



CASTABLE RESIN:

Recommended Burnout Process

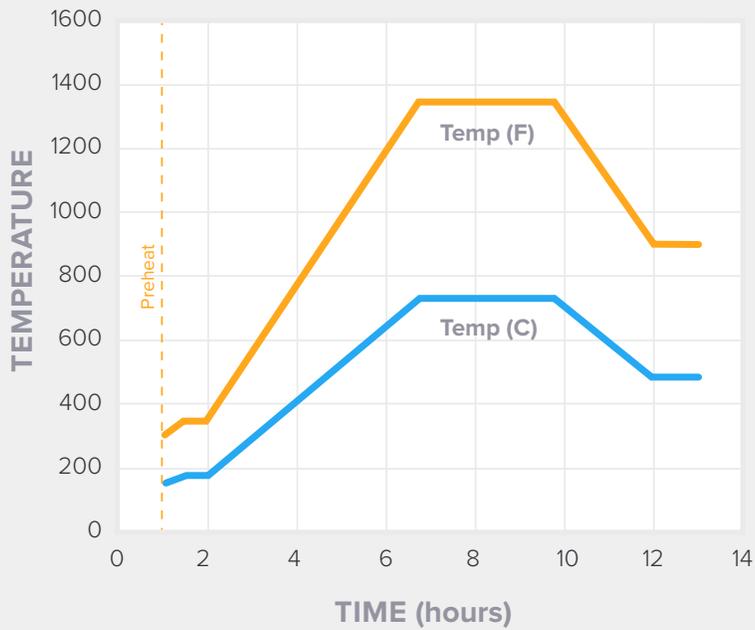
With Castable Resin, you can produce detailed metal parts through the investment casting process. Developed specifically with investment casting in mind, the resin burns out cleanly with no ash or residue, making it perfect for jewelry, metalworking, and engineering applications. Castable Resin is optimized for the best burnout performance, but developing a specific burnout and casting process is up to you. Below, we provide guidelines that have proven to be successful during our testing process.

[Watch a Video About Casting with Formlabs Resin >](#)

[Request a Castable Sample >](#)

[Learn About Selling Custom Jewelry with 3D Printing >](#)

Burnout Schedule



PROCESS

| | | |
|--------------|----------------|----------------|
| Preheat | 300 °F/h | 167 °C |
| Insert flask | 300 °F | 167 °C |
| Ramp | 100 °F/h | 56 °C/h |
| Hold | 350 °F, 30 min | 177 °C, 30 min |
| Ramp | 210 °F/h | 117 °C/h |
| Hold | 1350 °F, 3 h | 732 °C, 3 h |
| Ramp | -200 °F/h | -111 °C/h |
| Hold | 900 °F, 1 h | 482 °C, 1 h |

Recommended Investment:

R&R Plasticast with BANDUST

Technical Data

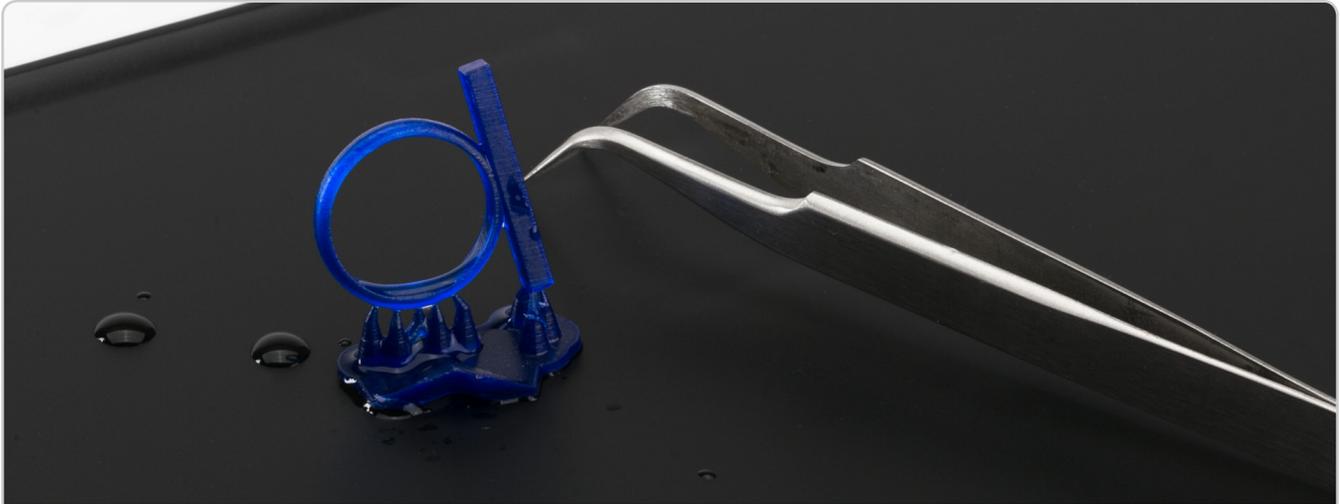
| | METRIC | IMPERIAL | METHOD |
|--|----------|----------|---------------|
| Mechanical Properties¹ | | | |
| Tensile Strength at Break | 11.6 MPa | 1680 psi | ASTM D 638-10 |
| Young's Modulus | 220 MPa | 32 ksi | ASTM D 638-10 |
| Elongation at Failure | 13% | 13% | ASTM D 638-10 |

NOTES:

¹Data was obtained from parts printed using Form 2, Castable 50 µm Fine Detail settings and post-cured with 2.5 mW/cm² of fluorescent bulb UV light, centered at 405 nm.

1. Prepare the Print for Investment Casting

The investment casting process starts with a high-quality finished print. Print your part normally, ensuring optimal orientation and support. Follow the standard post-print procedure. Advanced users may choose to design their own supports as part of the .STL for greater design freedom.



Allow the part to fully dry after removing it from the IPA bath.



Cure the part under UV light until the surface is hard and rigid. Discoloration of the part is normal during this process.

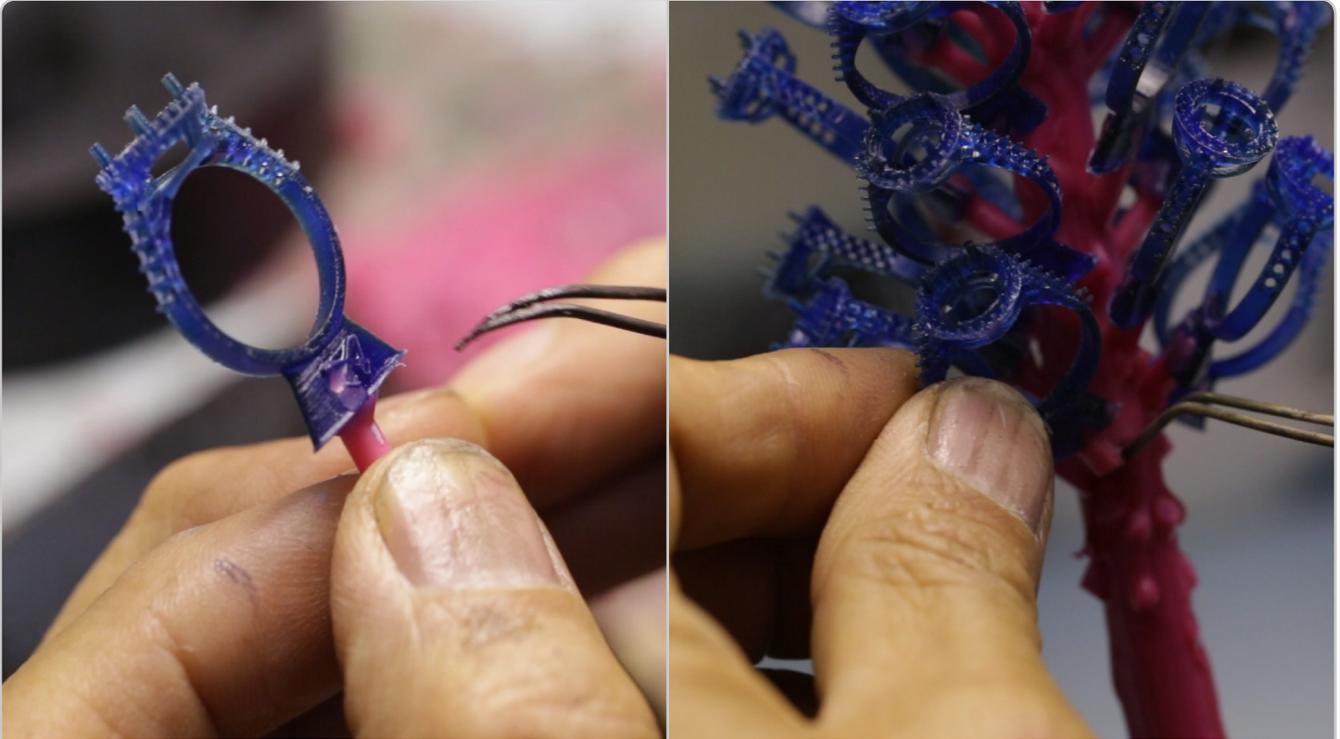
NOTE: To achieve desired durability, prints made with Castable Resin should be post-cured for at least 120 minutes at a 45°C temperature under a 405 nm wavelength light source. Curing times vary with UV source. Small UV sources like home UV nail dryers (shown above) may take up to 8 hours to properly cure parts, while industrial UV curing ovens may take only a few minutes.



If necessary, carefully remove support material from your print. Using fine sandpaper (400 grit and above), gently sand away support marks.



Polish the surface using polishing paper or a rotary tool with a buffing attachment.



Add wax sprues and gates to the print as you would for lost-wax casting. Ideal positioning will vary with part geometry.

TIP: Instead of adding wax sprues post-print, build them directly into the part using your CAD design software.



Attach a casting flask to the sprue base. If the flask is perforated, wrap it with clear packing tape to contain the investment.

2. Prepare the Mold



Weigh and mix the investment according to the manufacturer's instructions.



Slowly pour the investment into the casting flask. Pour the investment down the side of the flask to avoid damaging the fragile wax tree.



Degas the filled casting flask in the vacuum chamber for an additional 90 seconds or according to the manufacturer's instructions. Carefully remove the flask from the investment chamber and allow it to set in a vibration-free environment.

3. Burnout



Place the casting flask in a cold furnace and heat according to the burnout schedule provided on page 2. Remove the mold from the furnace and cast metal.



After casting, carefully quench the mold and wash away the investment.



To learn more about Formlabs printers and Castable Resin, speak with a member of our team: hello@formlabs.com

Casting is an involved process, so for best results, we suggest working with a casting specialist. To find a list of casting specialists, or to request a castable sample, visit formlabs.com/jewelry.

Special thanks to [Golden Century Casting](#) for letting us photograph their casting process.