3D Master

Instruction Manual

V1.1.1

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1.Before You Use – Quick 3-Point Check

1. Check whether the outer packaging is intact.
2. Check whether the product is undamaged.
3. Check whether all product information is complete (company name, product name, batch number, color specification, product inspection).

2. Aconia® 3D Master

The go-to material for implant-supported restorations, especially long bridges

- An excellent product mastering aesthetics and function in perfect balance
- Seamless natural gradient in shade, strength, and translucency
- Versatile across all indications for flexible clinical adaptability

3.Production Workflow

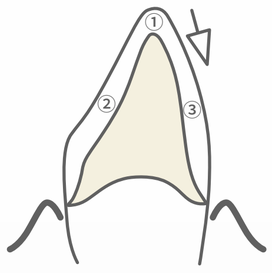
4.Technical Parameters

Parameter	Specification
Shade Available	VITA 16 shades + OM1/OM2/OM3 (commonly used VITA 26 shades)
Block Thickness (mm)	12 / 14 / 16 / 18 / 20 / 22 / 25 / 28* / 30*
Flexural Strength (MPa)	800–1200
Translucency (%)	43–51%
Vickers Hardness (HV10)	1250–1350
Post-Sintering Density (g/cm³)	⩾6.02
Fracture Toughness (MPa·m$^{1/2}$)	⩾5.8

**Customized production required. Please consult your local sales representative for details.*

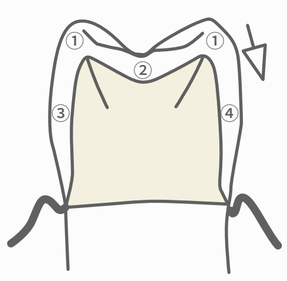
5.Teeth Preparation Guidelines

Anterior Teeth



- Incisal reduction should be ≥2.0 mm
- Minimum incisal width (labial–oral direction): ≥0.8 mm
- Minimum labial and lingual thickness: both > 0.8 mm
- Lingual contours should be prepared with a 3–5° convergence angle
- Finish line width: 1.0 mm with clear 90° shoulder
- Prepared shoulder to be rounded at the axial–cervical junction, and axial walls must be rounded

Posterior Teeth



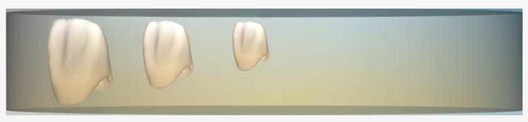
- Occlusal thickness: 1.3–1.5 mm
- Occlusal angle: 120–140°, with rounded junctions between occlusal and axial surfaces
- Minimum labial and lingual thickness: both > 0.8 mm
- When determining the insertion path, especially for a fixed bridge, ensure 6–8° convergence on axial surfaces of all abutments
- Finish line width: 1.0 mm with clear 90° shoulder, rounded at the axial–cervical angle, and with rounded axial walls

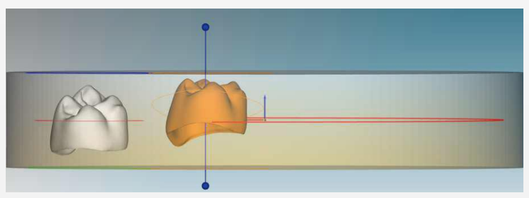
6.Design

Design Considerations:

- If the abutment conditions are unsuitable for zirconia fabrication — such as a lack of a common path of insertion, insufficient occluso-gingival height, excessive undercuts, or poorly prepared shoulders — the technician should promptly communicate with the clinician.
- Ensure the minimum crown thickness is >0.8 mm on the labial and lingual surfaces.
- Connector cross-sectional area: ≥9 mm^2 for anterior regions, ≥12 mm^2 for posterior regions.

7.Nesting





- Choose the appropriate zirconia block thickness based on restoration height
- When nesting bridges, adjust orientation slightly to include both incisal and dentin layers
- Connector placement: Place on buccal/lingual sides, preferably positioned at the height of contour whenever possible (between the middle and cervical 1/3 of the crown)
- Avoid placing connectors on pontics or proximal contact areas

8.Milling

Block Clamping:

- Jig must be dust-free and cleaned before each use
- Place block horizontally, align correctly with incisal edge orientation
- For first-time use, mark and record the alignment position between the block and the jig
- When reusing a block, align it precisely according to the previously recorded mark
- To avoid misalignment during clamping, apply even diagonal force when tightening screws
- **Note:** Clamping procedures may vary across machines and manufacturers. Always follow the specific instructions provided in the equipment manual.

9.Removing

Notes: Follow these precautions to avoid internal microcracks or fractures:

- Use a specialized dental handpiece designed for ceramics
- Maintain a stable speed of 10,000–12,000 rpm
- Ensure the handpiece operates smoothly without vibration

Removal Procedure:

1. Flip the disc to expose the cervical side of the restoration
2. Begin cutting the connectors near the cervical margin from the labial or buccal side, followed by the mesial and distal sides
3. Do not cut through more than half of any connector at a time
4. After removal, clean the surface of the restoration using a soft brush or air gun
5. Thoroughly remove all dust to prevent foggy white residues after sintering

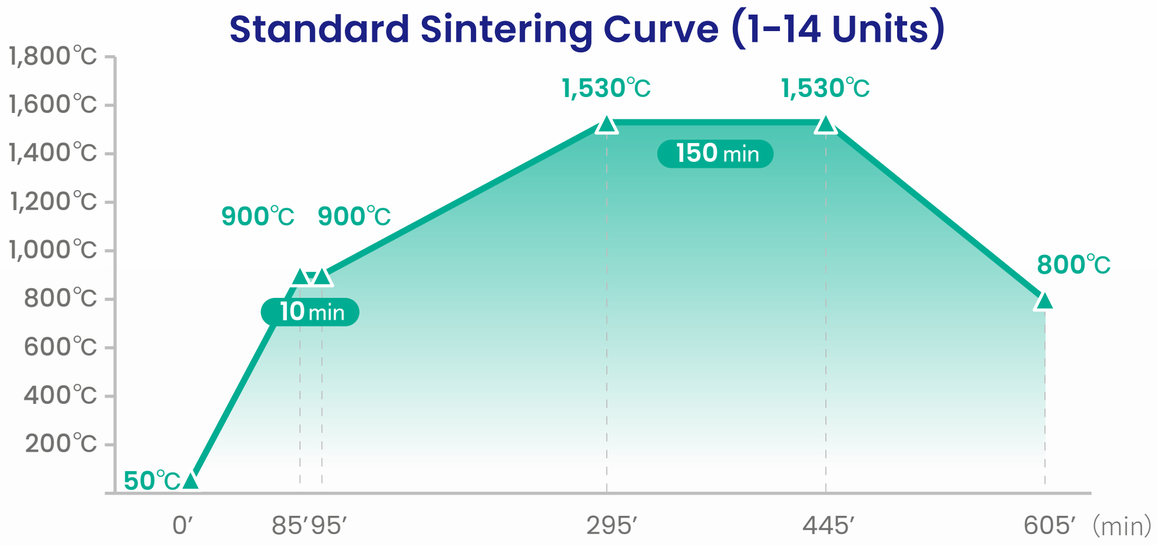
Grinding Guidelines:

Most adjustments should be completed at this stage, as excessive grinding after sintering is not recommended. If post-sintering grinding is necessary, it should be limited to minor refinements using appropriate techniques.

10.Sintering

Sintering Curve

Standard Sintering Curve (1-14 Units)

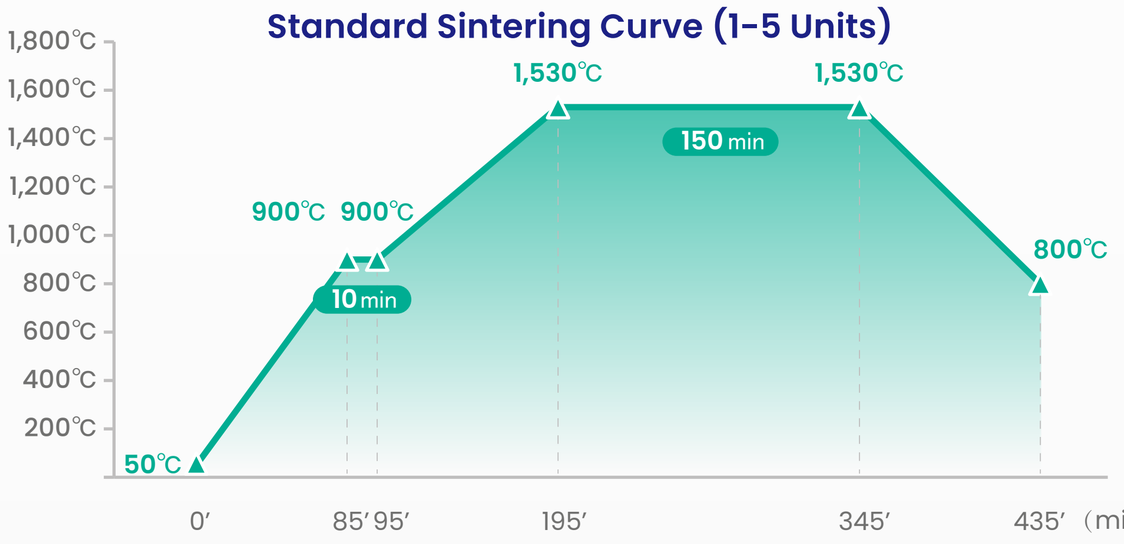


Standard Sintering Parameters (1-14 Units)

Step	Initial temperature(℃)	Final temperature(℃)	Time(min)	Heating rate(℃/min)
1	50	900	85	10
2	900	900	10	Holding
3	900	1530	200	3
4	1530	1530	150	Holding
5	1530	800	160	-5
6	800	Natural cooling		

*It's recommended to use BSM sintering furnaces in Standard mode.

Standard Sintering Curve (1-5 Units)

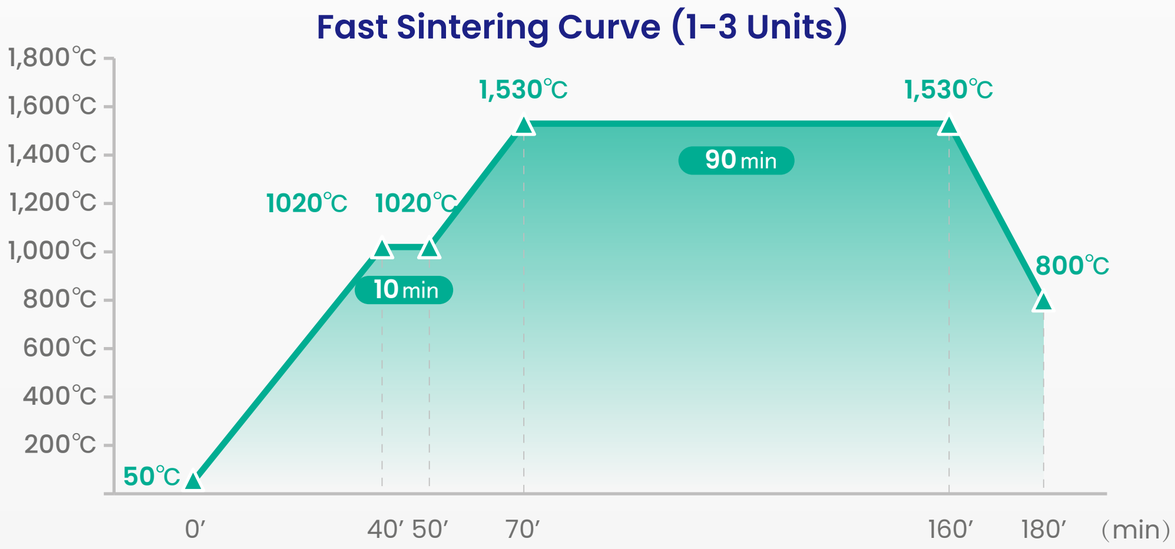


Standard Sintering Parameters (1-5 Units)

Step	Initial temperature(℃)	Final temperature(℃)	Time(min)	Heating rate(℃/min)
1	50	900	85	10
2	900	900	10	Holding
3	900	1530	100	6
4	1530	1530	150	Holding
5	1530	800	90	-8
6	800	Natural cooling		

*It's recommended to use BSM sintering furnaces in Standard mode.

Fast Sintering Curve (1-3 Units)



Fast Sintering Parameters (1-3 Units)

Step	Initial temperature(℃)	Final temperature(℃)	Time(min)	Heating rate(℃/min)
1	50	1020	40	24
2	1020	1020	10	Holding
3	1020	1530	20	25
4	1530	1530	90	Holding
5	1530	800	20	-36
6	800	Natural cooling		

*It's recommended to use BSM sintering furnaces in Standard mode.

Aconia® 3D Master – Optimized for Performance

- Compatible with most mainstream zirconia sintering furnaces on the market
- Achieves exceptional results when paired with the Besmile FM30 furnace, unlocking its full esthetic and strength potential

11.Grinding

Post-sintered restorations are very dense. Pay attention to the following tips during grinding to avoid damage and fractures:

- Use a specialized dental grinding tool
- Higher translucency zirconia block = use finer grit
- Recommended: Always grind under continuous cooling to prevent heat buildup
- Support your hand on a stable surface during grinding
- Handpiece speed: 20,000–25,000 rpm
- Avoid grinding the internal surface of the crown
- Apply light, one-directional pressure when grinding

12.Sandblasting

Post-grinding sandblasting is recommended to restore strength and surface cleanliness after grinding.

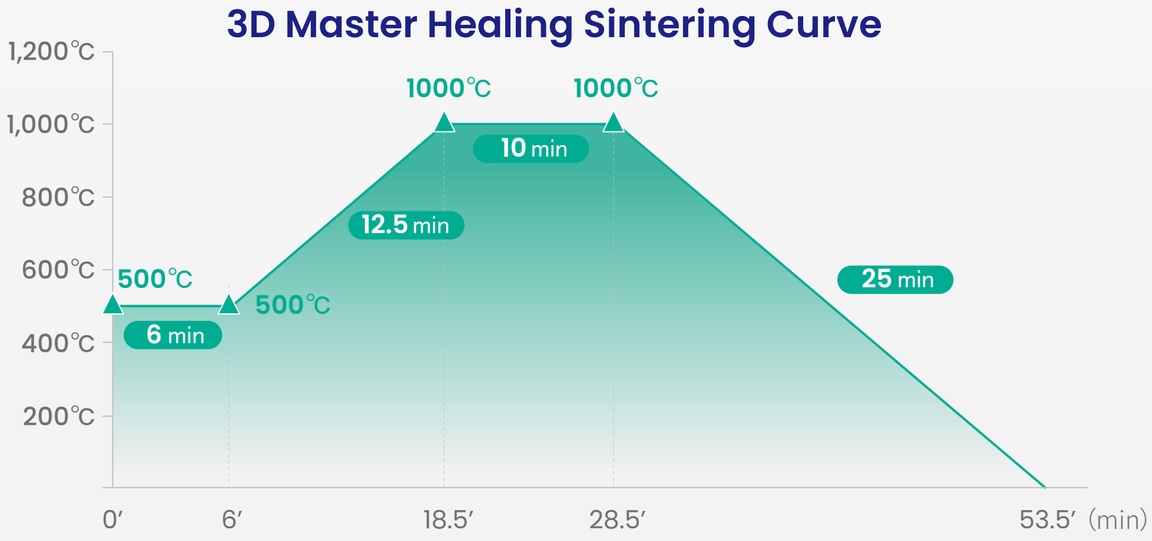
- **Material:** High-purity alumina, 270 mesh (50 μm)
- **Pressure:** 2.0–2.5 Bar (0.2–0.25 MPa)

Effect:

- Induces stress-related phase transformation toughening
- Increases monoclinic phase content to >10%
- Enhances biaxial flexural strength of zirconia

13.(Optional) **Heat Treatment** Post Grinding and Sandblasting:

It is recommended to perform heat treatment in a porcelain furnace after sandblasting. This not only enhances the strength of the crown but also improves the bond between the zirconia and porcelain.
Refer to the firing curve shown in the diagram below.



Step	Time (min)	Temperature (℃)	Speed (℃/min)	Notes
1		500	0	
2	6	500	30-50	500℃ holding time: 6 min
3	10–16.67	1000	0	1000℃ holding time: 10 min
4	20–26.67	1000	30-50	
5	46–66	0		

*It's recommended to use BSM sintering furnaces in Standard mode.

14.Staining

Key benefits of Artamic stain include:

- Instant Glossiness
- User-Friendly
- Lifelike Fluorescence
- Wide Temperature Range
- Predictable Shade

Master Kit

The Master Kit includes all the essential stain and glaze pastes in the Artamic Esthetic System, along with a bottle of blending liquid, giving you the flexibility to meet various staining needs.

STARTER KIT

The Starter Kit includes two jars of basic stain pastes, one jar of glaze paste, and a bottle of blending liquid, making it user-friendly for beginners.

*The shading guide is not included in the kit and needs to be ordered additionally as an accessory.

Dentine shades	A	B	C	D3	D4				
Glaze	Translucent	3D Glaze	Incisal shades	Blue	Purplish Gray	Gingival shades	Red	Pink	
Adjustment shades	Yellow	Brown	Light Brown	Black	White	Orange	Terracotta		

GINGIVA KIT

The Gingiva Kit includes 6 gingiva shades, 2 3D gingiva shades, and a bottle of blending liquid for creating detailed gingival effects.

*The Gingiva Kit includes 6 gingiva shades, 2 3D gingiva shades, and a bottle of blending liquid for creating detailed gingival effects.

Gingival Shades

- Red
- Pink
- Light Pink
- Orange Pink
- Purplish Red
- Reddish Brown

3D Gingiva

- 3D Light Pink
- 3D Orange Pink

15.Sintering Curve

Product	Drying Temp (°C)	Drying Time (min)	Heating Rate (°C/min)	Firing Temp (°C)	Holding Time (min)	Furnace Opening Temp (°C)
Stain Paste	450	6	45	740–820	3	600

About Besmile

Besmile is a global digital solutions provider for restorative and implant dentistry.

We offer integrated systems—premium CAD/CAM materials, advanced equipment, and precision implant systems—designed to streamline workflows and ensure reliable results.

All core products are developed and manufactured in-house, ensuring consistent quality and continuous innovation.

Trusted by over 1,000 partners in more than 100 countries, we empower dental professionals to create confident, lasting smiles.

Technology creates the best smile.

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