



Elegance
PREMIUM
Zirconia



User Guide

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SMILE ELEGANTLY

ZIRCONIA BLOCK USER INSTRUCTION

Zirconia blocks can be used for overlay coping, full contour and bridge, anterior restorations and etc. The following instructions provide general guidelines for designing, milling, coloring, sintering, porcelain, polishing and glazing and should be followed very carefully to avoid any loss of aesthetics, fit durability or overall quality

Eye Contact:

Mechanical eye irritation:

Signs/symptoms may include pain, redness, tearing and corneal abrasion.

Skin Contact:

Mechanical Skin irritation:

Signs/symptoms may include abrasion, redness, pain, and itching.

Inhalation:

During grinding, scraping or sanding, inhalation of particles may occur, resulting in upper respiratory tract irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Components	HT-Plus	ST &Multi/Preshaded	UT &Multi/Preshaded
ZrO ₂ +HfO ₂ +Y ₂ O ₃	≥99%	≥99	≥99%
Y ₂ O ₃	4.5%-6.0%	4.5%-6.0%	9%-10%
Al ₂ O ₃	<0.25%	<0.25%	<0.05
Other Oxides (for white block)	<0.15	<0.15	≤0.05
Other Oxides (for pre-shaded)	/	<1%	<1%

Components	HT-Plus	ST &Multi/ Preshaded	UT &Multi/ Preshaded
Density before sintering (g.cm ⁻³)	3.10-3.20	3.10-3.20	3.15-3.25
Density after sintering (g.cm ⁻³)	6.08-6.10	6.08-6.10	6.05-6.07
CTE(25-500℃)(K ⁻¹)	10.5	10.5	10.5
Flexural strength after sintering(Mpa)	1350	1200	650
Accelerated aging surface monoclinic phase content	<15%	<15%	<15%
Light transmittance	37%	41%	49%
Chemical solubility after sintering(μ g.cm ⁻²)	<100	<100	<100
Cytotoxicity	0 Level	0 Level	0 Level
Radioactivity(Bq.g ⁻¹)	<0.1	<0.1	<0.1
Sintering temperature(℃)	1500-1550	1480-1530	1430-1450

The dried restoration must be placed upside down on zirconium beads in crucible, and then crystallize it with sintering furnace, sintering files as following:

HT-plus

HT-Plus				
Temperature (°C)	Temperature rising	Time (Hour)		
		Single Crown (hrs)	3-4 Bridges (hrs)	>4 bridges (hrs)
20	0	0	0	0
900	10	1.5	3	5.5
900	0	2	3.5	6
1530	3.75	4.8	7.2	11.5
1530	0	6.8	9.2	13.5
900	5.25	8.8	11.2	
600	0			18

- Sintering temperature of HT-plus is from 1500°C to 1550°C, you should make sure peak temperature at this range.

ST & Pre-Shaded & Multilayer

Temperature rising	Temperature	Time span	Total time
°C / min	°C	hour	hour
0	20		0
10	900	1.5	1.5
0	900	0.5	2
3.45	1530	2.8	4.8
0	1530	2	6.8
4.83	900	2	8.8

- Sintering temperature of ST is from 1480 °C to 1530 °C, you should make sure peak temperature at this range.
- Sintering temperature of Pre-shaded ST and Multilayer ST is from 1500°C to 1530°C, you should make sure peak temperature at this range.

UT & Pre-Shaded & Multilayer

Temperature rising	Temperature	Time span	Total time
°C / min	°C	hour	hour
0	20		0
10	900	1.5	1.5
0	900	0.5	2
3.27	1470	2.8	4.8
0	1470	2	6.8
4.58	900	2	8.8

- Sintering temperature of UT & Pre-Shaded and Multilayer is from 1430 °C to 1450 °C, you should make sure peak temperature at this range.

SHT/3D Multilayer Sinter Instruction

Used for bridge: Suggestion within 6 units bridge

One unit sintering curve:

Sintering step	Temperature (°C)	Time (h)
First step	20-900	1.5
Second step	900-900	0.5
Third step	900-1500	3
Fourth step	1500-1500	2
Fifth step	1500-800	1
Sixth step	800-natural cooling 100	

6 units bridge sintering curve :

Sintering step	Temperature (°C)	Time (h)
First step	20-900	1.5
Second step	900-900	0.5
Third step	900-1500	4
Fourth step	1500-1500	2
Fifth step	1500-800	2
Sixth step	800-natural cooling 100	

Milling Zirconia

All the zirconia material has an inherent shrinkage rate associated with each production lot. This shrink rate, usually formatted as “SF or F” , can be found on the side of the actual disc. This number MUST be input into the milling preparation software to ensure the accuracy of the eventual restoration

When milling Zirconia, always follow these general guidelines

- Only use sharp end mills with carbide or diamond coating.
- Do not use any restoration that has chips and/or cracks
Remove the units from the disc using a handpiece with a diamond-coated burr.
- Smooth the support areas with a medium-grit rubber polishing wheel.
- Remove any residual zirconia dust with an art brush.
- If a wet mill is used make sure all the zirconia is completely dry before sintering. Air dry for at least 15 minutes prior to sintering.
Damp zirconia will crack if placed in the sintering oven.

Chair Side Fast Sinter Program

Final temperature:1550℃

Holding time at final temperature:20 min

Sintering Charts:

Sintering Charts		
Temperature	Time span	Total time
℃	min	min
20		0
1550	4	4
1500	20	20

Designing Zirconia

Noncompliance with these guidelines could result in a unit or failed restoration.

Design Option	Design Guidance
Drill Compensation Drill	compensation must be activated for all substructures milled from a solid structure.
Cement Gap	The distance where the coping intersects the die at the margin area. Use this setting to control margin.
Extra cement Gap	The distance between the coping walls and the die. Use this setting to control internal.
Distance to Margin Line	The distance from the margin outer line to the start of the interior wall of the coping.
Smooth Distance	The distance from the margin line to the margin engagement point. should be set at 0.20mm.
Drill Radius	The drill radius is the size of the smallest end mill used to mill the pattern.
Drill Compensation Offset	The distance from the margin line to the area affected by drill compensation. should be a minimum of 0.5mm.
Margin Line Offset	The effective thickness of the margin line and should not be less than 0.16mm. Thinner margin lines will result in a higher failure rate.
Offset Angle #1	The offset angle should not be less than 65° . Extension Offset The extension offset should not be less than 0.01mm.
Wall Thickness	A nominal wall thickness of 0.5mm will ensure a consistently quality product. Reducing this value could result in fractures or holes in the framework.
Bridge Connectors	Recommended Anterior restorations: 6mm ² minimum. Recommended Posterior restorations: 9mm ² minimum.