Best Practices

Lost wax casting using EC500

This paper aims to give a step by step guide on how to use EnvisionTEC Perfactory® machines to make master patterns for lost wax or investment casting.

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First the parts need to be prepared in 3D CAD and converted into a .stl file format. It is helpful if a large 6 mm diameter cone support can be added to the bottom of the shank not only to assist with part building but it is beneficial as this acts as a sprue to allow the metal to flow more easily during the casting process.

The type of perfactory machines commonly used for jewelry pattern production are Perfactory® Mini Series, Aureus or Perfactory® Micro; these tend to give the best accuracy and surface finish.

**Perfactory® Mini Series**

**Aureus**

**Perfactory® Micro**
### Supplies needed

- 99% pure alcohol
- 2 Tupperware containers with lids
- 2 soft makeup brushes
- 2” spatula

### EC500 Instructions

Using the 2” bladed spatula provided, gently remove the job from the platform.
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<td>Place jobs in first alcohol solution for 1 minute. Gently shake the container to help clean the parts. Using a soft brush lightly clean the parts. Repeat cleaning in second solution. Using a gentle air stream blow dry the parts completely dry. Do not use an ultrasonic to clean parts.</td>
<td><img src="image1.jpg" alt="Image" /></td>
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<td>Using the OtoFlash, cure parts on each side using 6500 cycles per side. Rotating the parts cure each side twice for a total of 4 curing sessions.</td>
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<tr>
<td>After curing in OtoFlash, sprue jobs conventionally. There is no need to use debubblizer.</td>
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<td>Using a hand piece or jewelers saw, taper the sprue lead as shown to decrease turbulence that may cause investment inclusion during casting.</td>
<td><img src="image4.jpg" alt="Image" /></td>
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Invest jobs using Ultravest, UltravestMax or Plasticast. Use a 39/100 water to powder ratio. Always use distilled water. Always be sure to properly measure materials. Our best results were with Plasticast.
Mix for a total of 4 minutes.

After mixing, place investment bowl in vacuum for 1 minute.

Pour a thin stream of investment to reduce air bubbles. Once the flask is filled place them in vacuum for 45 seconds.
Allow filled flasks to bench set at room temperature for 3 hours.

Place flasks in pre-heated 200 °F oven and hold for 3 hours. Ramp up to 1200 °F @ 800 °F per hour. Hold for 40 minutes. Ramp up to 1350 @ 800 °F per hour and hold for 1 hour. Ramp down @ 500 °F per hour to casting temperature.

Cast per alloy recommendations.
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<td>After casting bench cool for 5 minutes on small rings or as long as it takes for the red color to leave the button on larger rings and then quench.</td>
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<td>Cast silver part after steam cleaning still connected to button.</td>
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