Operation Attention

Please refer to Firing Parameters to get optimal restoration results.
Adjust drying time according to crown or bridge size to ensure ceramics in completely dry condition.
Adjust firing temperature and time according to furnace condition and the quantity of restorations.
Make sure vacuum pump is well maintained in order to initiate vacuum condition quickly.
Make sure ceramics are not contaminated by other materials.
Take appropriate amount of ceramics for building up. The remaining exposed ceramics are not suggested to use again.

Safety Warning

Products should be used by trained dental technicians.
Wearing protection suit and mask are suggested during operation.
If in eyes or mouth by chance, rinse immediately with plenty of water.
Powder-allergic personnel are not suggested to use.

Storage

Please seal the bottle porperly after use.
Please store our products in clean and ventilated places, and avoid direct sunlight.

BAOT BIOLOGICAL TECHNOLOGY CO.,LTD.
Add: No.12 building, Yujing Industry Zone, 106 Qihao Road, Torch Development District, Zhongshan, Guangdong, China. 528400
Tel: +86-760-87893825 +86-760-87893826
Fax: +86-760-87893827
Skype: baotcom
Website: www.baot.biz

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BAOT

JC
Metal Ceramic

Instructions for Use

BAOT

Content

Characteristic Features

Life-like shades

1.Colorful shades, classic 16 & 26 shades ceramics

2.Distinct layers & natural colors

Mechanical properties

1.Natural strength

2.Excellent bonding force

Optimal compatibility

1.Compatible with various alloy brands

2.Compatible with other brands' bonding agents

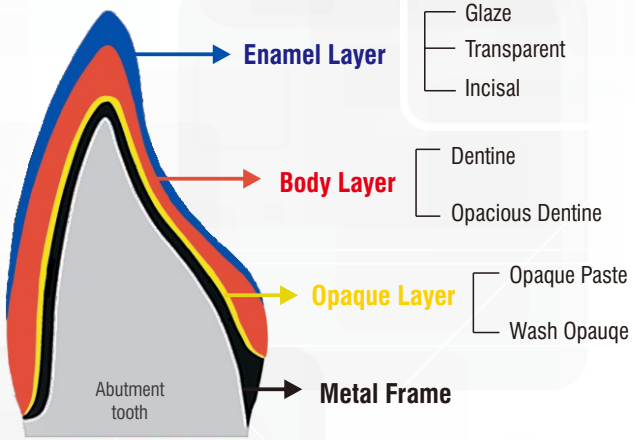
Tiny particle

1.High density, excellent bonding force, high color intensity

2.Low shrinkage, one step build up

Basic Technique

Ceramic layer distribution



*Anterior Teeth Crosscutting Structure

Application procedures

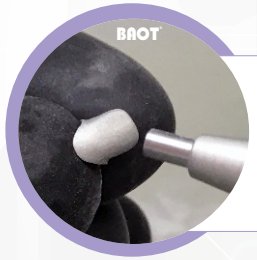
1. Metal frame treatment
2. Wash Opaque & Opaque application
3. Dentine application
4. Enamel & Transparent application
5. Contouring & Glaze application

Metal frame treatment

Grinding Metal Frame

Grind the metal frame, to get a smooth surface.

Standard:
1)Metal frame thickness no less than 0.3mm.
2)No sharp edges, to avoid cracks due to thin edges.



Sand Blasting

Sandblast metal surface, to roughen the frame.

Standard:
Roughen surface, strengthening physical bonding force.
No contamination on metal surface, reducing possibilities of bubble problems.

Ultrasonic Cleaning or Steam Cleaning

Clean metal frame with ultrasonic or steam machine for 1 minute.

Standard:
Clean the frame surface to avoid bubbles.

Oxidization

Oxidize the metal crown following the metal suppliers' recommendation.
Standard:
Degas the metal surface, to avoid bubbles.
Attention:
Use tweezer to pick up the metal crown after oxidization.

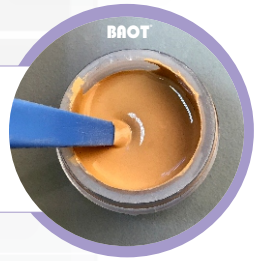
Wash Opaque application

WO Used for enchancing bonding force and covering metal color initially.

Mixing

If Wash Opaque is dry, use Opaque Liquid to get the optimal condition.

* Use plastic stick to mix, avoid mixing with water or other liquid.



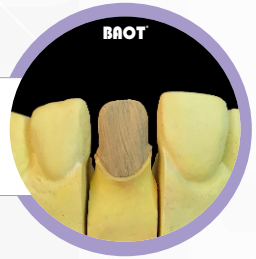
Coating

Use flat-end brush to coat a thin layer of Wash Opaque on metal crown before firing.

* Avoid water in the brush.
* Seal the Wash Opaque bottle after use to avoid contamination.

Firing

* Fire Wash Opaque referring to the Firing Parameters.

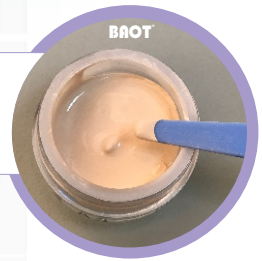


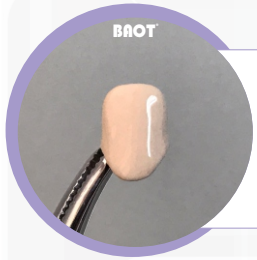
Opaque application

OP Used for covering metal color and differentiating shades.

Mixing

If Opaque is dry, use Opaque Liquid to dilute it and get the optimal condition as shown in the picture.
* Use plastic stick to mix, avoid water or other liquid.





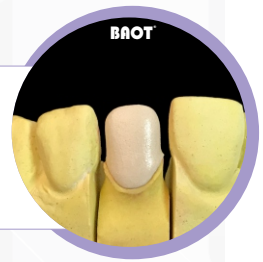
Coating

Use plastic stick to coat Opaque evenly on the surface, covering metal color.
Fire until Opaque layer is baked dry.

* Vibrate metal crown after Opaque coating, to ensure Opaque is well laid on the crown.

Firing

Fire referring to Firing Parameters.
* Preheat metal crown until Opaque layer looks white before firing, to avoid bubbles and cracks.
* Opaque layer should be smooth and metal color should not be seen, otherwise additional Opaque layer shall be applied.

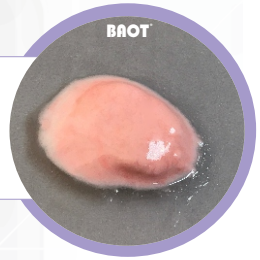


Dentine application

Mixing

Use Modeling Liquid to mix Dentine powder until it becomes pasty, as shown in the picture.

* Don't make it too dry or too wet.

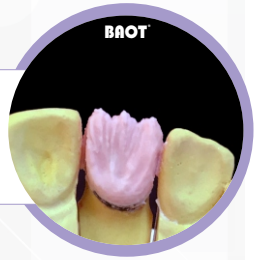


Building up Dentine

Judge the size of Dentine layer based on space and occlusion.
Due to shrinkage effect, normally Dentine layer should be around10% larger to compensate the firing shrinkage effect.

Attention

Cervical shade of natural tooth is darker than Dentine layer.
The thickness of Dentine layer should be thinner from the cervical 1/3 to the incisal 1/3 in order to reserve space for Enamel and Transparent layer.

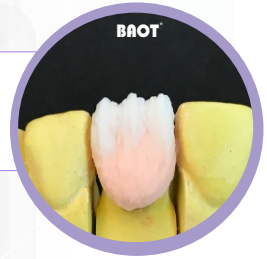


Enamel & Transparent application

Building up Enamel

Apply Enamel ceramic to the incisal 1/3.

* Use brush to compact and smoothen surface.



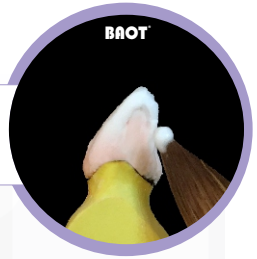
Building up Transparent

Apply Transparent to the incisal 2/3 if needed, covering Enamel.
Slight overbuilding is allowed at incisal area.

Add-on

Add-on Dentine & Transparent to interproximal space if needed

*Use tweezer to pick up crown.

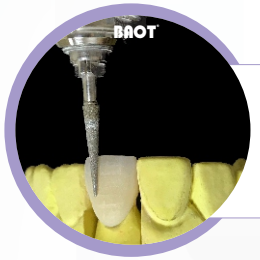


Firing

Fire referring to the Firing Parameters.(See P14)

*Insufficient firing or over firing may lead to unstable crystalline structure and undesired shades.

Countouring & Glaze application



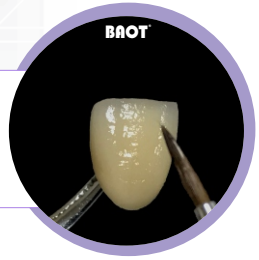
Contouring

After firing, contouring with non-contaminated discs, and diamond burs to shape the anatomy. Check whether additional ceramic application is needed. If additional is required, Firing Temperature can be lower 5 ℃.
* Add on too many times is not recommended, or it may lead to undesired results.

Glaze application

Mix Glaze powder with Glaze & Stain Liquid, to make it pasty.

Coating should be evenly distributed. Don't coat it too heavily.
Or the fine structure of the tooth surface may be destroyed.



Shades matching

Match shades with a SHADE GUIDE.
If required,use the tip of the staining brush and spread a thin layer of stain until satisfactory shade is obtained.

Glaze firing

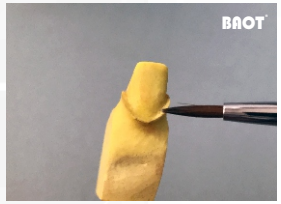
After Glaze application, fire the frame under atmosphere pressure referring to the Firing Parameters.
* If firing temperature is higher than the Firing Parameters, it may lead to circular formation and unnatural over-glossy surface and opacity.
* If firing temperature is lower than the recommended parameter, it may lead to matt and rough surface.

Advanced Technique

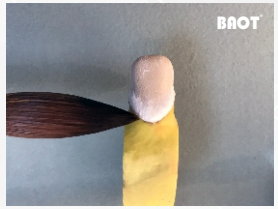
Margin application

Apply to the Margin area instead of metal margin to get better biocompatibility and more natural shade.

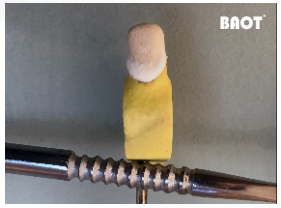
1.The common bevel chamfer preparation



2.Ceramic separator application



3.Build up Margin ceramic.



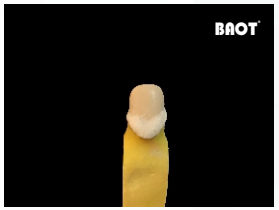
4.Vibrate to minimize the shrinkage

5.The 2nd Margin application

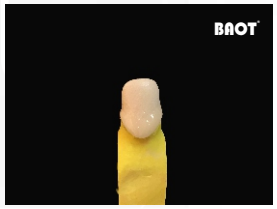
6.Margin application completed

Cervical application

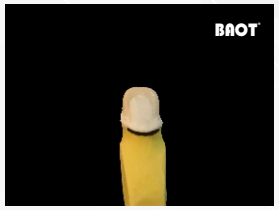
Coloring the cervical area to get natural shade.



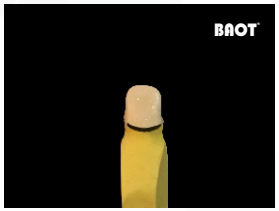
1.Build up on labial cervical area



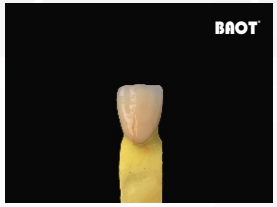
2.Cervical gets darker after firing



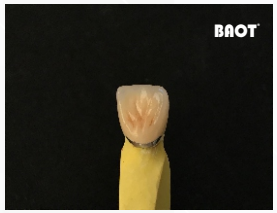
3.Build up on lingual side



4.Lingual fossa



5.Labial view after firing

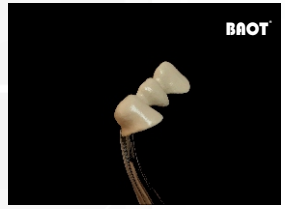


6.Lingual view after firing

Opacious Dentine application

Opacious Dentine is used for enhancing the application space or supply a gap when the frame designing is not proper. Also, for avoiding shades difference caused by different Dentine thicknesses, avoiding color layering caused by short metal frame and opaque exposure caused by thin Dentine layer.

1.Shortage of central incisor and canine

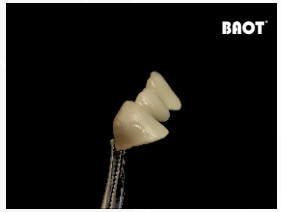


2.The cervical part of lateral incisor is too in

3.Incisal lengthened with Opacious Dentine

4.Build up lateral incisor with Opacious Dentine

5.Color difference is successfully avoided

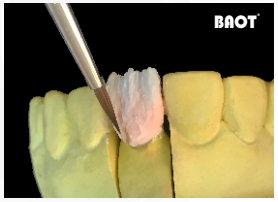


6.Color difference is successfully avoided

Pre-stain & Stain application

Used for internal and external staining, groove coloring, shade correcting and customizing.

1.Create a groove



2.Apply Stain into the groove

3.Finish application after applying Enamel and Transparent

4.Final view of labial after firing

5.External staining of groove before firing

6.Final view of lingual after firing

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Firing Parameters

Condition	Wash Opaque	Opaque	Margin	Body	Add-on	Glaze&Stain
Drying temp.(℃)	550	550	550	550	550	550
Drying time(min)	2	3	3	3	2	2
Heating time(min)	2	3	3	3	2	2
Heating rate(℃/min)	60	60	55	55	55	55
Firing temp.(℃)	960	940	930	920	910	890
Holding time(min)	1	1	1	1	1	1
Cooling time(min)	4	4	4	4	4	4
Cooling temp.(℃)	550	550	550	550	550	550
Vacuum start(℃)	550	550	550	550	550	-
Vaccum end(℃)	960	940	930	920	910	-

Note:
This Firing Parameters chart is only for reference.
Optimal results will be obtained during practical operation.
Firing temperature and holding time shall be adjusted according to furnace condition,crown design and bridge length.

Shades Matching

16 Shades

VITA 16	BAOT 16	OPAQUE	DENTINE	ENAMEL	TRANSPARENT	MARGIN	CERVICAL	GLAZE
A1	A1	A1	A1	E-1A	T-1	M-1A	C-1A	G-1
A2	A2	A2	A2	E-1A	T-1	M-1A	C-1A	G-1
A3	A3	A3	A3	E-1A	T-1	M-1A	C-1A	G-1
A3.5	A3.5	A3.5	A3.5	E-1B	T-1	M-1A	C-1A	G-1
A4	A4	A4	A4	E-1B	T-1	M-1A	C-1A	G-1
B1	B1	B1	B1	E-1B	T-1	M-1B	C-1B	G-1
B2	B2	B2	B2	E-1B	T-1	M-1B	C-1B	G-1
B3	B3	B3	B3	E-1B	T-1	M-1B	C-1B	G-1
B4	B4	B4	B4	E-1B	T-1	M-1B	C-1B	G-1
C1	C1	C1	C1	E-1B	T-1	M-1C	C-1C	G-1
C2	C2	C2	C2	E-1B	T-1	M-1C	C-1C	G-1
C3	C3	C3	C3	E-1A	T-1	M-1C	C-1C	G-1
C4	C4	C4	C4	E-1A	T-1	M-1C	C-1C	G-1
D2	D2	D2	D2	E-1B	T-1	M-1D	C-1D	G-1
D3	D3	D3	D3	E-1B	T-1	M-1D	C-1D	G-1
D4	D4	D4	D4	E-1B	T-1	M-1D	C-1D	G-1

BAOT®

26 Shades

VITA 26	BAOT 26	OPAQUE	DENTINE	ENAMEL	TRANSPARENT	MARGIN	CERVICAL	GLAZE
1M1	B1M1	B1M1	B1M1	E-1A	T-1	M-1B	C-1B	G-1
1M2	B1M2	B1M2	B1M2	E-1A	T-1	M-1B	C-1B	G-1
2L1.5	B2L1.5	B2L1.5	B2L1.5	E-1A	T-1	M-1B	C-1B	G-1
2L2.5	B2L2.5	B2L2.5	B2L2.5	E-1A	T-1	M-1B	C-1B	G-1
2M1	B2M1	B2M1	B2M1	E-1A	T-1	M-1D	C-1D	G-1
2M2	B2M2	B2M2	B2M2	E-1A	T-1	M-1A	C-1A	G-1
2M3	B2M3	B2M3	B2M3	E-1A	T-1	M-1B	C-1B	G-1
2R1.5	B2R1.5	B2R1.5	B2R1.5	E-1A	T-1	M-1A	C-1A	G-1
2R2.5	B2R2.5	B2R2.5	B2R2.5	E-1A	T-1	M-1A	C-1A	G-1
3L1.5	B3L1.5	B3L1.5	B3L1.5	E-1A	T-1	M-1C	C-1C	G-1
3L2.5	B3L2.5	B3L2.5	B3L2.5	E-1A	T-1	M-1B	C-1B	G-1
3M1	B3M1	B3M1	B3M1	E-1A	T-1	M-1C	C-1C	G-1
3M2	B3M2	B3M2	B3M2	E-1A	T-1	M-1A	C-1A	G-1
3M3	B3M3	B3M3	B3M3	E-1A	T-1	M-1B	C-1B	G-1
3R1.5	B3R1.5	B3R1.5	B3R1.5	E-1A	T-1	M-1A	C-1A	G-1
3R2.5	B3R2.5	B3R2.5	B3R2.5	E-1C	T-1	M-1A	C-1A	G-1
4L1.5	B4L1.5	B4L1.5	B4L1.5	E-1A	T-1	M-1C	C-1C	G-1
4L2.5	B4L2.5	B4L2.5	B4L2.5	E-1A	T-1	M-1A	C-1A	G-1
4M1	B4M1	B4M1	B4M1	E-1A	T-1	M-1C	C-1C	G-1
4M2	B4M2	B4M2	B4M2	E-1C	T-1	M-1A	C-1A	G-1
4M3	B4M3	B4M3	B4M3	E-1C	T-1	M-1A	C-1A	G-1
4R1.5	B4R1.5	B4R1.5	B4R1.5	E-1A	T-1	M-1A	C-1A	G-1
4R2.5	B4R2.5	B4R2.5	B4R2.5	E-1C	T-1	M-1A	C-1A	G-1
5M1	B5M1	B5M1	B5M1	E-1A	T-1	M-1C	C-1C	G-1
5M2	B5M2	B5M2	B5M2	E-1C	T-1	M-1A	C-1A	G-1
5M3	B5M3	B5M3	B5M3	E-1C	T-1	M-1A	C-1A	G-1

Troubleshooting Guide

1st Step: Make sure you are using the right metal.			
	Item	Standard	Remarks
Metal Selection	Coefficient of Thermal Expansion (CTE)	From 13.8 to 15.2*$10^{-6}K^{-1}$	CTE outside this range may lead to cracks .
	Vickers Hardness	⩽330HV	Metal with high hardness easily causes visible cracks.
	Recycled Metal	Suggest not to use	Recycled or mixed metal greatly increases risks of cracks and bubbles.
2nd Step: Make sure you are conducting correct metal treatment procedures.			
Metal Treatment	Grinding	Use tungsten carbide burs to grind the sharp angles of frame.	Stones may lead to bubbles.
	Sand Blasting	Blow off investment, scrap and oxides on metal surface with #110 to #130 aluminum oxide sand.	Unclean metal causes weak bonding force between metal and ceramic. Ceramic chipping off metal crown. Sand blasting also strengthens physical bonding force.
	Ultrasonic / Steam cleaning	Ultrasonic/Steam cleaning clears off surface after sand blasting.	Deep cleaning further boosts physical bonding force, avoid bubble and ceramic chipping.
	Oxidization	Degassing and cleaning	This step prevents cracks, bubbles and increases chemicalbonding force.
3rd Step: Make sure no contamination in ceramic powder. Take out powder from bottle in small amount, and do not refill powder back to bottle once taken out.			
4th Step: Make sure that furnace temperature is correctly set, and the furnace is under well-maintained condition, calibrate the furance every 2-3 months.			
Opaque Paste(OP) Application	Problems	Causes	Solutions
	Bubbles	Impurities or bubbles on metal crown surface	Sandblasting, cleansing, oxidating thoroughly.
		Holes after sand blasting in metal crown	Remake metal crown if the sand hole is too big. Grind metal crown if the sand hole is small.
		Water mixed in Opaque Paste	Use Opaque Liquid to mix with OP, OP pen cannot be polluted by water.
		Drying time is too short	Drying time must be more than 4 minutes.
		No or less vaccum	Check and adjust vacuum condition.
	Cracks	Thick or uneven ceramic	Opaque layer should be even and thin.
	Undesired Color	OP mixed with water or too diluted	Use Opaque Liquid to mix with OP, and don't make it too diluted.
		Thin OP layer	Apply appropriate OP layer.

	Problems	Causes	Solutions
Body Application	Bubbles	Bubbles or gaps in OP before Dentine application	Check OP layer before applying dentine, and add OP if necessary.
		Dentine not dense enough	Vibrate and absorb water.
		Too high firing temperature	Refer to suggested Firing Parameters. If the temperature is still too high, Reduce 5℃ more.
	Ceramic Chipping	Recycled metal or welded metal	Remake the crown with new metal.
		Contaminated metal or OP	Avoid contamination.
		Firing temperature of OP is not high enough.	Set the firing temperature right.
	Burst of Ceramic	Not enough drying time or fast heating rate	Extend drying time or lower the heating rate.
	Shrinkage Crack	Gap between ceramic layer and OP	Fill the gap,and vibrate the crown in softly.
	Edge Broke	Frame support is not enough.	Make metal edge up to 0.3mm.
	Incisal Crack	Dentine layer too thick or cooling time too short, metal frame not big enough.	Apply suitable dentine layer, and extend cooling time.
		Small design for metal crown	Remake metal frame.
	Crack During Ceramic Trimming (feels soft)	Insufficient sintering temperature causes uncompleted crystalization, which leads to insufficient cohesive force of crystals. Or over sintering may lead to glass phase, making ceramic surface tender, may easy to lead crack when contouring.	Set temperature correctly, 930℃ is suggested. Please pay attention to the temperature is based on calibrated furnace.
	Poor Color	Furnace is contaminated by volatile material.	Rise furnace temperature from 650℃ to 960℃ under vacuum condition, holding for 10 mins, in order to make volatile material dismissed.
		Dentine and Transparent layer are insufficient or over.	Apply appropriate Dentine and Transparent layer.
		Greenish color, low firing temperature or short firing time.	Increase firing temperature and firing time, and cleaning furnace.
	Opaque Color	Different layers of ceramic mixed, temperature too low.	Don't vibrate too much and too heavily.
		Abnormal vacuum condition in furnace	Set the furnace vacuum condition right.
Glaze Application	Lack of Glossiness	Too low firing temperature	Increase firing temperature.
		Unclean surface after contouring	Clean ceramic surface before applying Glaze.
		Not well-laid glaze paste or too condensed	Make glaze paste well-laid.
	Over Glossy	Too high firing temperature	Lower firing temperature.