

Formula 1 for the ProJet 1200 Printer



more reasons. one source



Formula 1 for the ProJet 1200 Printer

is a high performance phosphate investment designed to meet all of your pressing and casting needs with **VisiJet FTX** print material. It features rapid burnout as well as easy pouring and divesting processes. In addition, Formula 1 provides the widest expansion range and the best surface qualities of any investment available. To ensure success with Formula 1, please follow the instructions carefully.

Recommended Liquid:
Special Liquid Concentrate Plus

Physical Properties:

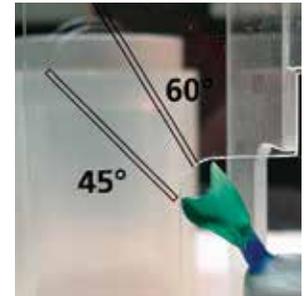
Liquid/Powder Ratio: 22 ml/100 gm
Working Time: 6–8 minutes
Setting Expansion: 1.6%
Thermal Expansion: 0.65%
Compressive Strength: 1,350 psi (9.2 MPa)

Spruing for pressing ceramics:

- ▶ Sprue the patterns using wax sprues with a minimum 3mm width and a maximum 8 mm length.



- ▶ Attach sprues to the crucible former at the angle recommended by the ceramic/ alloy manufacturer. For pressing, the angle is usually between 45°– 60° toward the ring wall. Keep the distance between the pattern and the wall at a minimum of 10 mm.



- ▶ Prior to investing, the wax weight – including the sprues – must be determined to calculate the required number of pellets.



Pattern Preparation:

- ▶ Attach sprue to the wax pattern using sticky wax.
- ▶ Mount the patterns on crucible former base. Junctions of the sprue, the pattern and the crucible former must be rounded. Avoid sharp point angles and line angles.
- ▶ If casting alloy, lightly spray a Wax Pattern Cleaner. Gently blow excess cleaner from pattern.
- ▶ If pressing ceramic, *do not use* Wax Pattern Cleaner or debubbler. Follow your pressable ceramic manufacturer's directions.

Ring Preparation:

- ▶ If metal ring is used, line the ring with a ceramic or dry paper liner positioned 6 mm short of each end. Do not wet the ceramic liner. If using a paper-lined ring, soak in water for a minimum of 1 minute. Shake excess water from ring before investing.
- ▶ Place ring over patterns and onto former base.



Mixing:

- ▶ **For best results, store and use powder and liquid at room temperature (between 20°C (68°F) and 25°C (77°F)). To ensure the proper ratio of liquid/water/powder, use an Aquaspense SL.**



- ▶ Prepare liquid at suggested concentration following the chart below (distilled water recommended for dilution).
- ▶ Rinse bowl 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 mixing 10–15 seconds.



- ▶ To achieve proper mixing speed and time, use a VPM2 Mixer. 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.

NOTE: If using a VPM2 mixer it is not necessary to incorporate powder by hand mixing.

Investing

- ▶ Use light vibration to help move investment in the ring.
- ▶ Invest the inside of the patterns first.
- ▶ Pour a thin stream of Formula 1 investment into the ring to avoid the formation of bubbles.

Fill the ring with the investment no more than ¼ inch or 6mm over the top of the pattern.



Benchset:

- ▶ Once the mold is poured, **benchset 20 minutes**.
- ▶ Trim glaze off top of mold before burnout.
- ▶ For best results, place in preheated oven within 30 minutes of investing.



Burnout:

- ▶ **Rapid Technique (Preheated Oven) Recommended:**
- ▶ Place molds in preheated oven at alloy or pressable ceramic manufacturer's recommended temperature, up to 925°C (1,700°F). For higher burnout temperatures, place molds in oven at 925°C (1,700°F), then heat to final temperature at 14 - 20°C (25° - 35°F) per minute.
- ▶ Heat soak at final temperature for 30 minutes, add 10 minutes for each additional mold.

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



Casting (Alloy):

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

Pressing (Pressable Ceramics):

- ▶ Press according to ceramic manufacturer's instructions.
- ▶ Use 200g mold for restorations requiring 2 ingots.

Divesting:

▶ Allow metal castings and pressed ceramic to cool completely before divesting or removing from the ring.



▶ Divest carefully using a hand-held microblaster or a WHIP Mix Xcavator automatic blasting unit to save time and labor.



▶ **NOTE:** Recommended Liquid: Special Liquid Concentrate Plus

▶ Decreasing liquid/powder ratio will increase expansion and improve surface quality.

▶ To correct tight fits: Increase special liquid to water concentration. If using metal rings, you may also use a double thickness of the liner.



▶ To correct loose fits: Decrease the liquid to water concentration (refer to Expansion Ratio Chart).

▶ Special Liquid Concentrate PLUS may freeze during shipment in cold weather. If liquid has crystallized upon arrival, it will no longer be usable. Keep liquid from freezing.

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

Expansion Ratio Chart

TWO-MINUTE MIX TIME			LIQUID CONCENTRATION	60 GRAM 13 ML/60 GRAM		100 GRAM 22 ML/100 GRAM		150 GRAM 33 ML/150 GRAM		
				LIQUID (ML)	WATER (ML)	LIQUID (ML)	WATER (ML)	LIQUID (ML)	WATER (ML)	
EXPANSION	ALLOY	MORE	100%	13.0	0.0	22.0	0.0	33.0	0.0	
			90%	12.0	1.0	20.0	2.0	30.0	3.0	
		OPTIMUM	Base	80%	11.0	2.0	18.0	4.0	27.0	6.0
			Noble	75%	10.0	3.0	16.5	5.5	25.0	8.0
			High Noble	70%	9.0	4.0	15.0	7.0	23.0	10.0
	LESS		60%	8.0	5.0	13.0	9.0	20.0	13.0	
			50%	6.5	6.5	11.0	11.0	16.5	16.5	
	CERAMIC	MORE		90%	12.0	1.0	20.0	2.0	30.0	3.0
				80%	11.0	2.0	18.0	4.0	27.0	6.0
		OPTIMUM	Crowns, Veneers	70%	9.0	4.0	15.0	7.0	23.0	10.0
Inlays, MODs			60%	8.0	5.0	13.0	9.0	20.0	13.0	
LESS			50%	6.5	6.5	11.0	11.0	16.5	16.5	
		40%	5.0	8.0	9.0	13.0	13.0	20.0		

* Recommended concentrations are approximate and can be adjusted to optimize fit. To increase expansion, use more liquid and less water. To decrease expansion, use less liquid and more water. Always maintain total liquid / water volume.

