

# FREQUENTLY ASKED QUESTIONS

**KATANA™ Zirconia YML**



## How do the mechanical properties of the KATANA™ Zirconia series differ from each other?

The existing KATANA™ Zirconia multi-layered materials (KATANA™ Zirconia UTML/ STML/HTML) have a color gradation, while the base material of the respective type is the same for all layers. The strength and translucency are the same for all layers of the respective type.

KATANA™ Zirconia YML is different in this regard. It is the latest KATANA™ multi-layered disc with a balanced combination of color/translucency and flexural strength gradation. Please refer to chart below, for the overview of the mechanical properties and translucency levels of each type of KATANA™ disc.

### Gradation map and physical properties of KATANA™ Zirconia YML

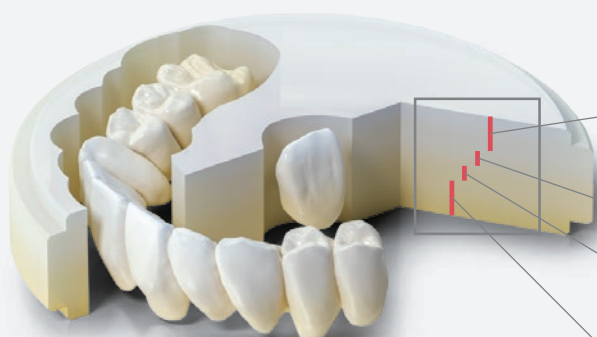


Image of gradation

Measurement condition: Evaluated by base material (white color).  
1 According to ISO 6872: 2015, Sample size: 3 x 4 x 40mm,  
2 All light transmittance, illuminant: D65, Thickness of sample: 1.0mm

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

| Layer                  | Flexural Strength <sup>1</sup> | Translucency <sup>2</sup> |
|------------------------|--------------------------------|---------------------------|
| <b>Enamel</b><br>(35%) | <b>750 MPa</b>                 | <b>49%</b>                |
| <b>Body 1</b><br>(15%) | <b>1.000 MPa</b>               | <b>47%</b>                |
| <b>Body 2</b><br>(15%) |                                |                           |
| <b>Body 3</b><br>(35%) | <b>1.100 MPa</b>               | <b>45%</b>                |

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

### Comparioson of physical properties of KATANA™ zirconia series

|             | Layer      | Flexural Strenght <sup>1</sup> | Translucency <sup>2</sup> |
|-------------|------------|--------------------------------|---------------------------|
| <b>UTML</b> | All layers | 550 MPa                        | 51%                       |
| <b>STML</b> | All layers | 750 MPa                        | 49%                       |
| <b>HTML</b> | All layers | 1100 MPa                       | 45%                       |
| <b>YML</b>  | Enamel     | 750 MPa                        | 49%                       |
|             | Body 1     | 1000 MPa                       | 47%                       |
|             | Body 2, 3  | 1100 MPa                       | 45%                       |

## What exactly does “All-In-One” mean?

“All-In-One” means all application range with one disc. KATANA™ Zirconia YML is characterized by a unique raw material combination of highly translucent zirconia with high strength, which are integrated together by an advanced manufacturing technology. As an “All-In-One” solution, KATANA™ Zirconia YML offers exceptional design flexibility, from long-span full-arch monolithic bridge restorations up to highly aesthetic anterior monolithic crown restorations.

## What are the recommended and indicated application areas for KATANA™ Zirconia YML?

From complicated full-arch restorations to highly aesthetic demanding anterior single-unit restorations, an exceptional design flexibility is available. In each of these cases, you can choose a monolithic, cut-back or framework design with the appropriate fabrication process, depending on your specific needs.



- ✓ Framework
- ✓ Long span bridge
- ✓ Anterior / posterior crown
- ✓ Inlay, onlay
- ✓ Laminate veneer

## Why is it possible to sinter KATANA™ Zirconia at such a high speed without compromising optical and mechanical properties?

KATANA™ Zirconia is characterized by the unique in-house production of zirconia raw materials. By using materials that Kuraray Noritake Dental Inc. has developed themselves specifically for the KATANA™ Zirconia series, completely different from those of other competitors, it is possible to realize high-speed sintering without compromising the aesthetic and mechanical properties.

## What shade selection is available for KATANA™ Zirconia YML and in which disc thicknesses and shapes are these available?

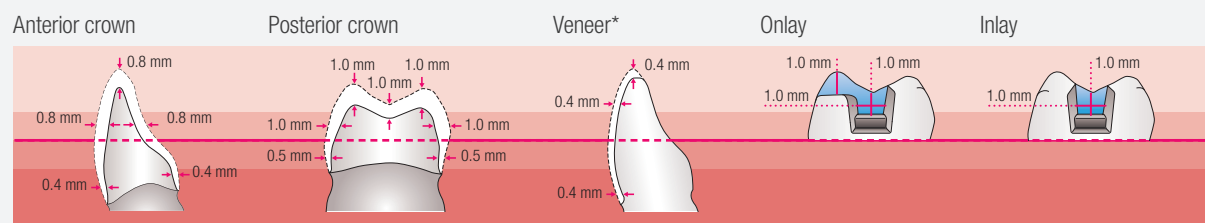
KATANA™ Zirconia YML is available in a shade selection of 14 shades, which are adapted to the VITA-classical A1-D4™ Shade Guide. Please refer to the following table overview for more information about shape and disc-thickness.

### 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 |    |    |                           |

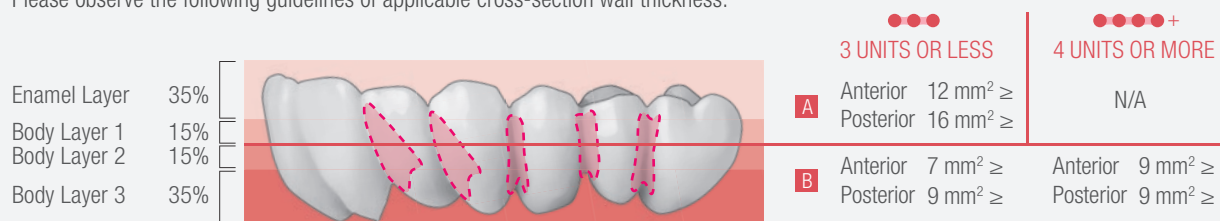
## What should be kept in mind when designing restorations with KATANA™ Zirconia YML?

Please observe the following guidelines of applicable minimum wall thickness:



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

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



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.

## What is the sintering schedule of KATANA™ Zirconia YML?

Please observe the following of sintering schedule:

|                   | Temp.1     | Rate of Temp. Increase<br>°C/°F min | Temp.2        | Rate of Temp. Increase<br>°C/°F min | Temp.3        | Rate of Temp. Increase<br>°C/°F min | Temp.4        | Hold Time | Rate of Temp. Increase<br>°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.

**Is it possible to speed sinter a KATANA™ Zirconia YML long span bridge?**

No, this is not possible. 54- or 90-minute sintering is only possible for up to a three-unit bridge restorations.

**How is the crystal distribution within KATANA™ Zirconia YML structured?**

The body layer has a higher content of tetragonal crystals, while the cubic content gradually increases towards the enamel layer.

**Which finalization methods are recommended for KATANA™ Zirconia YML?**

KATANA™ Zirconia YML can be finalized by glazing, staining or porcelain application. With an integrated translucency, color and strength gradient, KATANA™ Zirconia YML is designed to achieve highly aesthetic results by simply using the glazing technique. In case of additional color adjustments, characterizations or individualizations are desired, the unique CERABIEN™ ZR (CZR) FC Paste Stain can be used to achieve the final high aesthetic result according to your preferences.

**Is it also possible to finalize KATANA™ Zirconia YML restorations by simply polishing them after sintering?**

Of course, this is possible. For this purpose, the desired high-polished finishing can easily be achieved with the PEARL SURFACE™ Z (polishing paste). Please note that the shade of KATANA™ Zirconia YML should be pre-set for glazing, due to the fact that zirconia has a tendency to become darker during the polishing process. Therefore, select in advance one shade lighter than the target shade.

**Is it possible to wet mill KATANA™ Zirconia YML?**

It is generally not recommended to wet-mill KATANA™ Zirconia, because the desired aesthetic effect may not be achieved due to the possibility of contamination, which can reduce the translucency.

**After sintering KATANA™ Zirconia, white spots appeared on the restoration surface. What could be the reason for this?**

If a restoration is contaminated before sintering, it will cause white spots on the restoration during the sintering process. Causes for this are for example oily fingers, excessive purging with high air pressure, residuals of silicon point substance that has been applied to the pre-sintered zirconia during adjustment procedures, the use of scanning spray, or the insufficient removal of zirconia powder that has been created during the milling process/removal of sprue. Please take care not to contaminate the restoration.

**Is it possible to use coloring liquids from other manufacturers for KATANA™ Zirconia YML?**

This is not recommended, as the desired level of translucency or color development cannot be achieved.

**Are the sintering schedules for KATANA™ Zirconia the same as other existing zirconia products?**

The sintering parameters differ from other manufacturers' zirconia products. The maximum sintering temperature for the 54-minute program is 1600°C (2912°F), for the 90-minute program 1560°C (2840°F) and for the 7-hour program 1550°C (2822°F).

Note: The material is removed from the furnace at 800°C. High-speed sintering is possible for up to three-unit bridge restorations.

**What type of sintering furnace can be used? Is it possible to use a sintering furnace that is not able to reach the maximum sintering temperature or heating rate?**

Any sintering furnace capable of setting the KATANA™ Zirconia YML sintering program according to its technical specifications can be used, regardless of the manufacturer. If the KATANA™ Zirconia YML sintering program is not programmable in your sintering furnace, it is unfortunately not possible to set the furnace according to this schedule.

**Is it possible to adjust the vertical position of KATANA™ Zirconia multilayer gradation in order to suit each clinical case more effectively?**

Yes, this is possible using several options in your CAD/CAM software. These options allow the designer to change the restoration position within the disc profile to achieve the best gradation map for the restoration. Please refer to our “Handy Chart” as a guideline for this.

**When placing the disc in the milling unit, how is it possible to identify the right side from the wrong side of KATANA™ Zirconia disc?**

The side on which a “occlusal surface” sketch has been imprinted represents the upper layer (the enamel layer).