

Noritake

CERABIEN



CE 0120

Noritake

Sold by
Noritake Dental Supply Co., Limited
320-3 Higashiyama, Miyoshi-cho, Nishikamo-gun, Aichi, 470-0293 Japan
Phone +81-561-32-8953 Fax +81-561-32-8976

Manufactured by
Noritake Kizai Co., LTD.
3-1-36 Noritake-shinmachi, Nishi-ku, Nagoya, 451-8501 Japan

<http://www.noritake-dental.co.jp>

**TECHNICAL
INSTRUCTIONS**



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



All-Ceramic crowns using zirconia frameworks with Cerabien ZR porcelain

Distinctive Features

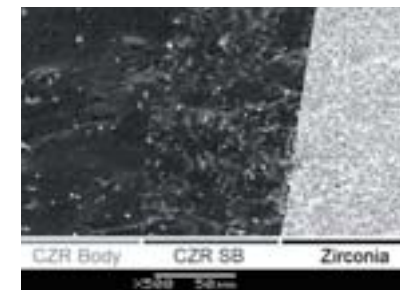
1 Replication of the natural tooth shades

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.



2 Excellent compatibility and bonding with zirconia frameworks



3 Exceptional Handling Characteristics

4 Ideal stability with outstanding resistance to fractures and chipping

● Coefficient of Thermal Expansion (50—500°C 10⁻⁶ 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.



● Full Kit

Shade Base (18 shades) 10g, 50g

Shade Base Porcelain is the first layer. It forms both the foundation of the shade and increases bonding strength with the Zirconia framework material.

SBA ₁	SBA ₂	SBA ₃	SBA _{3.5}	SBA ₄	SBNW ₀	SBNW _{0.5}
SBB ₁	SBB ₂	SBB ₃		SBB ₄		
SBC ₁	SBC ₂	SBC ₃		SBC ₄		
	SBD ₂	SBD ₃		SBD ₄		

Body (18 shades) 10g, 50g

A ₁ B	A ₂ B	A ₃ B	A _{3.5} B	A ₄ B	NW ₀ B	NW _{0.5} B
B ₁ B	B ₂ B	B ₃ B		B ₄ B		
C ₁ B	C ₂ B	C ₃ B		C ₄ B		
	D ₂ B	D ₃ B		D ₄ B		

Enamel (3 shades) 10g, 50g

E ₁	E ₂	E ₃
----------------	----------------	----------------

Cervical (4 shades) 10g, 50g

CV-1	CV-2	CV-3	CV-4
------	------	------	------

Translucent (4 shades) 10g, 50g

Using the convention that "A>B" means "A is more translucent than B", we express the relative translucency as follows: T_x>T₀>T₁>T₂

T _x	T ₀	T ₁	T ₂
----------------	----------------	----------------	----------------

Modifier (14 shades) 10g, 50g

Modifier can be applied, mixed with Body, Enamel, Translucent or used by itself. Use the same baking schedule as for Body, Enamel and Translucent.

White	Gray	Blue	Yellow	Light Orange	Orange	Brown
Pink	Dark Pink	Coral Pink	Mamelon-1	Mamelon-2	Light Tissue	Dark Tissue

Add-on (2 shades) 10g, 50g

Adjustment of contacts and minor corrections can be done with Add-on porcelain after final contouring, at the same time as the glaze.

AD-T	Enamel and Translucent layer	Over build-up of Add-on may lead to excessive whiteness after glazing. If a large addition is needed, build-up with Body, Enamel, Translucent and bake it again under vacuum.
AD-B	Body layer	

FULL KIT

SHADE BASE	10g	18 colors
BODY	10g	18 colors
ENAMEL	10g	3 colors
TRANSLUCENT	10g	4 colors
CERVICAL	10g	4 colors
MODIFIER	10g	14 colors
ADD-ON	10g	2 colors
COLOR COMBINATION TABLE	1 piece	
TECHNICAL INSTRUCTIONS	1 copy	



● NP Shade (8 shades) 10g, 50g

NP Shade is developed to create two Noritake original shades (NP1.5 & NP2.5). These shades are often seen in natural teeth.

NP1.5 : The chroma is between A1 and A2 shades - the hue corresponds to the slightly reddish shades.

NP2.5 : The chroma is between A2 and A3 shades - the hue corresponds to the slightly reddish shades.



NP SHADE

SHADE BASE	10g	2 colors
OPACIOUS BODY	10g	2 colors
BODY	10g	2 colors
MARGIN	10g	2 colors



● Opacious Body (19 shades) 10g, 50g

Opacious Body can be used to increase chroma and to control translucency.

Applications

- For anterior cases in which the preparation does not allow for proper thickness of porcelain, opacious body can eliminate the halo effect.
- For cases in which the thickness varies
 - For preventing excessive translucency on the tissue side of pontics where porcelain usually becomes quite thick.
 - For achieving appropriate translucency in multiple-unit cases in which there is a lot of variation in porcelain thickness.

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
OB White	OB Orange	OB Pale Pink		

OB Pale Pink : Used for discolored teeth

OPACIOUS BODY KIT

BASIC COLOR	10g	16 colors
SPECIAL COLOR	10g	3 colors



● Margin Porcelain (19 shades) 10g only

Margin Porcelain was developed to be used with zirconia frameworks and to eliminate high value at the margin. In addition to creating a porcelain margin, it can also be used repair a chip in the zirconia framework.

Features

i) Shade Assortment

Margin Porcelain Kit contains 12 basic shades, 2 NW shades, 3 Modifiers, 1 Retouching Powder and 1 Dilution Powder. Due to its minimal shrinkage, it eases the fabrication of porcelain margins. The kit also contains a low-fusing retouching porcelain (MRP) for final precision fit of the porcelain margin at final glaze. The firing schedule of MRP is on page 13.

ii) Replication of Natural Cervicals

The Margin Porcelain has the appropriate translucency, and the high value of the coping is eliminated when the margin is prepared supra-gingivally, resulting in a very natural appearance.

iii) Superior Marginal Fits

Due to the low shrinkage of the margin porcelain, repeated firings are not necessary to achieve a perfect fit. In addition, the margin remains sharp and precise during subsequent dentin/enamel bakes.

iv) Stable Thermal Expansion

In addition to having a thermal expansion (CTE) that is compatible to that of the framework and the body porcelain, it is also highly stable during repeated firings when doing individual custom bakes on a long-span bridge.

v) Smooth External Surface

The easily glazed, polishable surface is highly resistant to plaque deposits which are detrimental to the gingiva.

vi) Correction of framework

Margin porcelain can also be used to successfully repair small chips in the framework.

MA ₁	MA ₂	MA ₃	MA _{3.5}	MA ₄	MNW ₀	MNW _{0.5}
※	MB ₂	MB ₃		MB ₄		
※	MC ₂	※		MC ₄		
	※	MD ₃		MD ₄		
M Clear	M Orange	M Peach	MDL	MRP		

To acquire shades of B₁, C₁, C₃, D₂ use B₂, C₂, C₄, D₃ and dilution Powder (MDL). The proportion is 1:1 Retouching Powder (MRP) can be used after glazing.

MARGIN KIT

BASIC COLOR	10g	14 colors
SPECIAL COLOR	10g	3 colors
DILUTION POWDER (MDL)	10g	1 color
RETOUCHING POWDER (MRP)	10g	1 color



Application on zirconia frameworks

● Making a framework suitable for Margin Porcelain application

Margin application increases the translucency of the cervical area considerably. A much more natural appearance can be achieved. Also, it may be used to make repairs on the margin area of the framework.

The preparation must be chamfer-type with a well-rounded internal angle. Do not attempt to make a framework for a shoulder preparation; the zirconia scanner cannot read a sharp internal angle. The scanner will read the corner as if it were rounded, leaving a gap between the framework and the tooth. If one were to put margin porcelain on such a framework, the fit will be poor.

● Laboratory Methods for zirconia frameworks

Technique I. Cutback with a diamond bur.

Use Noritake MEISTER POINT (DP-02, SD-61) to reduce the margin of the framework. Use water to avoid excess temperatures. Sandblast with 50 micron alumina at 0.3 MPa (40 psi). Caution: excess pressure, coarse diamond burs and high speed grinding all lead to chipping and fractures.



In this case, making the zirconia framework is the same as in the no-margin-porcelain case.

Technique II. Scan a reduced duplicate die.

Take an impression of the die and make a die stone duplicate. To have a framework that leaves enough space for the margin porcelain, trim the duplicate die margin excessively to create a new "false" margin line. (The "false" margin should be shifted radially inward by an amount equal to the desired thickness of margin porcelain.) Scanning the "false" margin die gives you a framework "already cut-back" for the margin porcelain.

In this case, the Scanning Technician follows the same procedures as in the no-margin-porcelain case.

Technique III. Make a reduced coping from a normal die by data manipulation.

Scan the normally trimmed die as usual. First choose the margin line as usual. Then adjust the margin line in the area in which margin porcelain is to be applied by running PREPARATIONS/SET MARGIN LINE again. In that area, mark a new margin line that leaves enough space for the desired thickness of margin porcelain.

In this case, the responsibility for the framework reduction lies entirely with the Scanning Technician.

● Luster Porcelain (8 shades) 10g, 50g

Features

Luster Porcelain reproduces natural enamel in both surface features and color.

- Luster Porcelain reproduces the fine surface structure and luster of natural teeth.
- A unique combination of fine surface particles produces a selective reflection of light that results in the same opalescence seen in natural teeth.
- Luster Porcelain has transparent, bright, vivid colors, therefore darkening at the incisal edge or at the occlusal surface will not occur.
- Noritake has thoroughly studied color changes in natural teeth caused by aging. Luster Porcelain features a complete line of colors consistent with these changes.

Applications

LT₀(Luster T₀)

Use mainly for a highly translucent incisal edge, and for the reproduction of teeth with highly transparent enamel that have shades dominated by their dentin.

LT₁(Luster T₁)

LT₁ is effective for achieving the brightness of natural tooth enamel. It is opalescent porcelain similar to T₁. [Build-up in the same way as shown on page 12.]

TBlue(Translucent Blue)

Use mainly at the incisal edge of juvenile's restoration to reproduce a pale blue, youthful transparency.

LT Natural(Luster Translucent Natural)

To increase incisal and proximal translucency for the elderly.

Creamy Enamel

Use mainly on the cusps and marginal ridges of posteriors. Use when desired for the mesio-distal ridges and proximal surfaces of anteriors.

Sun Bright

Use to reproduce the orange enamel-like color at the incisal edge seen in the middle-aged and elderly. Also, use to produce a crown with a deep orange or amber enamel-like color.

Incisal Aureola

Use to reproduce the "HALO EFFECT", which is due to an incisal edge that reflects all lights.

Creamy White

Use to achieve a dense, milky color. Also, to be mixed and used in combination with other Luster shades.

LT ₀	LT ₁	TBlue	LT Natural
Creamy Enamel	Sun Bright	Incisal Aureola	Creamy White

LUSTER KIT

BASIC COLOR	10g	4 colors
SPECIAL COLOR	10g	4 colors



● Stain

Using Internal Stain, it is possible to replicate many of the most intricate three-dimensional patterns of shade variation found in natural teeth.

External Stain reproduces the great variety of color shades observed on the surface of natural teeth.

Features

i) Outstanding Resistance to Bubbles

Internal Stain is specially formulated to have a similar coefficient of thermal expansion as Body, Enamel, and Translucent.

Internal Stain has outstanding resistance to bubbling and fractures.

External Stain has minimal risk of separation even after long term intraoral function.

ii) Assortment of Shades

The shades were carefully selected using a detailed examination of the colors in natural teeth. Accurate color reproduction can be easily obtained by applying Stains to the appropriate areas.

iii) Easy Reproduction of Shades

By applying internal stain, either for special effects or to increase chroma, shades can be easily reproduced like painting a picture.

iv) Controlling Reflectivity

By applying internal stain on the Zirconia and margin porcelain, the excessive reflectivity can be easily controlled, lowering value.

INTERNAL STAIN KIT

White	Incisal Blue 1	Incisal Blue 2	Mamelon Orange 1
Mamelon Orange 2	Cervical 1	Cervical 2	Cervical 3
Earth Brown	Reddish Brown	Salmon Pink	Red
A+	B+	C+	D+

16 Shades 3g each 1 Bright (Dilution Stain), 3g
1 IS Liquid, 10ml 1 IS Color Guide
1 Technical Instructions



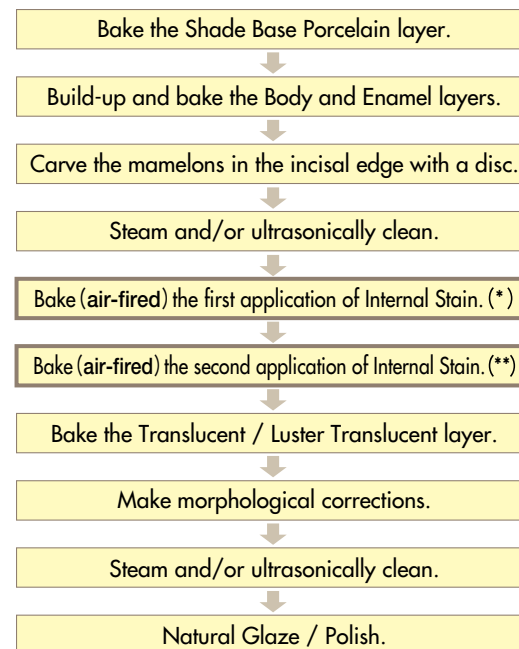
EXTERNAL STAIN KIT

Pure White	Gray	Black	Blue
Green 1	Green 2	Yellow	Orange 1
Orange 2	Cervical 1	Cervical 2	Cervical 3
Earth Brown	Reddish Brown	Salmon Pink	Pink
Red	A+	B+	C+
D+			

21 Shades 3g each 1 Glazing Powder, 10g
1 ES Liquid, 10ml 1 ES Color Guide
1 Technical Instructions



Operation Procedure of Internal Stain



* Stain the white bands, the cervical area and proximal region in a horizontal direction.

** Stain vertical check-lines if any.

Precautionary Measures

- There is a risk of blackening when using the stain liquid of other manufacturers. It is very important to use Noritake CZR Stain Liquid exclusively.
- Internal Stain is made exclusively for internal staining. If additional external staining is required, we recommend CZR External Stain.
- Internal Stain liquid should not be mixed with water, use as is without diluting.
- After mixing Internal Stain with Internal Stain 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.
- If 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.
- Internal Stain Liquid contains ingredients that dissolve some plastics. Please handle with extreme caution in the presence of plastic materials.



1. Shaping of Zirconia Framework

Check the fit of the framework. Adjust the finishing line or the thickness in the margin area with Noritake MEISTER POINT DP-02 or SD-61.

2. Framework Adjustment for Margin Porcelain Build-up

Now that the margin area is properly adjusted, the framework is ready for the build-up of Margin Porcelain. Refer to "Laboratory Methods for Zirconia Frameworks" (See Page 6).

3. Cleaning the framework

Clean the framework ultrasonically in acetone solution for 10 minutes. Do not contaminate the surface with oil by touching it with bare fingers.

4. Application of Porcelain Separator

After cleaning the framework, apply Noritake MAGIC SEPARATOR to the margin area of the die.



MAGIC SEPARATOR

5. Build-up of Margin Porcelain

Mix Margin Porcelain with Noritake MAGIC FORMER. If the build-up is too thick, this area tends to look artificial. Build-up the Margin Porcelain in a triangular structure.



MAGIC FORMER



6. Fabrication of Margin Porcelain

Bake Margin Porcelain according to the Baking Schedule on page 13. If 2nd bake is necessary, add additional margin porcelain and bake according to schedule.



7. Application and baking of 1st Shade Base Porcelain

To increase the strength between zirconia framework and CZR, apply a very fine thin layer of Shade Base Porcelain mixed with NORITAKE MEISTER LIQUID. After drying the Shade Base Porcelain at the muffle entrance for 5 minutes, bake it from 600°C (1112°F) up to 930°C (1706°F) under vacuum, release vacuum at 930°C (1706°F) and hold for a minute in the air.



8. Application of 2nd Shade Base Porcelain

Apply the 2nd Shade Base Porcelain to a thickness of 0.2mm. Due to the low viscosity of Shade Base Porcelain, it is easily applied with an instrument.



9. 2nd baking of Shade Base

Repeat 1st Shade Base baking. Release vacuum at high temperature of 930°C (1706°F) hold for a minute in the air.



10. Body / Cervical Build-up

Proceed with Body Porcelain build-up and as needed Body and Cervical Porcelains at the neck. Refer to mixing ratio on page 13.



11. Cut Back

Cut back the proximal and labial surfaces and carve the mamelon structure. The minimum thickness of Body Porcelain is 0.8mm.



12. Build-up of Enamel Porcelain

Be careful not to extend too far into the middle third, as it could tend to lower the value.



13. Build-up of Translucent Porcelain

Overbuild by approximately 10 percent, thereby allowing for shrinkage with room to overlay with luster translucent porcelain after having done internal stain if so desired. If needed, remove porcelain from inside of framework with a dry brush.



14. Baking of Body/Enamel/Luster Translucent Porcelain

Bake according to the recommended temperatures on the baking schedule, noting that baked porcelain should have a definite sheen. If porcelain does not have a definite sheen, raise the temperature to get the desired surface texture and refire.



15. Morphological Correction, Glazing and Final Polish

Make the morphological changes as needed. Do final shape, contour and surface texture using Meister Cones to achieve appropriate surface texture, steam cleaning before natural glaze. For final polish, use rubber wheels, felt wheel and diamond polishing paste. Due to the translucency of the zirconia framework, you can fabricate an all ceramic crown which more closely mimics natural dentition than a standard porcelain fused to metal crown.

● **Cerabien Forming Liquid (100ml)**
Specially formulated for CZR and CERABIEN.



● **Noritake Meister Liquid (100ml)**
Keep porcelain moist, which makes applying Shade Base easy.



● **Noritake Magic Set**
Magic Separator :
Pen-type porcelain separator.
Magic Former :
Dry-and-set type Margin Porcelain forming liquid.



Color Combination Table

Shade	A1	A2	A3	A3.5	A4	B1	B2	B3	B4	C1	C2	C3	C4	D2	D3	D4	NW0	NW0.5	NP1.5	NP2.5
Shade Base	SBA1	SBA2	SBA3	SBA3.5	SBA4	SBB1	SBB2	SBB3	SBB4	SBC1	SBC2	SBC3	SBC4	SBD2	SBD3	SBD4	SBNW0	SBNW0.5	SBNP1.5	SBNP2.5
Margin	MA1	MA2	MA3	MA3.5	MA4	MB1	MB2	MB3	MB4	MC1	MC2	MC3	MC4	MD2	MD3	MD4	MNW0	MNW0.5	MNP1.5	MNP2.5
Opacious Body	OBA1	OBA2	OBA3	OBA3.5	OBA4	OB1	OB2	OB3	OB4	OC1	OC2	OC3	OC4	OD2	OD3	OD4	-	-	OBNP1.5	OBNP2.5
Body	A1B	A2B	A3B	A3.5B	A4B	B1B	B2B	B3B	B4B	C1B	C2B	C3B	C4B	D2B	D3B	D4B	NW0B	NW0.5B	NP1.5B	NP2.5B
Cervical	-	CV-1	CV-1	CV-1	CV-1	-	CV-2	CV-2	CV-2	-	CV-3	CV-3	CV-3	CV-4	CV-4	CV-4	-	-	-	CV-1
Enamel	E2	E2	E3	E3	E3	E1	E2	E3	E3	E2	E3	E3	E3	E2	E3	E3	E1	E1	E2	E2

※1.To acquire shades of B1,C1,C3,D2 use B2,C2,C4,D3 and dilution powder (MDL) . The proportion is 1:1.

※2.Mix Body with Cervical at the ratio of 2:1 ※3.Mix Body with Cervical at the ratio of 1:1

Baking Schedule for CZR

	Unit	1	2	3※2	4	5	6	7	8
Dry-Out Time	min.	5	5	7-10	5	7	5	5	5
Low Temperature	°C	600	600	600	600	600	600	600	600
	°F	1112	1112	1112	1112	1112	1112	1112	1112
Start Vacuum	°C	600	600	600	—	600	—	—	—
	°F	1112	1112	1112	—	1112	—	—	—
Heat Rate	°C/min.	50	45	45	50	45	50	50	45
	°F/min.	90	81	81	90	81	90	90	81
Vacuum Level	kPa※1	96	96	96	0	96	0	0	0
Release Vacuum	°C	1000	930	930-940	—	930	—	—	—
	°F	1832	1706	1706-1724	—	1706	—	—	—
Hold Time	with vacuum	min.	1	—	—	—	—	—	—
	in the air	min.	1	1	1	—	0.5	0.5	—
High Temperature	°C	1000	930	930-940	900	930	930	930	880
	°F	1832	1706	1706-1724	1652	1706	1706	1706	1616
Cool Time	min.	4	4	4	4	4	4	4	4

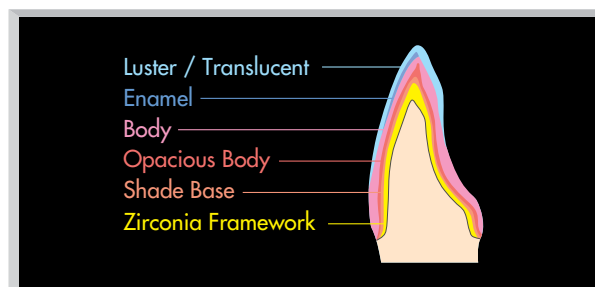
1. Margin Porcelain 1st and 2nd Bake
2. Shade Base Porcelain 1st and 2nd Bake
3. Body and Enamel (and Translucent) Bake
4. Internal Live Stain 1st and 2nd Bake

5. Minor Adjustments
6. Self Glaze
7. Glazing Powder and External Stain Bake
8. MRP and Add-on Bake

※1. 96kPa=72cmHg (29inchesHg)

※2.For baking bigger number of crowns, set the high temperature higher and dry-out time longer.

Application of CZR



Precautions for Handling Cerabien ZR

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

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

Notes on Safety

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

All products mentioned in this manual except Noritake Magic Set, CERABIEN FORMING LIQUID, NORITAKE MEISTER LIQUID and NORITAKE MEISTER POINT are part of the Cerabien ZR (CZR) system and are covered by its registered trademark.

SYMBOLS USED IN A LABEL

SYMBOL	MEANING
	MANUFACTURER
	USE BY
	BATCH CODE
	CAUTION, CONSULT ACCOMPANYING DOCUMENTS. ATTENTION, SEE INSTRUCTIONS FOR USE.
	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

Name : EMERGO EUROPE
Address : Molenstraat 15, 2513 BH,
The Hague, The Netherlands