

3D PRO ZIR MATERIAL INFORMATION

INSTRUCTIONS FOR USE - 3D pro Zir (Single Anterior teeth)



CONTENTS

Part 1: Introduction to 3D pro Zir	
• Advantage	01
• Material Properties	01
• Indications for Use	01
• Colors	01
• Disc Information	02
Part 2: Requirements for fabrication	
• Tooth preparation	03
Part 3: Fabrication process	
• Digital Order	04
• Scanning	05
• Designing	07
• Nesting	11
• Milling	12
• Separating and cleaning	13
• Sintering	15
• Grinding	18
• Staining/Glazing	20









1 Advantages

- Coloration with perfect balance of Hue, Value and Chroma to resemble natural dentition
- Ideal formulation and manufacturing for milling
- Compared with traditional aesthetic zirconia, 3D pro Zir homogeneous blended colored zirconia has higher strength, greater translucency
- Homogenous coloration with no demarcation, keyed to 17 Vita shade guide colors
- Recommended for all restorations, single, bridges and full arch
- Wear capability as natural enamel
- Ideal opacity at gingival, ideal translucency at incisal

2 Material Properties

Aesthetic	57%
Sintered density	$\geq 6.0 \text{g/cm}^3$
Bending strength	Cervical part 1050MPa
Fracture toughness	$5 \text{Mpa}\cdot\text{m}^{0.5}$
Hardness(Hv10)	(Hv10)1250

3 Indications for Use

Veneer	Posterior crown	Full crown bridge	Anterior crown	Inlay
				
Full contour screw retained bridge	Full arch crown bridge	Implant		
				

4 Colors

17 Colors, keyed to VITA 16 and bleach shade (0M2)

5 Introduction to Zirconia disc



ATMA2-3Dpro9816191207039 Scailing:1.2380 F9.4

ATMA2-3Dpro9816191207039 Scailing:1.2380 F9.4

↑ ↑ ↑
Color Product Type/Thickness

↑
Shrinkage ratio

Teeth Preparation

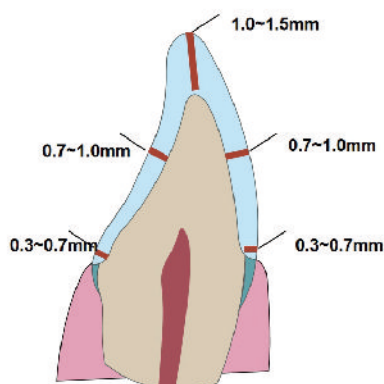
Minimum requirements for 3D pro Zir high-translucent zirconia.

	Anterior crown	
	Single crown	Below 3units bridge
Incisal/Occlusal surface(mm)	1.0-1.5	1.0-1.5
Lip side/Buccal(mm)	0.7-1.0	0.8-1.0
Adjacent(mm)	0.6-0.8	0.6-0.8
Lingual/Palatal(mm)	0.7-1.0	0.8-1.0
Shoulder(mm)	0.3-0.7	0.3-0.7

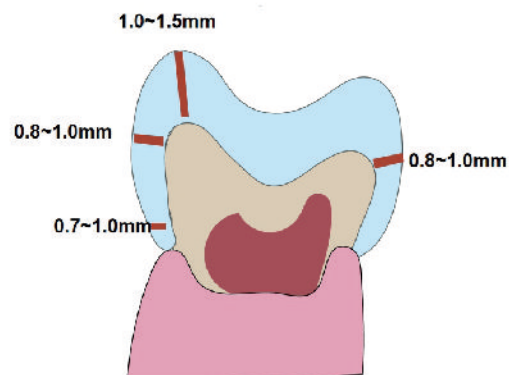
	Posterior crown	
	Single crown	Below 3units bridge
Occlusal surface(mm)	1.0-1.5	1.0-1.5
Buccal(mm)	0.8-1.0	1.0-1.5
Adjacent(mm)	0.6-0.8	1.0-1.5
Palatal(mm)	0.8-1.0	1.0-1.5
Shoulder(mm)	0.7-1.0	0.7-1.0

Remarks:

The preparation should be designed by dentist according to the requirements for esthetics and function. The data in the above table are the minimum values to maintain strength of the material.



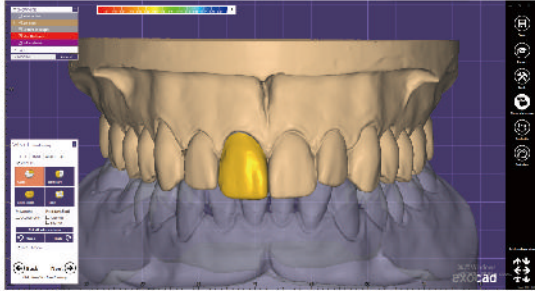
Minimum preparation guidelines for single anterior crown



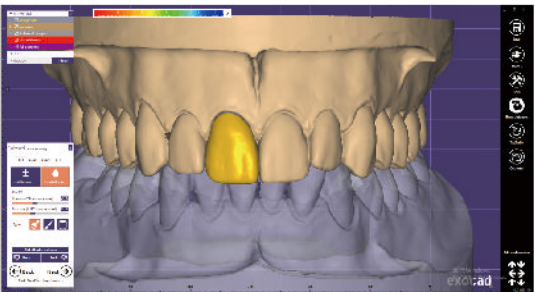
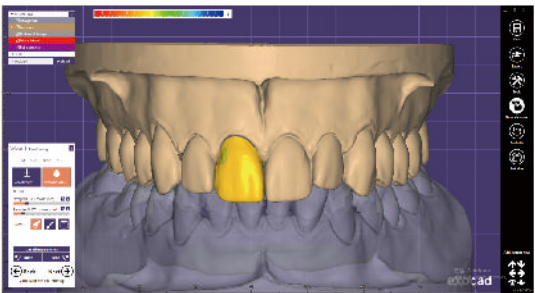
Minimum preparation guidelines for single posterior crown

Step 4: Smooth

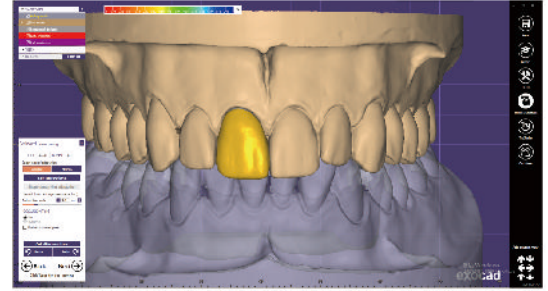
1.First click the wizard to return to the design interface.



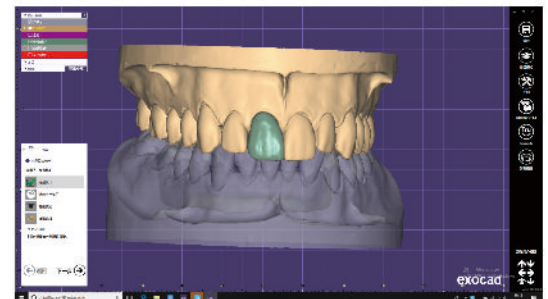
2.Use the smoothing tool to easily trim details such as edges.



3.Adjust abutment and occlusion.



4.Design finished.

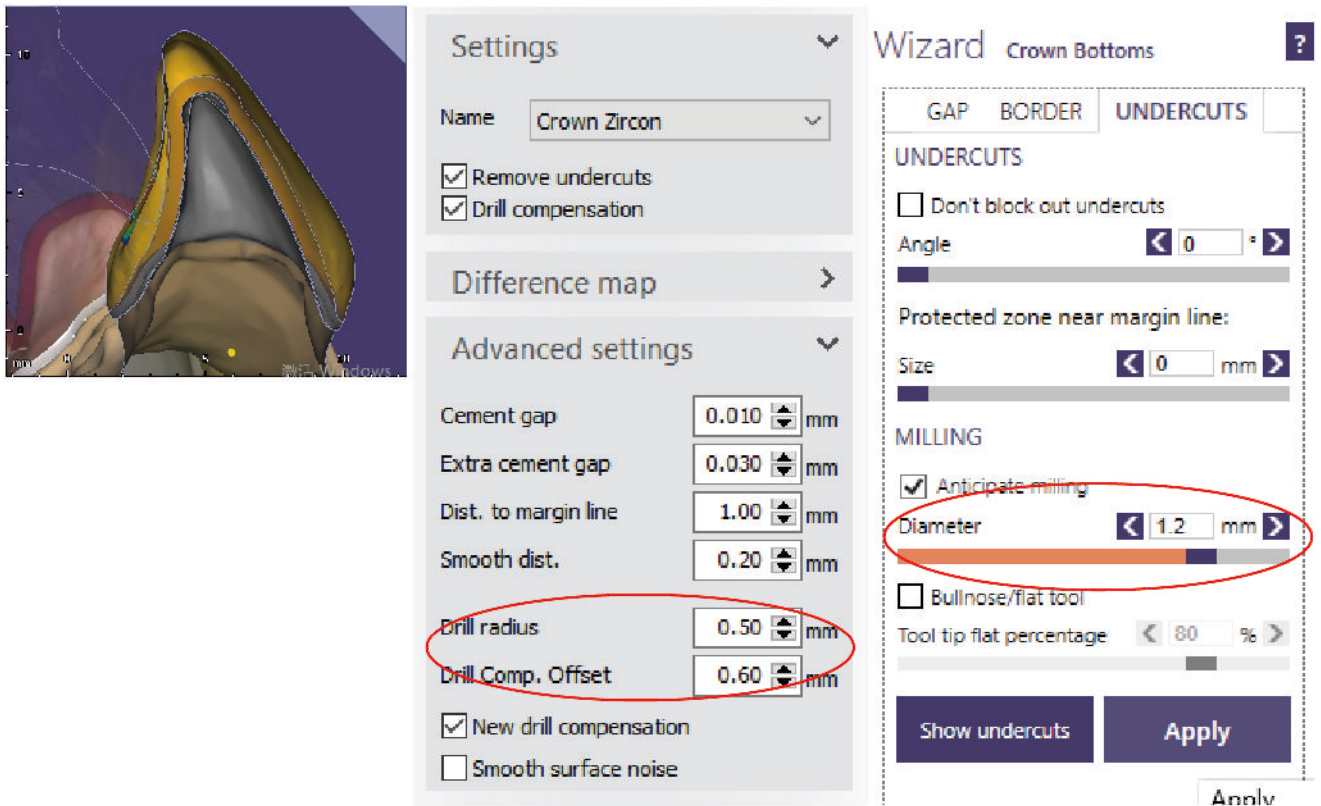


Designing notes

- ★ ✓ Designment shall conform with the requirement of minimum thickness and bridge design parameters.

Type of restoration	Anterior		Posterior	
	Thickness	Cross-sectional area of bridge	Thickness	Cross-sectional area of bridge
Single crown	0.6mm		0.8mm	
Three-unit bridge	0.8mm	9mm ²	1.0mm	12mm ²
Long bridge (>4unit)	1.2mm	12mm ²	1.2mm	12mm ²

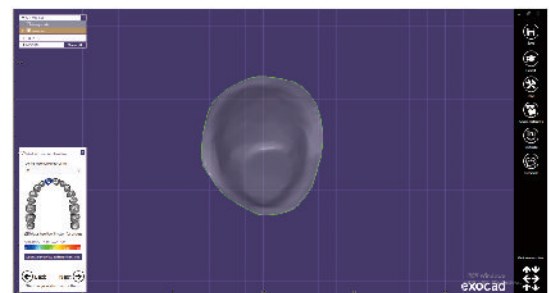
- ★ ✓ Follow the operation below if the incisal areas of abutment have sharp edges.
Fill with wax at the sharp edges before scanning, or increase the compensation value of burs.



- ★ ✓ If the automatically recognized margin line does not conform to the model, technician must check carefully and draw it by hand.



- ★ ✓ The common seating path of the dental bridge must be checked to avoid irregular seating.



Milling

Check milling machine:

- ★ ✓ The maintenance of equipment should include regular calibration, cleaning and lubrication. No vibrations abnormal noise during milling should be present. If there is a problem with the accessory, replace it in time.
- ★ ✓ Be sure to record the number of restorations being milled. Examine the milling tools for wear according to usage per sets of milled restorations. Replace accordingly.
- ★ ✓ 3D pro Zir puck needs to be milled with 5axis equipment.
- ★ ✗ Do not place the mill on an unstable table or shelf.
- ★ ✗ Do not use wet milling method, otherwise the shade and translucency may be affected.
- ★ ✗ Do not mill without vacuum.

Milling:



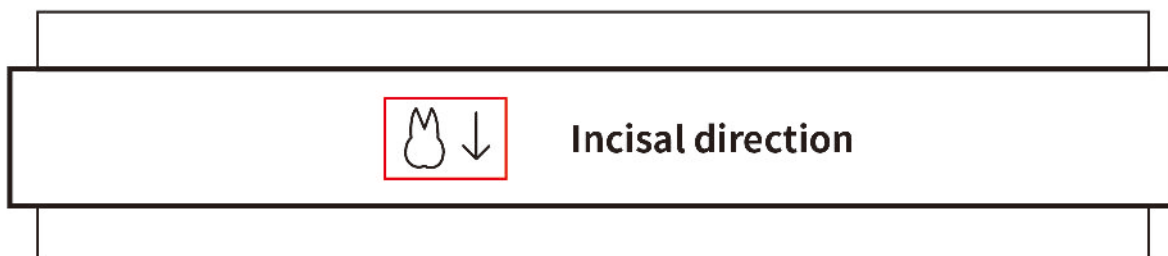
1. When securing the puck in the holder, tighten the screws in a diagonal order, after the first turn is fixed, then reinforce in the second turn. Finally, check by hand if the zirconium puck is positioned correctly. It should be firmly secured, but not over tightened. Check to be sure that the incisal of disc is at the correct position and not backwards.

2. Confirm that all requirements are met before processing can begin.

3. Milling finished.

★ Milling notes:

✓ Loading requirement: The side of the puck is marked with an arrow, and the arrow points to the incisal.



- ★ ✗ Do not use too much force when loading the puck. Do not overtighten the screws. Otherwise, the zirconium puck will be pinched or the milled restoration may crack.

Sintering

Check the Sintering equipment and tools:

Sintering furnace:

- ★ ✓ The sintering furnace must use a voltage regulator to ensure stable operating voltage.
- ★ ✓ The sintering furnace must be cleaned regularly (once a week) and kept dry. Cleaning method: scrape off the impurities in the furnace.
Place green-state scrap zirconia scraps into the furnace and sinter them according to the normal zirconia sintering curve.
- ★ ✓ If furnace has not been used for more than a week, it must be decontaminated before used.
- ★ ✓ When the equipment is not in use, the furnace should be closed to ensure a dry environment inside the furnace. Please keep the operation room of the sintering equipment clean and free of dust and debris. Do not place sintering furnace in a dusty environment. Metal shavings or dust, can adversely affect the heating elements.
- ★ ✓ The heating elements of the sintering furnace must not show damage. If there is a small amount of peeling on the surface of the heating rod (silicon-molybdenum rod), the leftover material can be burned and the sintering furnace will back to normal.
- ★ ✓ Check the furnace temperature regularly (every 3 months) to ensure the stability of the furnace temperature.
- ★ ✓ Be sure to sinter in strict accordance with Aidite standard curve.

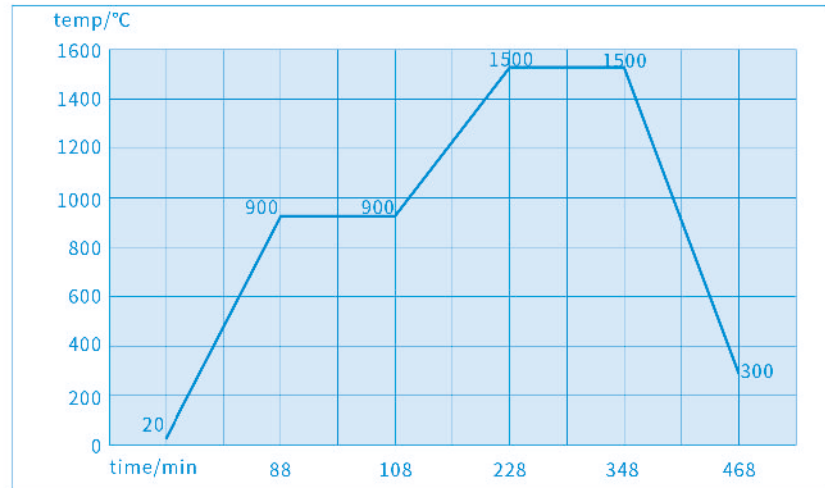


3D pro Zir Sintering Program:

Below 3 units bridge (7h) :

start temp	phase 1 heating rate	phase 1 Maximum temp	Holding time	phase 2 Maximum temp	phase 2 Maximum temp	Holding time	cooling rate	cooling to
20°C	10°C/min	900°C	20min	5°C/min	1500°C	120min	10°C/min	300°C

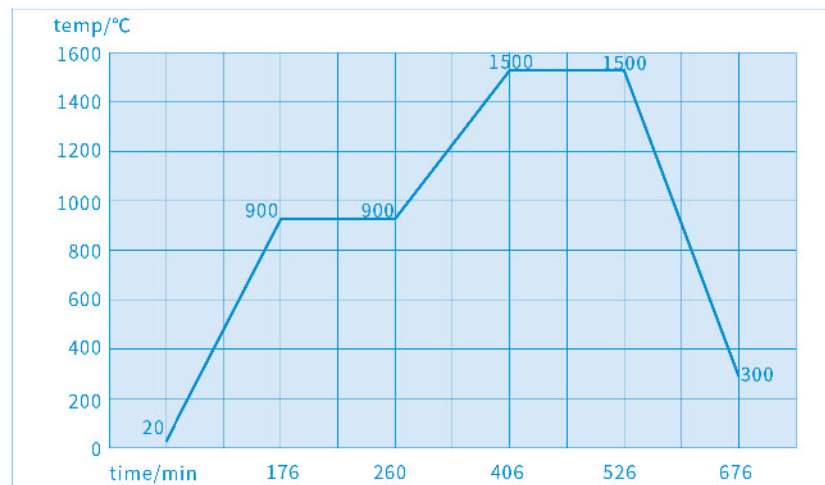
phase	temp/°C	time/min
1	20	88
2	900	20
3	900	120
4	1500	120
5	1500	120
6	300	



From 4 to 6 units bridge(10h):

start temp	phase 1 heating rate	phase 1 Maximum temp	Holding time	phase 2 Maximum temp	phase 2 Maximum temp	Holding time	cooling rate	cooling to
20°C	5°C/min	900°C	30min	3°C/min	1500°C	120min	8°C/min	300°C

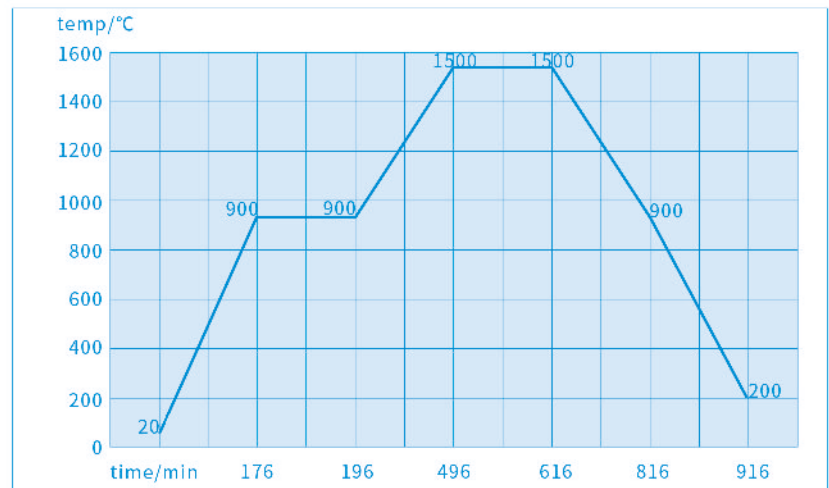
phase	temp/°C	time/min
1	20	176
2	900	30
3	900	200
4	1500	120
5	1500	150
6	300	



Above 7 units bridge (15h) :

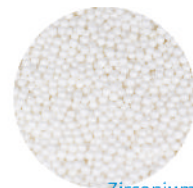
start temp	phase 1 heating rate	phase 1 Maximum temp	Holding time	phase 2 Maximum temp	phase 2 Maximum temp	Holding time	cooling rate	cooling to	cooling rate	cooling to
20°C	5°C/min	900°C	20min	2°C/min	1500°C	120min	3°C/min	900°C	7°C/min	200°C

phase	temp/°C	time/min
1	20	176
2	900	20
3	900	300
4	1500	120
5	1500	200
6	900	100
7	200	



Zirconium beads:

- ★ ✓ When the zirconium beads are severely discolored, the shape is broken or damaged, it must be replaced immediately.
- ★ ✓ If the zirconium beads are stuck together, be sure to break them apart to ensure proper bead function.
- ★ ✓ The amount of zirconium beads should completely cover the bottom of the box (2 - 3 layers).
- ★ ✓ When replacing zirconium beads, first sinter the zirconium beads with remnants of green state zirconia and conduct a normal sintering cycle.
- ★ ✓ It is recommended that Aidite Zirconium Beads be used and it is recommended to use zirconium beads with a diameter less than or equal to 1.0mm to sinter long bridges. Use zirconium beads with a diameter greater than 1.2mm to sinter single crown.



Zirconium beads

Sintering sagger:

- ★ ✓ Be sure to use a perforated sintering sagger to heat the restoration more evenly.

Sintering:

- ★ ✓ Put the lingual or occlusal side down into the sagger and sinter.



Sintering finished.