ResinVest™

Reinforced Investment for all Alloys and Pressable Ceramics

Optimized for casting/pressing resin or wax patterns

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ResinVest™ is a high performance phosphate investment designed to meet all your metal casting and glass pressing needs when using printed or milled resin patterns with resin binders. It features both rapid and standard burnout as well as easy pouring and divesting capabilities. In addition, ResinVest™ provides the widest expansion range and the best surface qualities of any investment available. To ensure success with ResinVest™, please follow the instructions carefully

Recommended Liquid: Special Liquid Concentrate – Plus

WARNING: Investments contain free silica — DO NOT BREATHE DUST.
May cause delayed lung injury (silicosis/lung cancer).

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1. Pattern Preparation:

- Attach sprue to the resin pattern using pliable sticky wax.
- Mount patterns on crucible former base.
- Spray with Whip Mix SMOOTHEX Wax Pattern Cleaner. Gently blow excess cleaner from pattern.

2. Ring Preparation:

- If metal ring is used, line casting ring with a ceramic or dry paper liner positioned 6 mm short of each end. (Do not wet the ceramic liner.)
- Soak paper lined ring in water for a minimum of 1 minute. Then shake excess from ring before investing.
- Place ring onto former base.

3. Mixing:

For best results, store and use powder and liquid at room temperature (between 20° C (68° F) and 25° C (77° F)).

- Prepare liquid at suggested concentration following the chart below (distilled water recommended for dilution),
- Rinse bowl out with water and shake out excess. Use separate mixing bowls for phosphate and gypsum investments.
- Add measured liquid to mixing bowl. Incorporate powder by hand spatulation 10–15 seconds.
- Mechanical mix under vacuum, slow speed (350-600 RPM) for **2 minutes (120 seconds)**. Higher RPM mixers may require decreased mix time (90 seconds

Note: Different paddle designs and mixer speed may require varying mixing time.

4. Benchset:

- Once the mold is poured, benchset 20 minutes minimum.
- Trim glaze off top of mold before burnout.

5. Burnout:

Note: Use rapid burnout method for benchset up to 1 hour. For longer than 1 hour, conventional burnout is recommended. Molds allowed to set more

than 12 hours should be re-wet prior to burnout by soaking in water for 1–3 minutes.

Rapid Technique (Preheated Oven):

- Place molds in preheated oven at alloy or glass manufacturer's recommended temperature, minimum of 760°C (1,400°F), maximum 925°C (1,700°F).
- For burnout temperatures above 925°C (1,700°F), heat to final temperature at 14°–20°C (25°–36°F) per minute.
- Large molds, greater than 500g: for burnout temperatures above 925°C (1,700°F), heat to final temperature at 10°–15°C (18°–27°F) per minute.
- Heat soak at final temperature for 30 minutes, add 10 minutes more per additional mold.

***Note: Maximum preheat entry temperature for metal ring is 870° C (1,600° F).**

Two Stage Burnout:

- Place molds in oven at room temperature.
- First stage - Raise oven temperature 8°C (14°F) per minute to 427°C (800°F), hold 30 minutes.
- Second stage – Raise oven temperature 8°–11°C (14°–20°F) per minute until final temperature is reached. Follow alloy or glass manufacturer's recommended temperature with a minimum of 760°C (1,400°F), maximum 925°C (1,700°F).
- For burnout temperatures above 925°C (1,700°F), heat to final temperature at 14°–20°C (25°–36°F) per minute.
- Large molds, greater than 500g: for burnout temperature above 925°C (1,700°F), heat to final temperature at 10°–15°C (18°–27°F) per minute.
- Heat soak at final temperature for 30 minutes, add 10 minutes more per additional mold.

Standard Technique (Cold Oven):

- Place molds in oven at room temperature.
- Heat to desired temperature at 14°–20°C (25°–36°F) per minute. For final temperature, follow alloy or glass manufacturer's recommended temperature with minimum of 760°C (1,400°F), maximum 925°C (1,700°F).
- For burnout temperatures above 925°C (1,700°F), heat to final temperature at 14–20°C (25°–36°F) per minute.
- Large molds, greater than 500g: for burnout temperatures above 925°C (1,700°F), heat to final temperature at 10°–15°C (18°–27°F) per minute.
- Heat soak at final temperature for 30 minutes, add 10 minutes more per additional mold.

6. Casting (Alloy):

- Upon removal from oven, immediately cast according to alloy manufacturer's instructions.

7. Pressing (Pressable Ceramics):

- Press according to ceramic manufacturer's recommendations.
- Use 200 gram mold for restorations requiring two ingots.

8. Divesting:

- Allow metal castings and ceramic pressings to cool completely before divesting.

Note:

- **Special Liquid Concentrate – Plus may freeze during shipment in cold weather. If liquid should have crystallized upon arrival, it will no longer be usable. Keep liquid from freezing.**

Physical Properties:

Liquid/Powder Ratio	22 ml/100 gram
Working Time	6–8 minutes
Setting Expansion	1.6%
Thermal Expansion	0.65%
Compressive Strength	1,350 psi (9.2 MPa)

Expansion Ratio Chart

TWO-MINUTE MIX TIME				LIQUID CONCENTRATION	100 GRAM 22 ML/100 GRAM LIQUID (ML)	WATER (ML)
EXPANSION	ALLOY	MORE		100% 90%	22.0 20.0	0.0 2.0
		OPTIMUM	Base Noble High Noble	80% 75% 70%	18.0 16.5 15.0	4.0 5.5 7.0
		LESS		60% 50%	13.0 11.0	9.0 11.0
	CERAMIC	MORE		90% 80%	20.0 18.0	2.0 4.0
		OPTIMUM	Crowns, Veneers, Inlays, MODs	70% 60%	15.0 13.0	7.0 9.0
		LESS		50% 40%	11.0 9.0	11.0 13.0

Note:

- To adjust fits, make changes to the cement spacer in your CAD software.
- Recommended Liquid: Special Liquid Concentrate – Plus
- For small volume mixes (less than 100 grams) decreasing liquid/powder ratio approximately 2 mL/100 gram will increase expansion and improve surface quality.
- To correct tight fits: Increase liquid concentration. If using metal rings, you may also use a double liner.

- To correct loose fits: Decrease liquid concentration. (Refer to Expansion Ratio Chart.)
- For large molds containing complex restorations or plastic sprues, runner bars or copings, the standard technique described above or a two-stage burnout technique is recommended.
- Special Liquid Concentrate – Plus may freeze during shipment in cold weather. If liquid should have crystallized upon arrival, it will no longer be usable. Keep liquid from freezing.
- Use Two Stage Burnout for high noble alloys if issues arise.

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Technical Tips for ResinVest

Alloy Casting

Rough Casting Surface

Use water-based debubblizer (i.e. Smoothex) and be sure to blow patterns dry.

Slightly warm mixing bowl by running it under warm water. Shake out excess water before adding measured liquid and powder.

Make sure vacuum unit is fully functional as ResinVest should be mixed under vacuum.

Increase mixing time by 30 second increments.

Hold mix under vacuum for an additional 30 seconds after mixing.

Replace worn mixing bowl.

Tight Fit

If using a metal ring, use a double liner.

Slightly warm liquid or mixing bowl; a cool/cold mix temperature can produce a rough surface and affect fit.

Increase liquid concentration, liquid to water ratio, (Refer to Expansion Ratio Chart). Maximum expansion is achieved by using 100% Special Liquid Concentrate Plus.

If still tight at 100% liquid concentration, reduce total liquid by 1-2 ml per 100g ResinVest.

Decrease mixing time in 30 second increments (this may increase expansion).

Replace worn mixing bowl.

Avoid overheating the alloy. Refer to the alloy manufacturer’s instructions.

Loose Fit

Decrease liquid concentration (Refer to Expansion Ratio Chart).

Increase mixing time in 30 second increments to 180 seconds maximum (this may also decrease expansion and require lowering entry burnout temperature to 650°C (1200°F).

Mold Cracking/Exploding

When using a ringless casting system, provide 8-10mm investment support from the edge of the ring to the first unit or edge of runner bar. A minimum of 3-4mm of space should be utilized for investment between units. The size of the rings using these parameters will dictate how many units should be placed in any given ring.

Reduce number of patterns in a ring.

Multiple patterns should not be put in the same horizontal or vertical plane.

Decrease mix time to 90 seconds. Note: This may increase expansion.

If using a ringless casting system, remove the mold at 15 minutes. Trim the top of the mold then allow the mold to benchset an additional 5 minutes for 100g rings/10 minutes for 200g rings.

If using Rapid Technique, reduce entry temperature to 650°C (1200°F) hold for 20 minutes then raise temperature 14°–20°C (25°–36°F) per minute to final temperature. Heat Soak as directed.

For large molds containing complex restorations or plastic components, the standard technique, or two-stage burnout is recommended. If using the Rapid Technique follow the previous instruction, reducing entry temperature to 650°C (1200°F).

If mold has dried out, place trimmed mold in a bowl of room temperature water for 1-3 minutes prior to burnout.

Overnight burnout may require placing molds in a plastic bag to avoid investment drying out and cracking. Standard or two-stage burnout recommended.

Use two-stage burnout for high noble alloys if mold cracking issues arise.

Investment Setting Too Fast

Store investment and liquids at room temperature of 20°–24°C (68°–75°F).

Cool bowl by running it under cold water prior to mixing. Shake out excess water before adding measured liquid and powder.

Keep temperature of mixed investment under 30°C (86°F).

Replace worn mixing bowl.

Pressable Ceramics

Mold Cracking or Exploding During Burnout

If using paper rings, smooth the seam.

If mixing 200 grams or more, decrease mix time to 90 seconds. **Note:** This may increase expansion.

Remove mold from ring at 15 minutes. Trim the top of the mold then allow the mold to benchset an additional 5-10 minutes.

If using Rapid Technique, reduce entry temperature to 650°C (1200°F) hold for 20 minutes then raise temperature 14°–20°C (25°–36°F) per minute to final temperature. Heat Soak as directed.

Re-wet mold if benchset was longer than 1 hour. Standard technique, or two-stage burnout is recommended.

Mold Splitting during Pressing

Ensure molds sit level and perpendicular to the furnace base.

Increase heat soak time in burnout furnace, 10 minutes per mold.

Check for cracks after removal from oven. Review benchset and burnout procedures.

Check regulator pressure.

Increase hold time at high temperature 5-10 minutes before the pressing begins. This will help completely soften the ingot.

Reaction Layer

Calibrate pressing furnace.

Review glass manufacturer's instructions.

Decrease maximum pressing temperature in increments of 5°C until the reaction layer is minimized. Note: Check manufacturer's recommendation.

Decrease press time in increments of 30 seconds.

Spruing Tips

Follow glass manufacturer's recommendations.

Weigh wax patterns with sprues attached to determine how many glass ingots to use. Follow glass manufacturer's recommendations.

Use smooth connections – avoid sharp angles.

Place sprues/patterns in line with flow of ceramic material, with a vertical angle of 30°–45°.

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