FORMLABS USAGE GUIDE:

# Castable Wax: Jewelry Pattern Burnout Process

A 20% wax-filled material for reliable casting with zero ash content and clean burnout, Castable Wax accurately captures intricate features and offers the smooth surfaces stereolithography 3D printing is known for. Printed parts are strong enough to handle with no post-cure required, suitable for custom try-ons and direct investment casting.

Request a Sample Part Printed in Castable Wax



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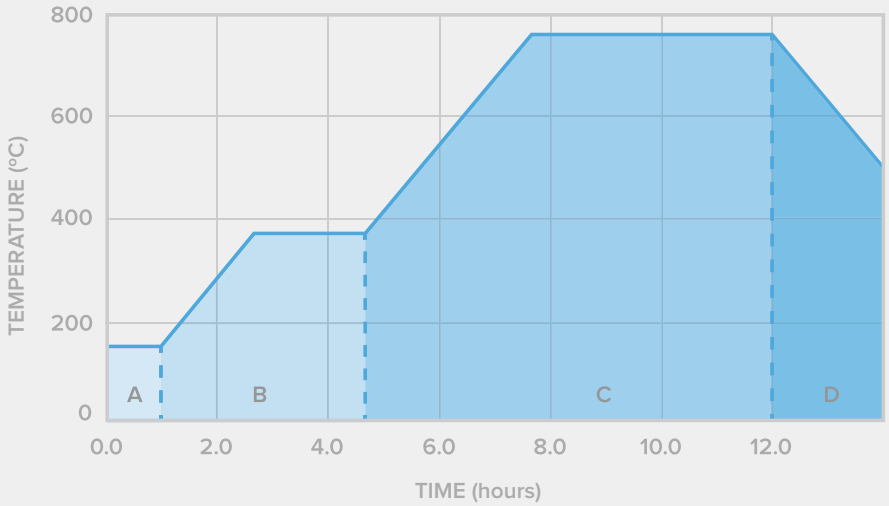
# Standard Burnout Schedule

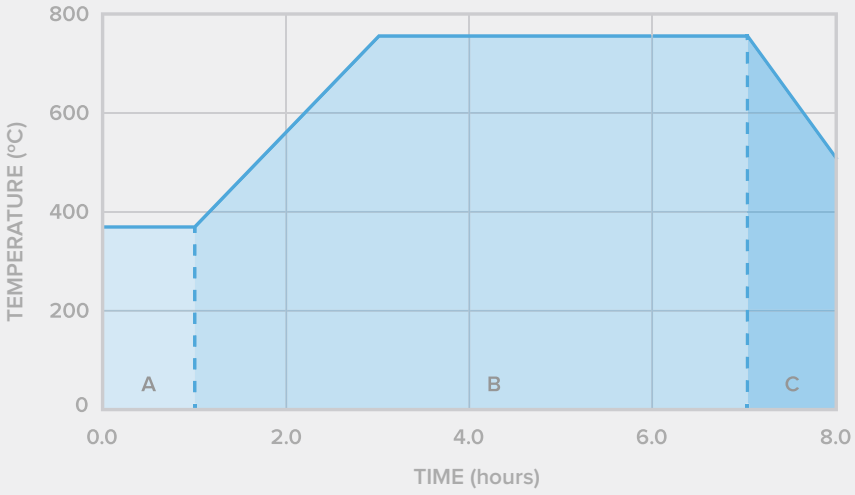



The Standard Burnout Schedule is designed to provide the maximum possible investment strength and complete burnout of the finest details using R&R Plasticast or similar investment materials. Use this schedule as a starting point and make adjustments as needed.

| | DESCRIPTION | PHASE | TIME TO TEMP | SCHEDULE °C | SCHEDULE °F |
|---|---|---|---|---|---|
| A | Place flasks into pre-warmed oven (or ramp as quickly as possible from room temperature). | Insert Flasks | 0 min | 150 °C | 302 °F |
| | **Drying** Eliminates water and improves investment strength. | Hold | 60 min | 150 °C | 302 °F |
| B | **Thermal Transition** Wax melts out, increasing airflow to the resin pattern. Burnout begins gently, breaking down the pattern without excessive expansion. | Ramp | 100 min | 2.2 °C/min | 4.0 °F/min |
| | | Hold | 120 min | 371 °C | 700 °F |
| C | **Burnout** Eliminates the remaining resin in the investment. | Ramp | 180 min | 2.0 °C/min | 3.6 °F/min |
| | | Hold | 280 min | 732 °C | 1350 °F |
| D | **Casting Temperature** Cools the flask to casting temperature of the selected metal. | Ramp | 100 min | -2.2 °C/min | -4.0 °F/min |
| | | Casting WIndow | Up to 2 hours | 512 °C (or casting temperature of alloy) | 954 °F (or casting temperature of alloy) |

**Before Casting:** It is important to thoroughly clean prints before use. Wash Castable Wax prints in isopropyl alcohol (IPA) for 10 minutes. Rinse for 5 minutes in a second, cleaner IPA bath to eliminate any remaining uncured material. For best results, fully dry parts with compressed air. No post-curing is required for Castable Wax parts.

## Short Burnout Schedule




It is possible to achieve faster cycle times with some geometries and investment materials. Higher end investments, such as R&R's Ultravest Maxx, are stronger and can withstand faster heating.

Consider a fast burnout schedule if parts are thin (weigh less than 1 g per piece) and total flask volume is low (flask less than 6" tall).

The cured flask is placed directly into a preheated furnace, and can be cast after 8 hours. Time at peak temperature may be reduced or extended depending on the volume of the parts.

| | DESCRIPTION | PHASE | TIME TO TEMP | SCHEDULE °C | SCHEDULE °F |
|---|---|---|---|---|---|
| A | **Thermal Transition** | Insert Flasks into hot oven | 0 min | 371 °C | 700 °F |
| | | Hold | 60 min | 371 °C | 700 °F |
| B | **Burnout** | Ramp | 120 min | 3.5 °C/min | 6.3 °F/min |
| | | Hold | 240 min | 788 °C | 1450 °F |
| C | **Casting Temperature** | Ramp | 60 min | -4.6 °C/min | -8.3 °F/min |
| | | Casting Window | Up to 2 hours | 512 °C (or casting temperature of alloy) | 954 °F (or casting temperature of alloy) |

**Tip:** Allow your investment to bench set at room temperature for 2-6 hours after mixing. Bench set time allows the investment to cure and strengthen, important when inserting the flask directly into a hot oven.

# Technical Data for Castable Wax FLCWPU - Green[1]

| | METRIC[2] | IMPERIAL[2] | METHOD |
|---|---|---|---|
| **Tensile Properties** | | | |
| Ultimate Tensile Strength | 22.5 MPa | 3270 psi | ASTM D 638-10 |
| Young's Modulus | 0.94 GPa | 13 ksi | ASTM D 638-10 |
| Elongation at Break | 13% | 13% | ASTM D 638-10 |
| **Burnout Properties** | | | |
| Temp @ 5% Mass Loss | 249 °C | 480 °F | ASTM E 1131 |
| Ash content (TGA) | 0.0 - 0.1% | 0.0 - 0.1% | ASTM E 1131 |

**NOTES:**

[1]Data was obtained from green parts, printed using Form 2, 50µm, Castable Wax settings without additional treatments.

[2]Material properties can vary with part geometry, print orientation, print settings, and temperature.