New High Esthetic Potential for Zirconia in Dental Restorations *

NEW UTML Ultra Translucent Multi Layered
STML Super Translucent Multi Layered
ML Multi Layered HT High Translucent

Kuraray Noritake Dental Inc.

* Comparison with our conventional products.
New High Esthetic Potential for Zirconia Dental Restorations*  
New KATANA™ series which feature translucency similar to natural tooth enamel are now available.

KATANA™ Zirconia UTML-STML zirconia discs which feature multi-layered color with higher translucency levels are now available. You can now expect a more natural look with predictable results and save time, even when fabricating esthetic anterior restoration with KATANA™ monolithic zirconia materials.

*Comparison with our conventional products.

4 Layer structure

- Enamel Layer (35%)
- Transition Layer 1 (15%)
- Transition Layer 2 (15%)
- Body (Dentine) Layer (35%)

※In% is the thickness of each layer in a disc

Actual finished surface of disc after sintering

The original innovative multi-layered technology creates the smooth transition of color gradation.

Restorations are full contour zirconia crowns made from KATANA™ Zirconia UTML*  
*with external staining

Restorations fabricated by  
Anterior crown : FEAL Dental Laboratory  
Yoshiteru Tomita, RDT  
Laminate veneer : Cusp Dental Supply Inc.  
Kazunobu Yamada, RDT
UTML has the most translucency among the KATANA™ Zirconia and is recommend as the most suitable for fabricating anterior crowns or laminate veneers. Two different shade types are available, the Standard shade and Enamel shade for your selection.

**Concept of color and translucency**

- **Standard shade (A1～D4)**
  - Translucency
  - High translucency through all the disc layers.
  - Color
  - Color of Shade Guide*

- **Enamel shade (ENW, EA1, EA2, & EA3)**
  - Translucency
  - High translucency through all the disc layers.
  - Color
  - Reduced chroma from incisal to the middle layer (1part)

*VITA Classical Shade Guide

Applying external stains more clearly highlights and enhances the translucency. The **Enamel Shade** version has reduced color intensity in one half of the disk from the incisal edge (1part) so that you can characterize and express color variations with the external stains.

**CERABIEN™ ZR External Stain**
- Blue : Gray =1 : 1
- A+, B+, C+, D+, etc.

The restorations are full contour anterior zirconia crowns made from KATANA™ Zirconia UTML

1. Shade taking
2. Applying the Glaze and the External Stain
3. Checking the restorations on the model.
4. Seating in the mouth

Clinical cases contributed by Keiko Okubo, DDS  Restorations fabricated by Kazunobu Yamada, RDT
STML has a well-balanced combination of translucency and mechanical properties. This version of KATANA™ has gradations of translucency as well as color, exhibiting a masking effect in the cervical area. Using this series, you can easily obtain the desired shades to accommodate the variety found in prepared tooth conditions of clinical cases.

Concept of color and translucency

Standard shade  
(NW, A1–A4, B1–B3, C1–C3, D2 & D3)

Translucency
Translucency is gradually decreased from the incisal to the cervical region to increase the masking level in the cervical region.

Color

Color of Shade Guide*

*NW : NORITAKE Shade Guide  
A1–A4, B1–B3, C1–C3, D2 & D3 : VITA Classical Shade Guide

Color and translucency of the layers after sintering (Image of gradation)

Range of masking level compared to the prepared abutment colors

Abutment color examples

UTML
STML
ML/HT

You can select a shade tab that corresponds to the final desired color.

Select a shade tab one level brighter than the final color. (It would be necessary to finish with external stains)

The restorations is a full contour posterior zirconia crown made from KATANA™ Zirconia STML *  
*with external staining

1. Preparation
2. Wax up
3. Checking the restoration on the model.
4. Seating in the mouth
   (Left : Buccal view, Right: Occlusal view)
Even higher esthetic restorations are possible.

You can achieve a higher esthetic appearance by layering porcelains and utilizing the internal and/or the external staining technique.

1. Layering only on the incisal area of the frame, while maintaining the minimum thickness, with Body and Enamel porcelain etc.
2. Application of the Internal Stain
3. Layering of Luster porcelain
4. Finished restoration.

Recommended materials

CERABIEN™ ZR
FL Glaze, VC Glaze, External Stain, Internal Stain, Luster etc.

CZR PRESS LF
LF External Stain, LF Internal Stain, LF Luster etc.

*Do not mix CERABIEN™ ZR and CZR PRESS LF. Do not use a blend of these porcelain powders.
*Do not use the CZR PRESS (Ingot H, L, EW) with UTML, STML

Restoration fabricated by Otani Dental Clinic Nato Yuasa, RDT

Glaze materials for Full Contour Zirconia (FCZ) Crowns

>>> FL Glaze
FL Glaze is a colorless and transparent glaze powder containing high fluorescence.

>>> VC Glaze
VC Glaze is a colored glaze powder used to lower the value of Full Contour Zirconia Crowns. It also contains fluorescence. (The fluorescence of VC Glaze is less intense than FL Glaze.)

Technical Information for Finishing with Glaze

- Smooth the zirconia surface as fine as possible with a silicone diamond point before applying FL &/or VC Glaze.
- Mix glaze powder with IS Liquid and apply to the entire zirconia surface. If characterization is necessary, add CERABIEN™ ZR External Stain to FL &/or VC Glaze to obtain your ideal colors and shade. Bake in the same schedule with FL &/or VC Glaze.
- Apply and bake again for a 2nd time as necessary.

* Sandblasting is strongly recommended before applying the glaze powder.
* If the zirconia surface is designed to contact the opposing tooth, we recommend polishing the surface as smooth as possible.
Recipe example for color characterization of the enamel area

**Grayish Enamel**
CERABIEN™ ZR External Stain Gray : VC Glaze : FL Glaze = (1 : 6) : 7

**Bluish Enamel**
CERABIEN™ ZR External Stain Blue : VC Glaze : FL Glaze = (1 : 6) : 7

- Mix CERABIEN™ ZR External Stain and FL &/or VC Glaze with 15 Liquid
- Apply VC Glaze evenly over the entire surface and bake
- Apply Glaze Recipe to the Enamel Area and bake

* Please adjust the mixed ratio and application thickness appropriate to desired levels and intensity.

CERABIEN™ ZR External Stain + CERABIEN™ ZR FL &/or VC Glaze

<table>
<thead>
<tr>
<th>Dry-out Time</th>
<th>Low Temperature</th>
<th>Start Vacuum</th>
<th>Heat Rate</th>
<th>Vacuum Level</th>
<th>Release Vacuum</th>
<th>Hold Time in the air</th>
<th>High Temperature</th>
<th>Cooling time</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 minutes</td>
<td>600°C (1112°F)</td>
<td>600°C (1112°F)</td>
<td>65°C (117°F)</td>
<td>98kPa (72cm Hg)</td>
<td>850°C (1562°F)</td>
<td>1 minute</td>
<td>850°C (1562°F)</td>
<td>4 minutes</td>
</tr>
</tbody>
</table>

*1 2nd bake is not necessary if it is baked to desired level on 1st bake.

Technical Information for Finishing by Polishing

Pearl Surface Z is a diamond paste ideal for polishing the zirconia surface to a final finish on Full Contour Zirconia Crowns. Specially developed for KATANATM Zirconia. It is the simplest and fastest way to achieve finished Full Contour Zirconia Crowns.

- Smooth the zirconia surface as fine as possible with a silicone diamond point before using Pearl Surface Z.
- Add the proper amount of Pearl Surface Z to the polishing brush and polish the entire crown surface.

* Pearl Surface Z can be used for an average of 100 FCZ molar crowns per container (20g).

Color guide

<table>
<thead>
<tr>
<th>Line-up of KATANA™ Zirconia</th>
<th>Thickness</th>
<th>UTML, STML, ML : —</th>
<th>14mm</th>
<th>18mm</th>
<th>22mm</th>
<th>—</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSKD</td>
<td>PSKD</td>
<td>10mm</td>
<td>14mm</td>
<td>18mm</td>
<td>22mm</td>
<td>26mm</td>
</tr>
</tbody>
</table>

**UTML**

A1 A2 A3 A3.5 A4

**STML**

NW A1 A2 A3 A3.5 A4

**ML Multi-layered**

A White A Light A Dark B Light C Light D Light

**HT High Translucent**

HT10 HT12 HT13

**Color selection for CERABIEN™ ZR**

HT13 HT12 HT13

EWe EWe NW e.e. A e.e. NW e.e. A e.e. NW e.e. A e.e. NW e.e. A e.e. NW e.e. A e.e. NW e.e. A e.e. NW e.e. A e.e. NW e.e. A e.e. NW e.e. A e.e. NW e.e. A e.e. NW e.e. A e.e. NW e.e.
The translucency is 1.4 times more than the conventional zirconia products.

The translucency of zirconia raw materials was increased 1.4 times by our proprietary research and development. Now you can achieve natural life like translucency with KATANA™ monolithic zirconia materials.

You now have a wide range of clinical case applications for monolithic zirconia with the new additional KATANA™ series.

Selecting the right translucency and mechanical properties, you can fabricate many options, from the esthetic anterior restoration to the posterior bridge work.*1

Recommended indications and applications*2

<table>
<thead>
<tr>
<th>UTML</th>
<th>STML</th>
<th>ML/HT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laminate veneer</td>
<td>Inlay-Occlusal</td>
<td>Anterior crown</td>
</tr>
</tbody>
</table>

Mechanical Property (Flexural Strength)

<table>
<thead>
<tr>
<th>UTML</th>
<th>STML</th>
<th>ML/HT</th>
</tr>
</thead>
<tbody>
<tr>
<td>557</td>
<td>748</td>
<td>1125</td>
</tr>
</tbody>
</table>

*1 UTML, STML, ML: The minimum thickness of zirconia which is necessary in each series is different. Read carefully the instructions prior to using the material.

*2 HT is recommended for the framework if you overlay with layered porcelains.
Design and Milling

Restorations for Anterior and Posterior Crown, Laminate Veneer, Inlay, and Onlay
Design the restoration to maintain the minimum wall thickness* of zirconia as shown. Do not adapt the design to a form that becomes contraindicated.

*Thickness for zirconia only which dose not include porcelain.

Minimum Wall Thickness of Zirconia

UTML

STML

ML/HT

Anterior crown
Veneer
Posterior crown
Inlay
Onlay

*Please keep 0.8mm in case of porcelain build-up. You can reduce to 0.4mm when finishing with glaze and polish.

Contraindications

"J" Margin
Deep Shoulder
Knife Edge
Undercuts
Rough Margin
Groove
Parallel Axis
Sharp Incisal Top
Height Difference (Anterior)

Sintering Schedule

UTML / STML = 1,550°C (2,812°F) or ML/HT = 1,500°C (2,732°F)*

The sintering recommendations are only a guideline, some adjustments may be required depending on each individual furnace.

PSKD - 1375°C (2507°F)*

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Heat Rate</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>RT~1100°C (212°F)</td>
<td>9°C (16°F)/min.</td>
<td>Approx. 2hr</td>
</tr>
<tr>
<td>1100(2012°F)~1375°C (2507°F)</td>
<td>4.6°C (8.3°F)/min</td>
<td>Holding 2hr</td>
</tr>
<tr>
<td>1375 (2507°F)~500°C (932°F)</td>
<td>-4.8°C (8.8°F)/min</td>
<td>3hr</td>
</tr>
<tr>
<td>500°C (932°F)~RT</td>
<td>Natural slow Cooling</td>
<td></td>
</tr>
</tbody>
</table>

*High Temperature

SYMBOLES USED IN A LABEL

Manufacturer
Lot
Batch Code
Use By
Ref
Catalogue Number

Consult Instructions for Use

Authorized Representative in The European Community

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