

# **KATANA™ Zirconia**

**YML** *Yttria multi-layered*

TECHNICAL GUIDE



# EXCELLENT AESTHETIC POTENTIAL FOR ZIRCONIA DENTAL RESTORATIONS

With an innovative concept of combining high translucency and strength, the best features of the well-known KATANA™ series have been combined in one disc, KATANA™ Zirconia YML. From highly esthetic anterior restorations that require high translucency, up to long-span bridges that require high strength, one single disc is all you need now.

This technical guide explains key aspects helping to achieve the most aesthetic restorations with KATANA™ Zirconia YML.



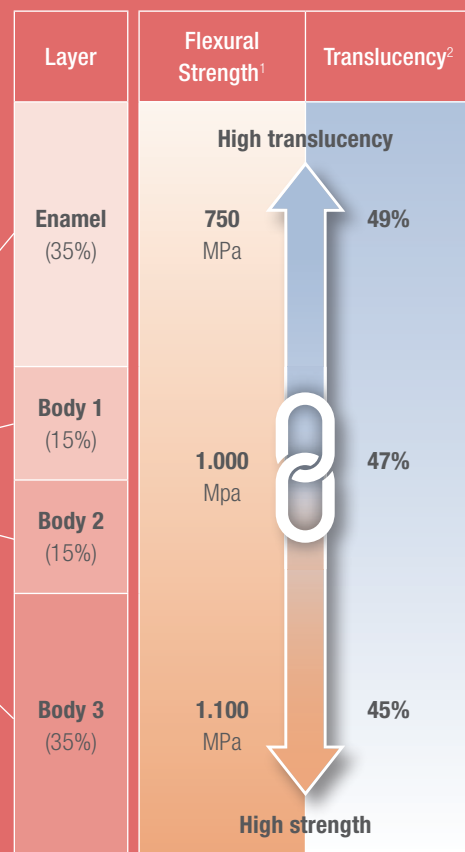
Image of gradation

Measurement condition: evaluated by base material (white color).

1 According to ISO 6872: 2015, Sample size: 3 x 4 x 40 mm,

2 All light transmittance, illuminant: D65, Thickness of sample: 1.0 mm

Data source: Kuraray Noritake Dental Inc. The numerical value varies according to a condition.



(..%) the thickness of each layer in a disc in %

## RESTORATION PROCESS



1

# DISC SELECTION SHADE & THICKNESS

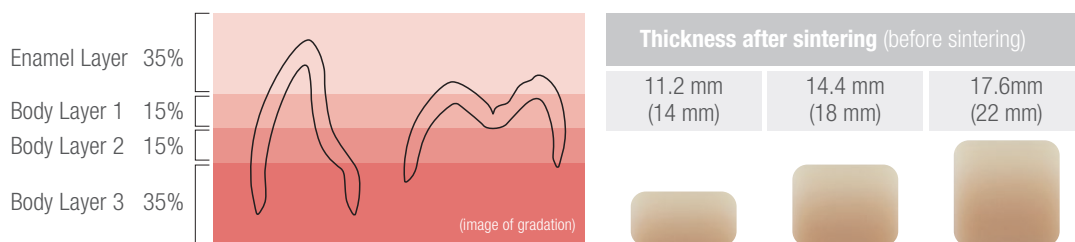
Select the target shade and the correct disc thickness to achieve an appropriate gradation between crown length, enamel and body (dentin).

## SHADE / THICKNESS SELECTION

SERIES	SHADE								SIZE (Diameter/Thickness)
<b>YML</b>	<b>A1</b>	<b>A2</b>	<b>A3</b>	<b>A3.5</b>	<b>A4</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	98.5 mm/14, 18, 22 mm
	<b>C1</b>	<b>C2</b>	<b>C3</b>	<b>D2</b>	<b>D3</b>	<b>NW</b>			

KATANA YML should be set for glazing. For polishing, it tends to become darker. Therefore, in this case, select one level lighter than the target shade color.

## GRADATION IMAGE AND THICKNESS



To fabricate an anterior crown of 11 mm in length, we recommend to use an 18 mm disc with a better color gradation for restorations (14.4 mm after sintering), to fabricating a 7 mm posterior crown, use the 14 mm disc (11.2 mm after sintering) to cover and exploit the enamel layer up to the body (dentin) layer in the best possible way.

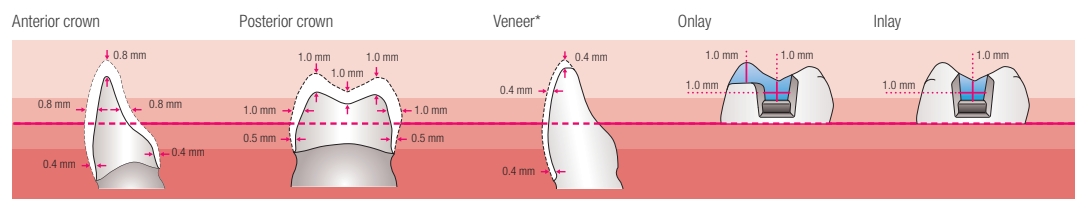
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# FRAMEWORK DESIGN AND MILLING PROCESS

## ANTERIOR CROWN, VENEER, POSTERIOR CROWN, INLAY, ONLAY

For a successful restoration, it is essential to observe the minimum wall thicknesses\*. Please keep in mind the following:

### MINIMUM WALL THICKNESS OF ZIRCONIA



\*1 The thickness specifications apply to full zirconia restorations. The thickness of build-up porcelain is not included.

\*2 The minimum wall thicknesses apply to full zirconia restoration or to frame-work for build-up porcelain restoration. In these cases, 0.4 mm (anterior) or 0.5 mm (posterior) should be kept for the area located in the bottom (lower) half of the disc.

\*3 If full zirconia veneer restoration is used for combination with the porcelain, 0.8 mm or more should be kept for the area located in the upper half of the disc.

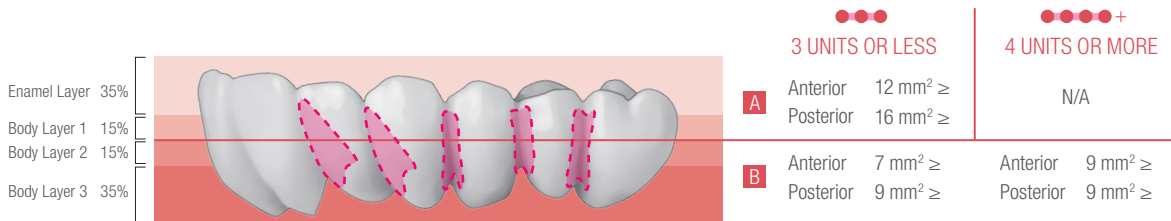
## GUIDELINE OF CONNECTOR CROSS-SECTION

Please observe the following guidelines of applicable cross-section wall thickness:

LOCATION & INDICATION	CONNECTOR CROSS SECTION*
Anterior 2-3 units	7 mm <sup>2</sup> or more
Anterior 4 units or more	9 mm <sup>2</sup> or more
Posterior 2-3 units	9 mm <sup>2</sup> or more
Posterior 4 units or more	9 mm <sup>2</sup> or more

Minimum size if more than half of the cross-section areas are in the bottom half of disc (up to 50% height from the bottom [lower]).

## RELATION BETWEEN SETTING POSITION AND CROSS-SECTION



**3 UNITS OR LESS** Connector cross-section area can be placed in any layer.

**A** The maximum number of pontics is one. Not suitable for a cantilevered bridge.

**4 UNITS OR MORE** At least 50% of the connector cross section should be positioned in the bottom (lower) half of the disc.

**B** The maximum number of pontics between two abutments (teeth) should not exceed two.

For cantilever bridge, keep the number of pontics at one. In this case, the connector cross-section must be at least 12 mm<sup>2</sup>.

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# SINTERING AND ADJUSTING

Please follow the sintering schedule. After the sintering process, corrections of the framework and the marginal areas can be made.

	Temp.1	Rate of Temp. Increase °C/°F min	Temp.2	Rate of Temp. Increase °C/°F min	Temp.3	Rate of Temp. Increase °C/°F min	Temp.4	Hold Time	Rate of Temp. Increase °C/°F min	Temp.5
<b>54-minute</b>	Room Temp.	120°C/216°F	1450°C/2642°F	10°C/18°F	1600°C/2912°F	—	—	20 min.	-120°C/216°F	800°C/1472°F
<b>90-minute</b>	Room Temp.	50°C/90°F	1400°C/2552°F	4°C/7°F	1500°C/2732°F	10°C/18°F	1560°C/2840°F	16 min.	-50°C/90°F	800°C/1472°F
<b>7-hour</b>	Room Temp.	10°C/18°F	1550°C/2822°F	—	—	—	—	2-hour	-10°C/18°F	RT.

The above sintering recommendations represent only a guideline; depending on each individual furnace and condition, some adjustments might be necessary. If the 54 or 90-minute sintering program is not programmable in your furnace, it is not possible to set the furnace according to one of these schedules.

- 1 Be sure that material is fully cooled to avoid cracking.
- 2 Do not use excess force or work under running water for inside and/or margin adjustment of the sintered restoration.

# FINISHING METHODS

## COMPATIBLE MATERIALS

**CERABIEN™ ZR**  
**FC Paste Stain,**  
 FL Glaze, VC Glaze,  
 External Stain, Internal Stain,  
 Luster and other porcelains

**CZR Press LF**  
 LF External Stain,  
 LF Internal Stain,  
 LF Luster, etc.

Do not mix CERABIEN™ ZR and CZR Press LF powder for build-up.  
 Do not use CZR Press (H-ingot, L-ingot, Esthetic White Ingot)

## TECHNICAL POINTS OF FINISHING

- 1 Polish the contact surface with opposing tooth and clean the restoration with an ultrasonic cleaner for maximum benefit.
- 2 Always use a standing support pin for glazing, staining and baking porcelain. The baking schedules vary depending on the product, therefore please refer to the corresponding technical instructions.
- 3 Do not continue fabricate until cool down to avoid possible cracks.

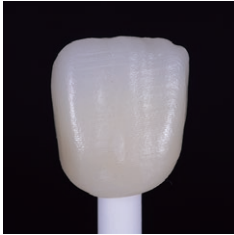


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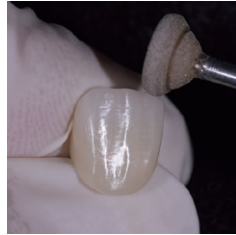
# GLAZING

With an integrated Translucency, Color and Strength gradient, KATANA™ Zirconia YML is designed to achieve highly aesthetic result already by using a single glazing technique.

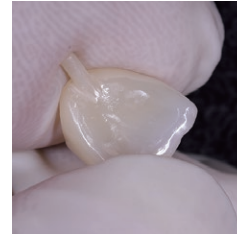
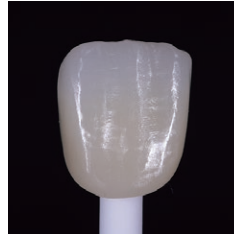
In case of additional color adjustment, characterization or individualization are desired, the unique CERABIEN™ ZR FC Paste Stain can be used to achieve final aesthetic result according to your needs.



After sintering.



Create surface details as needed and smoothen of surface (pre-polishing).



The lingual surfaces contacting the opposing teeth should be polished using PEARL SURFACE™ Z (polishing paste) and a brush.



Application of FC Paste Stain Clear Glaze or Glaze.



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# GLAZING AND STAINING

## GLAZING



After bake Glaze.

## STAINING



CERABIEN™ ZR FC Paste Stain.



After bake CERABIEN™ ZR FC Paste Stain.

# BAKING SCHEDULE

## FC PASTE STAIN GLAZE AND STAIN BAKING SCHEDULE (PRODUCT USED AS ZIRCONIA)

Product	Dry-out Time min.	Low Temperature °C/°F	Start Vacuum °C/°F	Heat Rate °C/°F min.	Vacuum Level kPa	Release Vacuum °C/°F	Hold Time in the air min.	High Temperature °C/°F	Cooling Time min.
<b>CERABIEN™ ZR</b> FC Paste Stain Clear Glaze, Glaze Grayish Blue, A+, ect.	5	500°C/932°F	600°C/1112°F	45°C/81°F	96	750°C/1382°F	1	750°C/1382°F	4

## CERABIEN™ ZR BAKING SCHEDULE

Baking Schedule	Dry-out Time min.	Low Temperature °C/°F	Start Vacuum °C/°F	Heat Rate °C/°F min.	Vacuum Level kPa	Release Vacuum °C/°F	Hold Time in the air min.	High Temperature °C/°F	Cooling Time min.
Wash Baking	5	600°C/1112°F	600°C/1112°F	45°C/81°F	96	930°C/1706°F	1	930°C/1706°F	4
Internal Stain*1 (After wash baking)	5	600°C/1112°F	-	50°C/90°F	-	-	-	900°C/1652°F	4
Translucent Luster, etc.	7	600°C/1112°F	600°C/1112°F	45°C/81°F	96	930°C/1706°F	1	930°C/1706°F	4
External Stain Glaze/ Blue, A+, etc.	5	600°C/1112°F	-	45°C/81°F	-	-	-	930°C/1706°F	4
FC Paste Stain*2 Glaze/ Blue, A+, etc.	5	600°C/1112°F	600°C/1112°F	45°C/81°F	96	-	-	910°C/1670°F	4

\*1 If the internal stain is baked directly on the zirconia, it is baked on the same schedule as Wash Baking.

\*2 Product used as CERABIEN™ ZR porcelain.

## CZR PRESS LF BAKING SCHEDULE

Baking Schedule	Dry-out Time min.	Low Temperature °C/°F	Start Vacuum °C/°F	Heat Rate °C/°F min.	Vacuum Level kPa	Release Vacuum °C/°F	Hold Time in the air min.	High Temperature °C/°F	Cooling Time min.
Wash Baking	5	600°C/1112°F	600°C/1112°F	45°C/81°F	96	840°C/1544°F	1	840°C/1544°F	4
Internal Stain*1 (After wash baking)	5	600°C/1112°F	-	45°C/81°F	-	-	-	840°C/1544°F	4
Translucent Luster, etc.	7	600°C/1112°F	600°C/1112°F	45°C/81°F	96	840°C/1544°F	1	840°C/1544°F	4
External Stain Glaze/ Blue, A+, etc.	5	600°C/1112°F	-	45°C/81°F	-	-	0.5	840°C/1544°F	4
FC Paste Stain*2 Glaze/ Blue, A+, etc.	5	600°C/1112°F	600°C/1112°F	45°C/81°F	96	-	-	840°C/1544°F	4

\*1 If the internal stain is baked directly on the zirconia, it is baked on the same schedule as Wash Baking.

\*2 Product used as CZR PRESS LF porcelain.

## YOUR CONTACT

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- Before using this product, be sure to read the Instructions for Use supplied with the product.
- The specifications and appearance of the product are subject to change without notice.
- Printed color can be slightly different from actual color.
- Read the IFU (Instructions For Use) before the procedure.

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