

TECHNICAL GUIDE

KATANA™ ZIRCONIA BLOCK STML

 **KATANA™ Zirconia Block**



For optimal adhesion

ADVANCED CERAMIC SYSTEM
PANAVIA V5

SELF-ADHESIVE RESIN CEMENT
PANAVIA SA Cement Universal

SUPER TRANSLUCENT MULTI LAYERED ZIRCONIA FOR CHAIR SIDE

18-minute Sintering with SpeedFire

KATANA™ ZIRCONIA Block is designed to provide fast and easy chairside prosthetics e.g., for highly aesthetic single crown or 3-unit bridge prosthetics. The special feature of KATANA Zirconia Block is the combination of high translucency with high flexural strength, sinterable in an ultra-high-speed sintering process of 18 minutes³. The four-layered color gradient adapts the material easily to the tooth environment of the patient, which ensures exceptional aesthetics. It is now possible to fabricate and cement monolithic KATANA Zirconia Block prosthetics within a single treatment session, without any problems. Full contour Zirconia prosthetics is now chairside.



THE MULTI-LAYERED STRUCTURE IN GRADUATED SHADES

COLOR GRADIENT

The multi-layered KATANA™ Zirconia Block consists of four layers of zirconia in graduated shades. This product allows the chair side fabrication of natural-tooth-colored prosthetics – eliminating the time-consuming and difficult process of staining the prosthetic.

Enamel Layer
Transition Layer 1
Transition Layer 2
Body (Dentin) Layer

MULTI LAYERED

POWERFUL

Delivers better mechanical properties than lithium disilicate glass ceramics

NATURAL

Aesthetic quality mimics natural teeth through enhanced translucency

FAST

Single-visit chairside prosthetics.
15 min. Milling* + 18 min.³ Sintering

* In case of KATANA™ ZIRCONIA Block for bridge milling time will be 45 minutes.

With its Superb Mechanical Properties and aesthetic qualities mimicing natural teeth, KATANA™ Zirconia Block brings in the best of both worlds. Super Translucent and high Flexural Strength. Resulting in exceptional aesthetics and better mechanical properties than lithium disilicate glass ceramics.

¹ Dry milling is recommended. If wet milling/grinding is performed by using cooling water contaminated by silica-based glass ceramics (lithium disilicate glass, etc.), the translucency of the zirconia may be reduced after sintering. Before wet milling/grinding, clean the milling/grinding chamber, cooling water tank and filter insert. The cooling water must be changed in order to assure optimum results.
² For Single-unit prosthetics. ³ For cases where the wall thickness is less than 6 mm use dry milling.

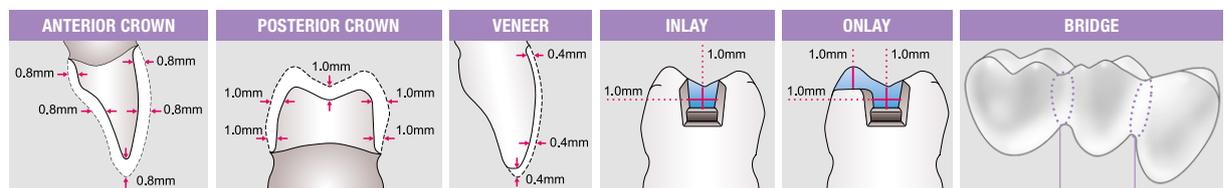
PROSTHETIC FABRICATION PROCESS

- 1 TOOTH PREPARATION
- 2 SHADE SELECTION
- 3 INTRAORAL SCANNING / DESIGNING / BLOCK SIZE SELECTION
- 4 MILLING
- 5 SINTERING / MORPHOLOGICAL CORRECTION
- 6 FINISHING
- 7 CEMENTATION

1 TOOTH PREPARATION

It is crucial to keep a minimum wall thickness for successful prosthetics.

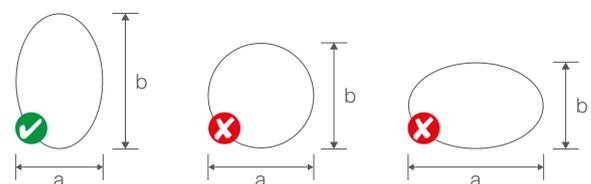
MINIMUM ZIRCONIA WALL THICKNESS



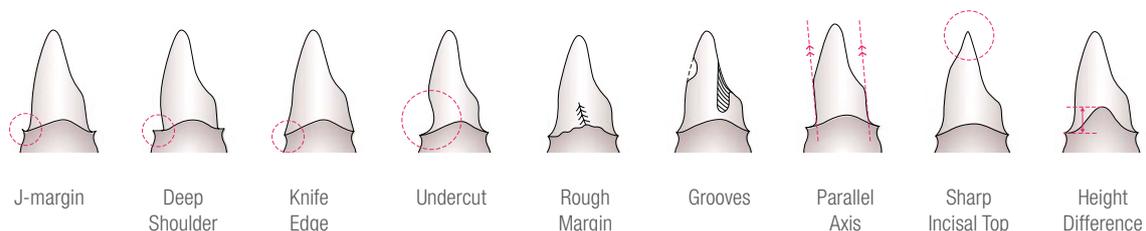
Connector cross section
 Anterior 2-3 units: 12 mm² or more
 Posterior 2-3 units: 16 mm² or more

THE IMPORTANCE OF CONNECTOR SHAPE AND SIZE

To ensure a long lasting, reliable and strong bridge prosthetic it is essential to have the correct shape and size of connector. The highest force applied to a connector is vertically, from top to bottom. The following diagram shows the best and safest shape to design in order to avoid fractures or chipping.



CONTRAINDICATIONS



2

SHADE SELECTION

Select the right shade, paying attention to the shade of the abutment.

STML

Super Translucent Multi Layered



POINTS TO KEEP IN MIND WHEN SELECTING SHADES

1

KATANA™ Zirconia Block has so much translucency that a prosthetic fabricated with this material is affected by the color of the abutment that will be behind it after it is placed in the mouth. Select the right block shade, with reference to the following descriptions. It is advisable to use care in the selection of the correct shade for the case you are treating, in particular if a metal abutment needs to be completely masked.

ABUTMENT COLOR EXAMPLES



- Select the same shade as the shade you need.
- The color of the prosthetic may be darkened due to the effect of the abutment color. **Select a shade number one level lower on the scale (brighter)** than the color you need. (It will be necessary to use stain with it.)

2

There can be cases when the prosthetic might be color matched with surrounding teeth **by selecting a shade number one level higher on the scale (darker) or lower (brighter) than the color you need.** Select a suitable shade by referring to the following:

Select a shade number:
ONE LEVEL LOWER (BRIGHTER)

When the prosthetic is finished by polishing:

The final colors of full-zirconia prosthetic may differ if they are finished by glazing or by polishing, even if the same shade is used. KATANA™ Zirconia Block is designed to deliver the specified color when finished by glazing. The final color will be darker when it is finished by polishing.

When the prosthetic has a thick wall:

The final color of prosthetics with thick walls will be darker than the shade you selected.

Select a shade number:
ONE LEVEL HIGHER (DARKER)

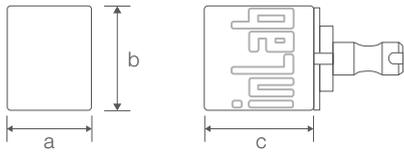
Posterior prosthetics:

Zirconia has a tendency to look brighter than the color you probably want (and so to stand out starkly) in the posterior region due to its high refractive index.

3

INTRAORAL SCANNING / DESIGNING / SIZE SELECTION

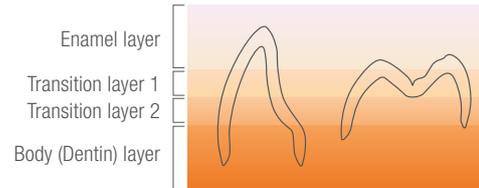
Scan the abutment using an intraoral scanner to design the restoration. Select the block size that suits the size of the prosthetic you have designed. After baking, the prosthetic will shrink to about 80 percent of its original size. **Size 12Z is suitable for a prosthetics with a crown height of 12 mm, size 14Z is good for prosthetics with a crown height of 14 mm and 14ZL is best for bridge prosthetics up to 14 mm height.** For STML, the side stamped "inLab" is the Body layer and the layer on the opposite side is the Enamel layer.



Size*		a (height)	b (width)	c (length)
12Z	Before Sintering	15.3 mm	19.2 mm	20.2 mm
	After sintering	12.2 mm	15.4 mm	16.2 mm
14Z	Before Sintering	17.8 mm	19.2 mm	20.2 mm
	After sintering	14.2 mm	15.4 mm	16.2 mm
14Z L	Before Sintering	17.8 mm	19.2 mm	40.0 mm
	After sintering	14.2 mm	15.4 mm	32.0 mm

Block sizing may have individual slight differences, but will be adjusted automatically by the software
 * Block Size STML: 12Z, 14Z

POINT TO BLOCK SELECTION



Example:

If you want to fabricate a 7 mm long posterior crown, select size 12Z, not 14Z; this will result in thinner Enamel and Body layers.

4

MILLING

Observe the conditions below while dry milling the block you have selected. After milling, remove the prosthetic from the milling machine. Cut off the holder and remove any excess by using a diamond bur, etc.

1

Remove any cuttings from the prosthetic using compressed air or a soft brush.

2

Dry milling is recommended. If wet milling/grinding is performed by using cooling water contaminated by silica-based glass ceramics (lithium disilicate glass, etc.), the translucency of the zirconia may be reduced after baking. Before wet milling/grinding, clean the milling/grinding chamber, cooling water tank and filter insert.

The cooling water must be changed in order to assure optimum results.

5

SINTERING / MORPHOLOGICAL CORRECTIONS

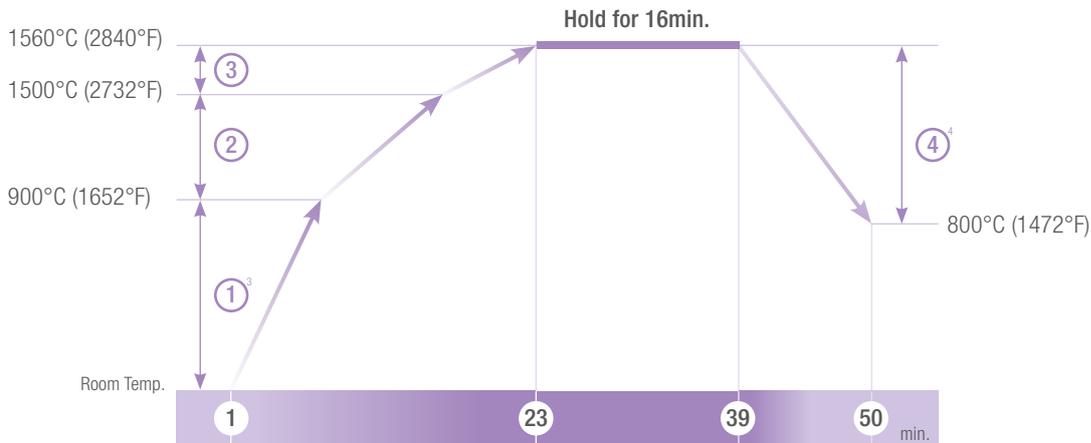
Sinter the prosthetic in a CEREC SpeedFire furnace, observing the conditions given below. Then, make morphological corrections (adjustment of contacts on proximal surfaces and occlusion).

- 1 The prosthetic is very hot immediately after sintering. Do not touch the prosthetic with your bare hands when removing it from the furnace.
- 2 Make morphological corrections carefully using a diamond bur or silicone points containing diamond particles. Use a copious spray of water or work on the prosthetic while it is well wet. Be careful not to apply undue force, because this might cause a fracture, break or micro-cracks from a local spot heating.
- 3 It is recommended to apply the Glaze of CERABIEN™ ZR FC Paste Stain at a thickness of 30 to 40 µm. Using articulation paper, make morphological corrections while remembering the need to leave space for applying Glaze*.
- 4 After morphological correction, make sure there are no cracks.

* There is no need to leave space for applying Glaze if the whole surface of the prosthetic is polished as the final finish.

NOW ADAPTED FOR OTHER SINTERING FURNACES

A new sintering schedule is available for using KATANA™ Zirconia Block with other sintering furnaces than the CEREC SpeedFire such as Programat CS4¹ among others. Optimal translucency can be achieved by sintering the block for approximately 50 minutes.²



Heat Rate

- ① 130°C/min. (234°F/min.)
- ② 50°C/min. (90°F/min.)
- ③ 15°C/min. (27°F/min.)
- ④ -70°C/min. (-126°F/min.)

¹ Not a trademark of Kuraray Co., Ltd.

² In case of performing the milling process under dry conditions.

³ In case of performing the milling process under wet conditions, dry the prosthetic at 200°C (392°F) for 10 minutes in sintering furnace before process step 1.

⁴ When using Programat CS4, program to open the furnace head at 800°C (1472°F). Take out the prosthetic two minutes after the start of opening.

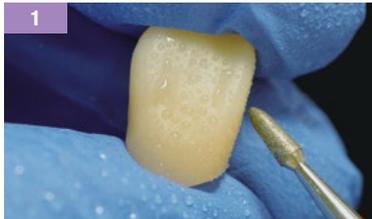
6

FINISHING

Finish the prosthetic by: refining the surface texture, polishing areas in contact with the opposing tooth, and applying Glaze of CERABIEN™ ZR FC Paste Stain*, followed by baking.

* If you use a porcelain other than CERABIEN™ ZR FC, check for the suitability of the porcelain.

FINISHING WITH CERABIEN™ ZR FC PASTE STAIN



1 Create a surface texture over the entire crown under running water or wet condition.



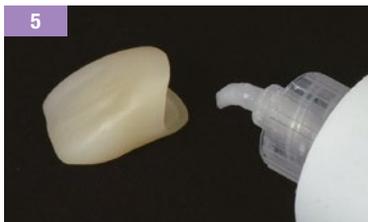
2 Polish areas in contact with opposing tooth*. (For finishing with polishing alone, complete entire crown while polishing.)
* Refer to "Polishing method" given below.



3 Alumina sandblast the crown surface and interior other than polished areas (50-70 μm, 0.2 MPa).



4 Clean the prosthetic using an ultrasonic cleaner in alcohol or acetone, or steam cleaner.



5 Secure the prosthetic to a stand or metal pin.



6 Apply Glaze and bake.

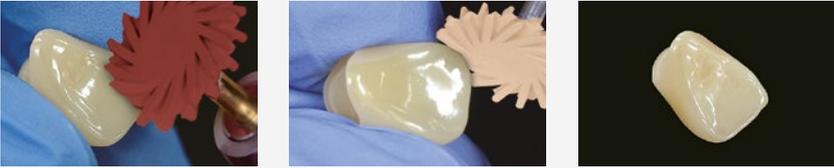
PRECAUTIONS TO TAKE WHEN FINISHING

- 1 Never try to finish a warm prosthetic, or when it is not cooled sufficiently; otherwise, it will cause cracks.
- 2 Polish the zirconia surface which might contact to the opposing tooth. For, zirconia could become exposed on the glaze layer during its long-term wearing.
- 3 Use stands or metal pins when baking the Glaze.



POLISHING METHOD

To polish the areas of the prosthetic that are in contact with the opposing tooth or to finish the entire surface by polishing without using Glaze, refer to the procedures below.



Polish using silicone points containing diamond particles, such as KATANA™ Zirconia TWIST DIA COARSE*.

* It is good practice to use three types of silicone points (coarse, medium and fine, respectively) to achieve good luster.

Finish by polishing, using silicone points containing diamond particles, such as KATANA™ Zirconia TWIST DIA (MEDIUM or FINE) or using paste containing diamond particles, such as Pearl Surface Z.

Completion.

POLISHING WITH KATANA™ ZIRCONIA TWIST DIA

KATANA™ Zirconia TWIST DIA has an innovative shape with flexible polishing spirals offering various application benefits to the dentist for excellent polishing results.



STAINING METHOD

With the help of the 4 shades: Clear Glaze, A+, Value and Grayish Blue, you can reproduce almost all clinical cases in terms of individualization.

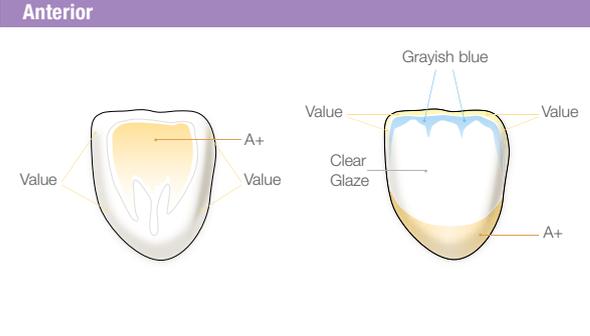
Working procedure

At the beginning, Clear Glaze should be applied over the entire surface of the prosthetic. All remaining shades should be brushed gently into the glaze material. The shade A+ has a dual function: on one hand, it is used to increase the chroma content in the cervical area and, on the other hand, it is used to re-trace or darken the fissures. The right combination of Value on the cusp tips and Grayish Blue on the cusp slopes creates an excellent opalescence and translucency effect. The baking should take place only after both - glazing and adding colored paste stains has been done.

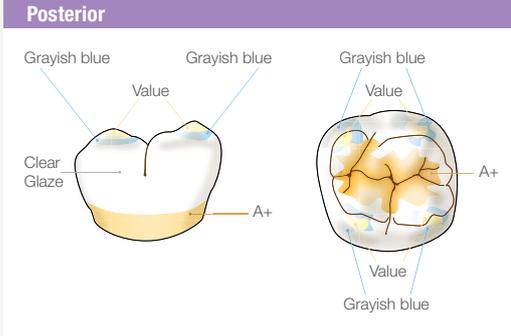
* If you use another staining material, please check the suitability of the staining method.

Example of staining using CERABIEN™ ZR FC Paste Stain

Anterior



Posterior



7

CEMENTATION

Our original MDP monomer adheres especially well to zirconia. Reliable bonding of KATANA™ Zirconia Block to the tooth structure can be attained by using PANAVIA™ SA Cement Universal or PANAVIA™ V5, both utilizing MDP monomer technology.



BONDING PROCEDURE USING PANAVIA™ V5



1 Check the fit and color of the prosthetic using the TRY-IN paste of PANAVIA™ V5. Stain as necessary*.

* Refer to the section "Staining method" given below.



2 Alumina sandblast the internal surface (30-50 μm 0.1-0.4MPa), clean and dry. Apply CLEARFIL™ Ceramic Primer Plus to the internal surface and dry.



3 Apply PANAVIA™ V5 Tooth Primer to the abutment and cavity, rub for 20 seconds and dry.



4 Apply PANAVIA™ V5 paste to the internal surface and seat the prosthetic into place.



Remove the excess cement using method A or B

A. Polymerise for 3 to 5 seconds using a light curing device and remove the excess material by means of an appropriate instrument.



B. Remove the excess cement using a small brush and irradiate the margins with a light-curing unit. Take care: always apply method B for opaque prosthetics and for opaque colours.



6 Final curing (3 min.)



7 Check for occlusion and adjust*.
* It is good practice to adjust using silicone points containing diamond particles; polish using polishing paste containing diamond particles to achieve good luster.

BASIC PROCEDURE FOR ZIRCONIA PROSTHETICS WITH PANAVIA SA Cement Universal

Regardless of the restorative material; no primer required. One single procedure regardless of the restorative material.



1
Conditioning the crown.*
*Clean and dry the tooth surface, and then trial fit the prosthetic, followed by conditioning of the crown.



2
Only for Handmix
Dispense an equal amount of Paste A & B.
Mix Paste A & B for 10 seconds.

Do not store the mixing pad spatula in the refrigerator to avoid condensation.



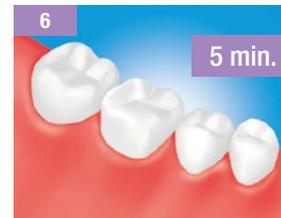
3
Apply the cement to the crown.



4
Place the crown.



5
Light-cure for 2 to 5 seconds or let self-cure for 2 to 4 minutes, then remove the excess cement.

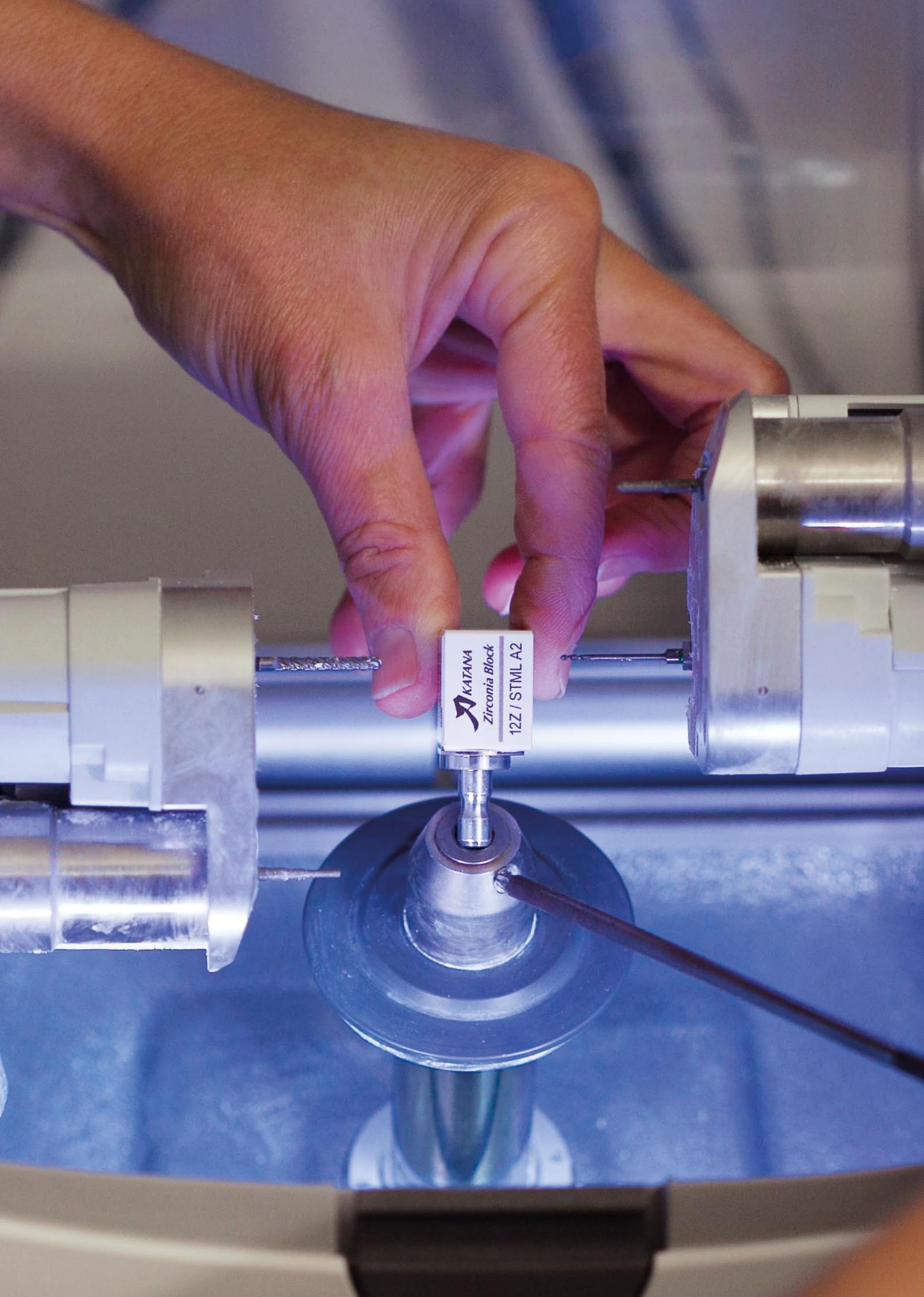


6
Light-cure the margin and maintain isolation for 5 minutes.*
*For a translucent restoration, fully light-cure.

MINIMAL CEREC REQUIREMENTS

When using KATANA™ Zirconia Block, use the following guidelines: CEREC software 4.5.2 or later is required.

For 18-minute sintering, CEREC software 4.6.1 or later is required. In the US, CEREC software 4.6 or later is required.



KATANA
Zirconia Block
12Z / STML A2

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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.

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