from flames and high temperatures. They are flammable.
- Ceramic Ingot containers are made of glass. Be careful in handling them.
- Some people are sensitive to skin contact. Wear rubber gloves to protect your skin.
- Avoid ingesting. Keep out of the reach of children.
- This material is for dental application only. Do not use for any purpose not specified in the instruction manual.