

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.

Layer	Flexural Strength ¹	Translucency ²
Enamel (35%)	750 MPa	49%
Body 1 (15%)	1.000 Mpa	47%
Body 2 (15%)		
Body 3 (35%)	1.100 MPa	45%

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

RESTORATION PROCESS



1

DISC SELECTION SHADE & THICKNESS

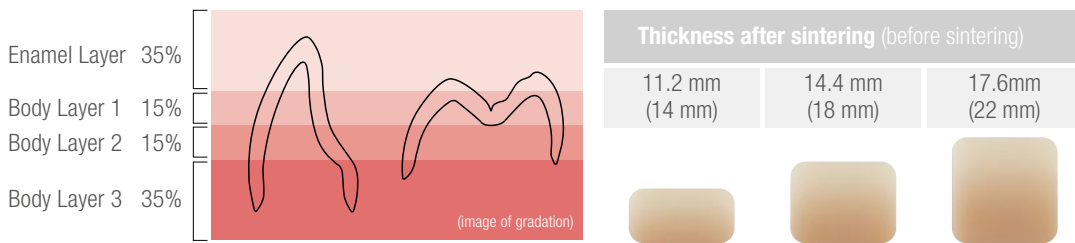
Select the target shade and the correct disc thickness to achieve an appropriate gradation between crown length, enamel and body (dentin).

SHADE / THICKNESS SELECTION

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

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.

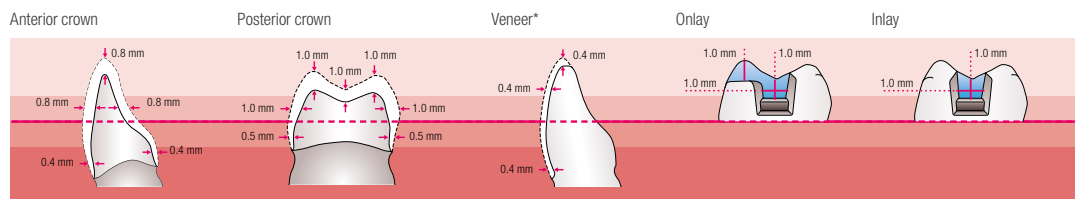
2

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.

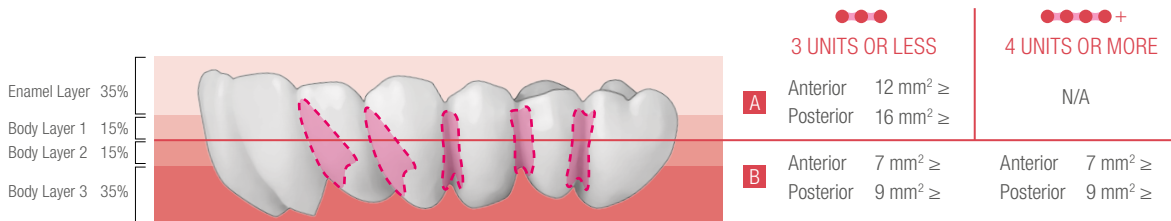
GUIDELINE OF CONNECTOR CROSS-SECTION

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

LOCATION & INDICATION	CONNECTOR CROSS SECTION*
Anterior 2-3 units	7 mm ² or more
Anterior 4 units or more	9 mm ² or more
Posterior 2-3 units	9 mm ² or more
Posterior 4 units or more	9 mm ² 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 mm².

3

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
54-minute	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
90-minute	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
7-hour	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.



4-1

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.

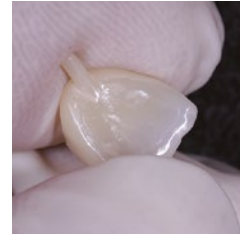
In case of additional color adjustment, characterization or individualization are desired, the unique CERABIEN™ ZR FC Paste Stain can be used to achieve final aesthetic result according to your needs.



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

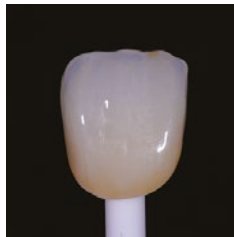


After bake Glaze.

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.
CERABIEN™ ZR 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.

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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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