

Instruction for Use of Dental Zirconia Blocks

1. Intended Use

This product is a pre-sintered zirconia ceramic material. It is applicable for CAD/CAM system milling and fabrication of dental fixed restorations, including anterior and posterior full-contour crowns, fixed dental bridges, implant-supported crowns and bridges, inlays, onlays and aesthetic veneers.

2. Indications

It is used for fixed restoration of single-tooth defect and missing tooth, fixed bridge restoration for dentition defect, superstructure crown and bridge restoration after implant treatment, and aesthetic restoration for defective tooth color and morphology (veneers, inlays, onlays).

3. Contraindications

- a. Patients with allergy to zirconia, yttria, alumina and other product components;
- b. Patients with severe bruxism and excessive occlusal stress without occlusal protection measures;
- c. Restoration scenarios with insufficient abutment height and poor retention form that cannot provide effective retention for restorations;
- d. Patients with poor oral hygiene who cannot cooperate with oral maintenance.

4. Product Composition

	3D Series	ST Series	SHT Series
ZrO ₂ +HfO ₂	≥92%	≥94%	≥92%
Y ₂ O ₃	4.5%~8.0%	4.5%~6.0%	6.5%~8.0%
Al ₂ O ₃	< 0.15%	< 0.15%	< 0.15%
Other Oxides	< 0.5%	< 0.5%	< 0.5%

5. Physical & Chemical Properties

	3D Series	ST Series	SHT Series
Density before sintering	$3.15\pm0.05\text{ g}\cdot\text{cm}^{-3}$	$3.15\pm0.05\text{ g}\cdot\text{cm}^{-3}$	$3.15\pm0.05\text{ g}\cdot\text{cm}^{-3}$
Density after sintering	$6.07\pm0.02\text{ g}\cdot\text{cm}^{-3}$	$6.09\pm0.02\text{ g}\cdot\text{cm}^{-3}$	$6.08\pm0.02\text{ g}\cdot\text{cm}^{-3}$
CTE (25~500°C)	$(10.5\pm0.5)\times10^{-6}\text{ K}^{-1}$	$(10.5\pm0.5)\times10^{-6}\text{ K}^{-1}$	$(10.5\pm0.5)\times10^{-6}\text{ K}^{-1}$
Fracture toughness	$5.0\sim6.5\text{ MPa}\cdot\text{m}^{1/2}$	$6.5\text{ MPa}\cdot\text{m}^{1/2}$	$5.3\sim6.3\text{ MPa}\cdot\text{m}^{1/2}$
Hardness	1250~1350 Hv10	1350 Hv10	1270~1330 Hv10
Accelerated aging surface monoclinic content	< 5%	< 15%	< 5%
Chemical solubility after sintering	< $100\text{ }\mu\text{g}\cdot\text{cm}^{-2}$	< $100\text{ }\mu\text{g}\cdot\text{cm}^{-2}$	< $100\text{ }\mu\text{g}\cdot\text{cm}^{-2}$
Cytotoxicity	0 Level	0 Level	0 Level
Radioactivity	< $0.1\text{ Bq}\cdot\text{g}^{-1}$	< $0.1\text{ Bq}\cdot\text{g}^{-1}$	< $0.1\text{ Bq}\cdot\text{g}^{-1}$
Sintering temperature	1480~1510°C	1500~1530°C	1500~1530°C

6. Safety Warnings and Precautions

- Zirconia dust generated during milling may irritate the respiratory tract, eyes and skin. Operators must turn on equipment dust suction device and keep the working environment ventilated.
- Follow the specified heating, holding and cooling parameters strictly for sintering. Do not open the furnace door when the furnace temperature is higher than 300°C. Rapid cooling of large restorations is forbidden to prevent cracking caused by thermal expansion and contraction.
- Do not mix and sinter zirconia products of different brands, specifications and translucency grades, so as to avoid product performance failure caused by mismatched sintering parameters.
- This product is a special dental restoration material. It is strictly prohibited for implantation in other parts of human body or non-medical use.

7. Product Technical Specifications

Model	Shade	Specifications	Thickness
3D-Pro-A0	White	98mm 95mm 92*75mm	10mm 12mm 14mm 16mm 18mm 20mm 22mm 25mm
3D-Pro-ML	A1, A2, A3, A3.5, A4 B1, B2, B3, B4 C1, C2, C3, C4		
3D-Pro-Esthetic	D2, D3, D4 BL1, BL2, BL3, BL4		
ST	White		
ST-C	A1, A2, A3, A3.5, A4 B1, B2, B3, B4 C1, C2, C3, C4		
ST-ML	D2, D3, D4 BL1, BL2, BL3, BL4		
SHT	White		
SHT-C	A1, A2, A3, A3.5, A4 B1, B2, B3, B4 C1, C2, C3, C4		
SHT-ML	D2, D3, D4 BL1, BL2, BL3, BL4		

Minimum Wall Thickness Standard: Anterior full crown $\geq 0.4\text{mm}$, posterior full crown $\geq 0.5\text{mm}$, cross-sectional area of full-contour bridge connector $\geq 12\text{mm}^2$. Fabrication below the minimum thickness is forbidden to prevent restoration fracture.

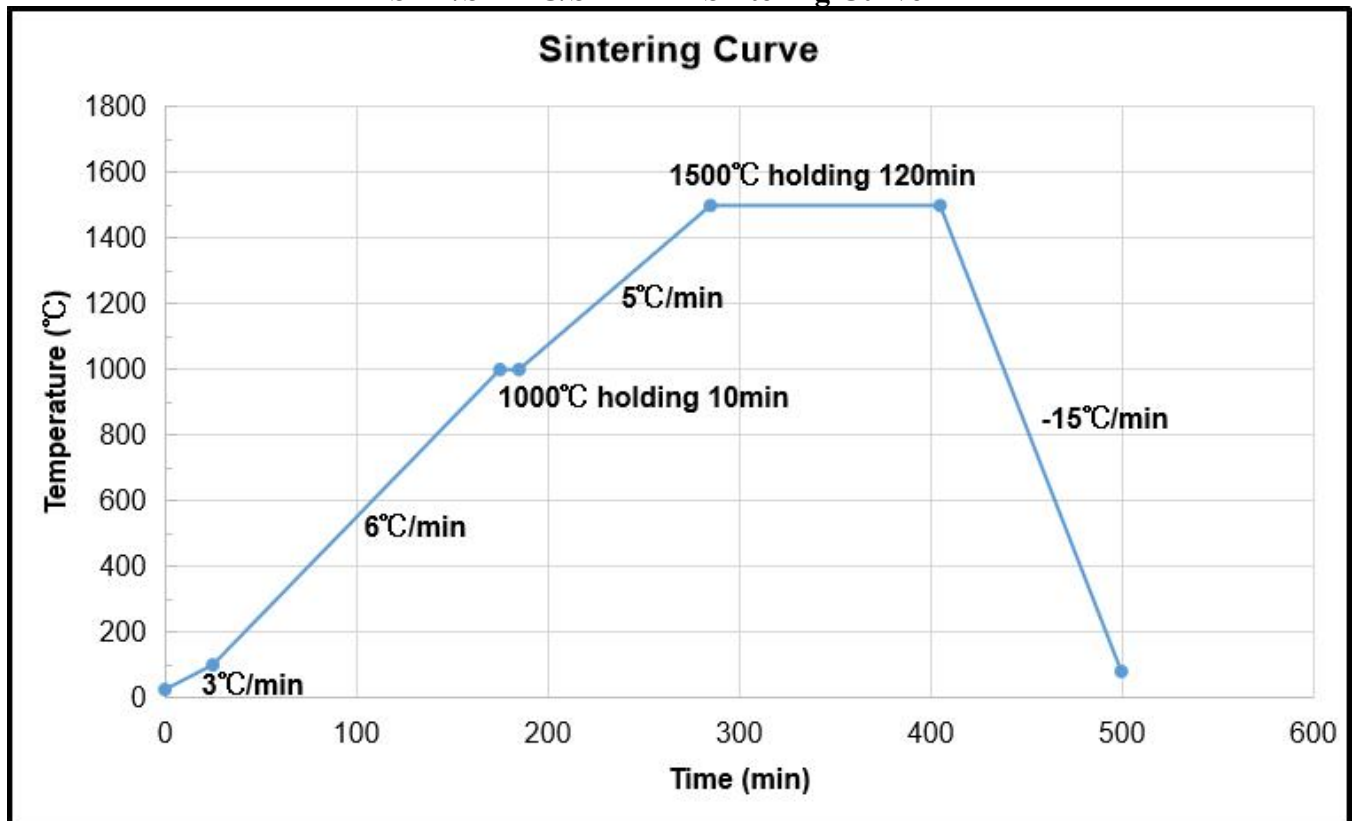
8. Standard Operating Procedures

8.1. CAD/CAM Milling Processing

- Firmly clamp the zirconia blank/disc in the fixture of milling equipment to ensure no looseness and offset;
- Check the product shrinkage rate parameters and match the equipment milling compensation coefficient;
- Use special sharp zirconia burs for milling to ensure cutting accuracy;

8.2. Standard Sintering Process

SHT/SHT-C/SHT-ML Sintering Curve



8.3. Finishing, Polishing and Glazing

- Use fine-grained diamond burs for restoration adjustment after sintering with high-speed and water cooling operation;
- Sandblast the bonding surface of restorations with 50 μ m alumina sand under 2-3bar pressure to improve bonding strength;
- Completely remove surface dust and impurities by ultrasonic cleaning or steam cleaning;
- Use special zirconia stains and glaze powder for staining and glazing, and follow the matching glaze firing curve strictly.

9. Clinical Cementation Operation

- Recommended bonding method (high-strength bonding): After sandblasting the bonding surface, apply MDP special zirconia primer, and use dual-cure resin cement for bonding and curing;
- Self-adhesive method: Suitable for single crown restoration with good abutment retention form and low occlusal stress;

- c. Traditional cement bonding: Zinc phosphate cement and glass ionomer cement are available, only applicable to restoration scenarios with low occlusal stress and excellent retention conditions.

10. Storage Conditions and Shelf Life

Storage environment: Temperature 15°C-25°C, cool, dry, ventilated and away from light, far from corrosive chemicals and humid environment.

Shelf life: 10 years for unopened products with intact packaging and standardized storage.

11. Waste Disposal

Product milling waste, grinding dust and waste restorations are ordinary non-hazardous ceramic wastes, which do not require special hazardous waste treatment.

12. Manufacturer Information

Company Name: Zhengzhou Yp Dental Co., Ltd.

Company Address: Room 15, Floor 8, Building 7, 289 Xisanhuan Road, High-tech Zone, Zhengzhou, Henan

Web: <https://www.ypdental.com>

Email: info@ypdental.com