

# Jewelry Casting

3D Systems Non-Contact Membrane Digital Light Printing (DLP) technology, Figure 4™

Making 3D production real, Figure 4 technology provides a high quality jewelry casting pattern manufacturing solution with Digital Molding productivity and cost-efficiency. Figure 4 factory solutions utilize non-contact membrane DLP technology to produce accurate, repeatable, and highly detailed master patterns for direct jewelry casting at ultra-fast speed.

## Figure 4 JCAST-GRN 10 Burnout Casting Guide

3D Systems' Figure 4 JCAST-GRN 10 material was specifically developed to produce jewelry master patterns that can be used as part of a conventional jewelry production workflow for flask casting using conventional gypsum investments.

While many processes may work well with Figure 4 JCAST-GRN 10, the procedures outlined in this guide have been tested and shown to be a good starting point\* for most users.



### ***Designed For the Jewelry Casting Professional***

*Producing high-quality models and casting patterns for jewelry applications:*

- *Investment casting*
- *Prototype pieces*
- *Design verification*
- *Fitting pieces*

\* Variations in the investment used, the burnout furnace, and the pattern geometry/size may impact the results obtained. Post-cure of the patterns is critical to good castings. Use of the LC-3DPrint Box UV post-curing unit from 3D Systems is needed to ensure that patterns burnout well. Users may need to adjust the process to fit ideally with their needs. Larger flasks may require longer heating periods to achieve optimal results.





Figure 4 JCAST-GRN 10 is a green material, ideal for small, fine-featured jewelry master patterns for gypsum investment casting applications. This material leaves minimal ash after burnout to produce superior casting quality. Create and produce custom jewelry or other investment castings that capture fine detail with a smooth surface finish.

## Pattern Creation

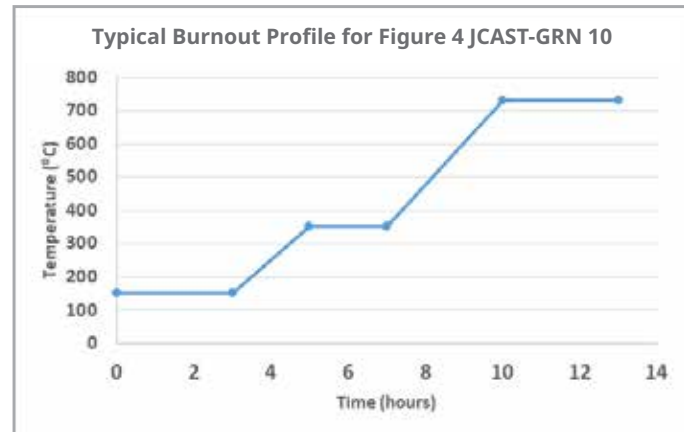
Patterns for jewelry casting must be made with care. Users should follow the user guide carefully and only use the recommended cleaning and post-curing process outlined. Jewelry patterns for casting should be UV post-cured 30 minutes in the 3D Systems LC-3DPrint Box. Most specifically, during pattern preparation, we know that excessive UV post-cure can cause issues with casting. Users should follow our recommended curing times to avoid excess light exposure.

## Investment Selection

While many different investment materials can be used, best results have been achieved with gypsum investments, like Ransom & Randolph's Plasticast or Ransom & Randolph's Ultravest Maxx, both of which were designed for casting of plastic patterns.

## Preparation of the Investment

Follow the manufacturer's recommendations for preparing investment and filling the flask.



## Burnout

1. Load flask into a pre-heated oven at 150 °C (300 °F). Hold for 1-3 hours.
  - This step is designed to dry the investment and remove water
2. Slowly raise oven temperature to 370 °C (700 °F) over a period of 1-2 hours. Hold at this temperature for 1-2 hours.
  - This step is designed to cause the thermal transition of the investment. The exact temperature required may vary based on the investment used. Care must be used to raise the temperature slowly.
3. Slowly raise the oven temperature to 730 °C (1350 °F) over a period of 2-3 hours. Hold at this temperature for 2-3 hours.
  - This step is designed to burnout the Figure 4 JCAST-GRN 10 pattern.
4. Lower the temperature of the oven to casting temperature, and allow to stabilize for at least 1 hour prior to pouring metal.

Learn more about the Figure 4 at <https://www.3dsystems.com/figure4>