All Ceramic Materials for All-Ceramic Restorations

Amber®

Troubleshooting Guide

EN

CE 2195 FDA

Human-Aid System Supplier

beLIVE HASS

Contents

Troubleshooting for **Amber**® Press / **Amber**® LiSi-POZ

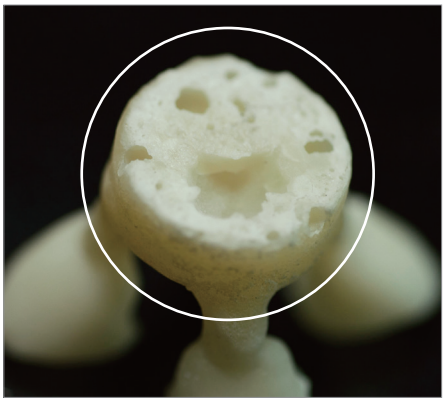
Amber® Press
Amber® LiSi-POZ Troubleshooting Guide

1-1. Troubleshooting for Pressing

Case 1 Porous after pressing

Problem

Porous occurred on the ingot after pressing.



Cause

When ingot is pressed at a higher temperature than the recommended temperature, the surface boils and causes porosity.

Solution

- Press to fit the recommended temperature on the pressing schedule table.
- If recommended temperature schedule has been applied, check the calibration of the pressing furnace. If calibration is difficult, decrease the pressing temperature by 10℃ lower than the recommended temperature.
- Shorten the holding time.
- Pressing at an overheated temperature may result in porous and thick reaction layers on the ingot surface.

Pressing Schedule

<table>
<tr><th></th><th>Translucency</th><th>Size</th><th>Shade</th><th>Investment Ring(g)</th><th>Starting Temp. (B, °C)</th><th>Heating Rate (t↗, ℃ / min.)</th><th>Max Temp. (°C)</th><th>Holding Time (min.)</th><th>Vacuum On (°C)</th><th>Vacuum Off (°C)</th></tr>
<tr><td rowspan="3">Amber® Press</td><td>HT</td><td rowspan="3">R10 / R20</td><td>A1, A2, A3, A3.5, B1, B2, W1, W2, W3, W4</td><td rowspan="3">Small (100g) / Large (200g)</td><td rowspan="3">700℃</td><td rowspan="3">60℃/min</td><td>915℃</td><td rowspan="3">15 min / 20 min</td><td rowspan="3">700℃</td><td>915℃</td></tr>
<tr><td>LT</td><td>A1, A2, A3, A3.5, B1, B2, B3, B4, C1, C2, C3, C4, D2, D3, D4 W1, W2, W3, W4</td><td rowspan="2">920℃</td><td rowspan="2">920℃</td></tr>
<tr><td>MO</td><td>MO0, MO1, MO2, MO3, MO4</td></tr>
<tr><td rowspan="4">Amber® LiSi-POZ</td><td>HT</td><td rowspan="2">R10 / R15</td><td rowspan="4">W4, A1, A2, A3, A3.5</td><td>Small (100g)</td><td rowspan="4">700℃</td><td rowspan="4">45℃/min</td><td rowspan="4">915℃</td><td>15 min</td><td rowspan="4">700℃</td><td rowspan="4">915℃</td></tr>
<tr><td>LT</td><td rowspan="3">Large (200g)</td><td rowspan="3">30 min</td></tr>
<tr><td>HT</td><td rowspan="2">R20</td></tr>
<tr><td>LT</td></tr>
</table>

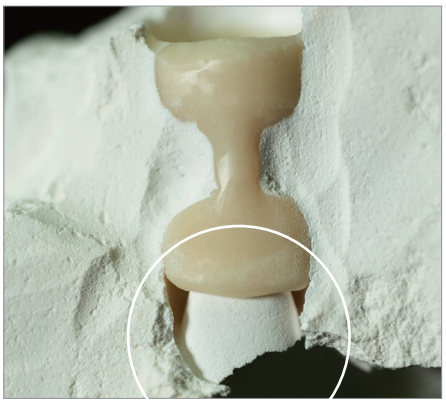
Note

1. There may be a little difference between the displayed temperature and the actual temperature of each furnace. When you use the Amber® ingots, please verify that the above standard schedule is suitable for your press furnace. If it is not, please try to find the optimized pressing temperature through the following processes.
   1) If there are some traces of tiny bubble on the surface of pressed restoration ⇒ Reduce the maximum temperature by 5~10℃ and retry the pressing.
   2) If the marginal area of restoration is not formed completely ⇒ Increase the maximum temperature by 5~10℃ and retry the pressing.

Case 2 Insufficient pressing not as much as wax pattern

Problem

Ingot has not been melted enough into the margin part.



Cause

- This problem happens when ingot has not been crystallized well at the optimal temperature.
- Pressing temperature is low.

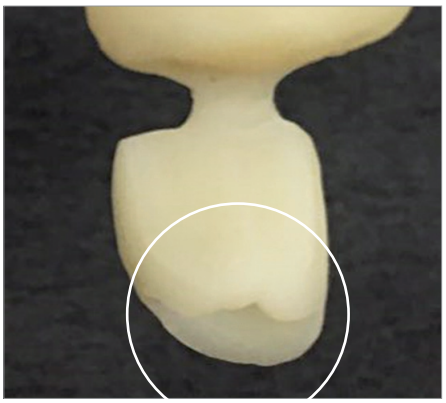
Solution

- Press to fit the recommended temperature schedule table. (Please refer to the Amber® Pressing, Amber® LiSi-POZ Pressing Schedule)
- If recommended temperature schedule has been applied, check the calibration of the pressing furnace. If calibration is difficult, increase the pressing temperature by 10℃ higher than the recommended temperature.
- Make sure there is sufficient hardening of the investment material so that it does not crack during working.
  Do not apply any impacts or shocking. The ingot may not be pressed properly when the investment material is cracked.

Case 3 Insufficient pressing not long enough to the margin part

Problem

Ingot was not pressed long enough to the margin part.

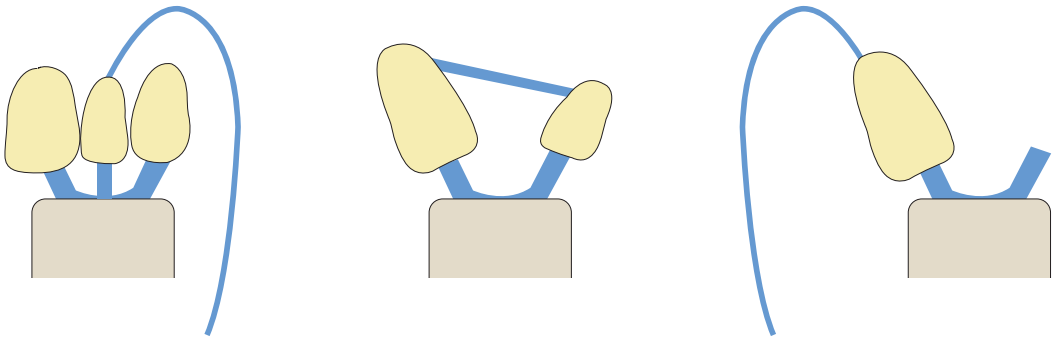


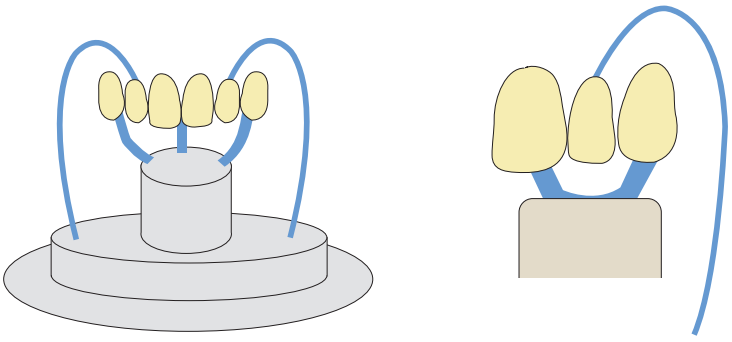
Cause

1) The residual gas may exist inside due to insufficient holding time for wax burnout.
2) The sprue may be fixed in an inappropriate way while setting the wax sprue.

Solution

- Take sufficient holding time in burnout process. At least one hour is recommended. Or residual gas may interfere with appropriate processing.
- Follow the time table recommended by investment material manufacturer.
- Observe below guidelines when you work on wax sprue.
- When press body is large, add air vent to reduce internal pressure generated by pressing.
- In case of applying more than two press bodies and/or when there is height gap between press bodies, add sprue between the bodies.





Amber® LiSi-POZ

Amber® LiSi-POZ

Case 4 Too many reaction layers

Working condition : Recommended Amber® Press, Amber® LiSi-POZ Pressing Schedules

Problem

Too many reaction layers remain roughly on the surface after divesting.

Cause

1) Due to overheating pressing temperature or overlong holding time.
2) The residual gas may exist inside due to insufficient wax burnout.

Solution

- Press to fit the recommended temperature schedule table.
- If recommended temperature schedule has been applied, check the calibration of the pressing furnace.
  If calibration is difficult, decrease the pressing temperature by 10℃ lower than the recommended temperature.
- Do not use wetting agent.
- The reaction layers may be formed due to the residual gas inside, so please proceed with sufficient burnout holding time.
- Do not reuse any ingot.
- Observe the mixing ratio recommended by investment material manufacturer.
- Use the investment material which generates less reaction layers.

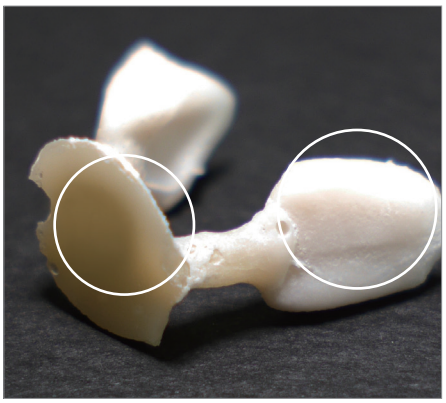
Mixing Ratio of the Ceramic Investment Material

Brand	Use	100g			Handmixing (sec.)	Mixing in vacuum (sec.)	Firing	
		Powder	Liquid	Water			Temp.(°C)	Holding Time(min.)
BC VEST	Crown/Veneer	100	14	6	15	60 (40 in summer)	800-850	60
	Inlay	100	12	8	15	60 (40 in summer)	800-850	60
MICROSTAR	Crown/Veneer	100	20	5	20	60	800-850	60
	Inlay	100	12.5	12.5	20	60	800-850	60
Calibra	All indications	100	17	8	20	60	800-850	60
Prime vest	All indications	100	19	6	20	60	800-850	60
Heraeus	All indications	100	20	2	20	60	850	30-60

Case 5 Discoloration or two colors after pressing

Problem

Discoloration or two colors appears after pressing.



Cause

1) Due to the higher pressing temperature than the recommended temperature.
2) Due to reused ingot.

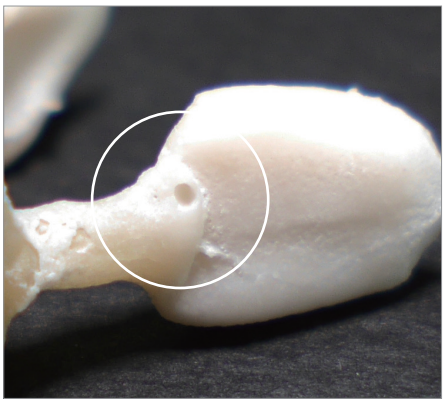
Solution

- Press to fit the recommended temperature schedule table.
- If recommended temperature schedule has been applied, check the calibration of the pressing furnace.
  If calibration is difficult, decrease the pressing temperature by 10℃ lower than the recommended temperature.
- Do not reuse any ingot. If reused, the results may come out in different colors from its original shade.

Case 6 Formation of bubble and excessive reaction layers

Problem

There is porous and excessive reaction layers on the surface after pressing.



Cause

Insufficient amount of ingot causes unstable pressing work and the consequent lack of pressure results in gas porosity.

Solution

- Check the weight of wax pattern as below to make sure the ingot weight is enough to press. (R10 1ea up to 0.7g, R20 1ea up to 1.7g)
- Do not reuse any ingot.

Case 7 Cracks of an investment ring during the pressing process

Problem

Investment ring cracks during the pressing process.

Cause

1) Residual investment material on the Alox plunger surface.
2) The ring base may not be horizontal when pressed.
3) Some impact may be applied to the surface of the investment material.
4) Incorrect mixing ratio of investment material.
5) Insufficient curing time of investment material.

Solution

- Get rid of residual investment materials clearly on the Alox plunger.
- Place the ring base surface horizontally to carry on the pressing.
- Be careful not to apply external impact to the ring.

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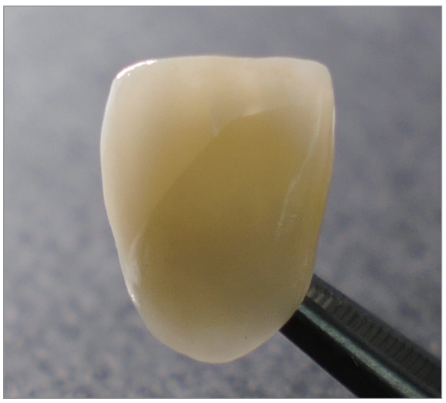
1-2. Troubleshooting for Firing / Polishing

Case 1 Cracks after cut-back / layering technique

Problem

Cracks after cut-back/layering technique has been applied.

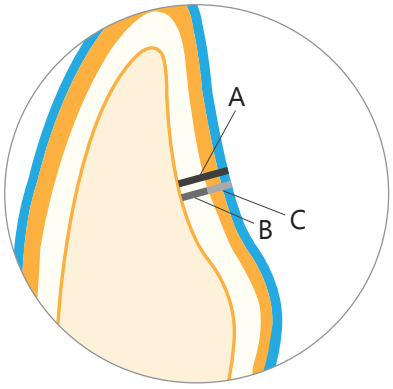


Cause

1) The guideline for minimum core thickness may not have been observed when building up powder.
2) Fractures due to thermal shock.
3) Compatibility issue with porcelain powders in use.
4) Degeneration of the core due to the repetition of excessive firing over 800℃

Solution

- Layer thickness between framework and veneering powder must be strictly observed.
- Minimize thermal shock to the glass ceramic products.



Note

Layer thickness

Dimension mm

A	1.2	1.5	2.0	2.5	3.0
B	0.6	0.8	1.1	1.3	1.6
C	0.6	0.7	0.9	1.2	1.4

A : Overall thickness
B : Framework thickness
C : Veneering material thickness

- The application of Layering technique for LT is contraindicated. Cut-back technique is recommended for LT.
- Wash firing process is recommended before the build up.
- Object fix must be used when firing.
- Do not use metal pin but be sure to use ceramic pin for firing.
- Do not cool down the restorations rapidly after firing.
- Do not pick up the restorations with metal tongs.
- Be sure to keep the firing temperature of the veneering powder.

Case 2 Cracks on the margin part of the restorations

Problem

Cracks in the part of thin restorations after divesting

Cause

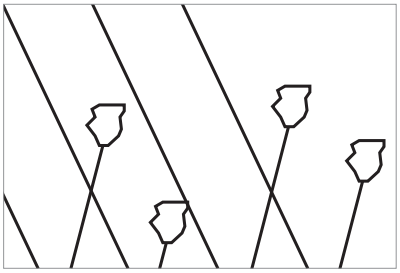
When alumina oxide is used in sand blasting.

Solution

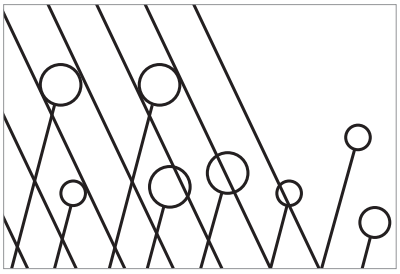
- Glass bead with a particle size 25-50 micro is recommended to use for sand blasting.
- While the surface of the glass bead is round, alumina oxide particles are rough as the pictures below. Hence sand blasting with alumina oxide is not recommended for glass ceramic products.

Particle shape

Alumina oxide



Glass bead



Case 3 Cracks during the the polishing process

Problem

Crack occurs during the polishing process.

Cause

1) When electroplated diamond burs were not used for polishing.
2) Thermal shock caused by improper, severe polishing.

Solution

- During the polishing process, be sure to use electroplated diamond burs for glass ceramics.
- Conduct your polishing job at a low working rate when you work with a hand piece to prevent the thermal shock. Spray water on the surface of the restorations continuously to keep the restoration wet.
- During the polishing process, make sure that recommended minimum thickness of the restorations is well maintained.
- Do not trim the connecting part of the framework severely.

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