

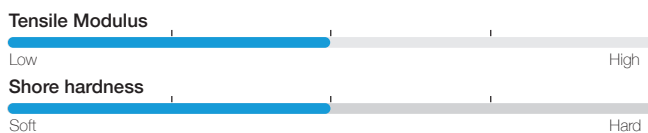
Technical Data



UV Castable Violet



Properties



Compatible Printers

UV LCD & DLP 3D Printers



Liquid Crystal
OPUS



Liquid Crystal
DENTAL

Colours

 Violet

Available in 500g & 1kg bottles

Introduction

UV Castable has been precisely formulated to create highly detailed castable jewellery parts. During the casting process, parts will burn evenly, with virtually no ash, leaving an ideal mould for casting metals. Please refer to the casting guidelines for optimal casting results, Photocentric UV Castable works with a variety of UV LCD and DLP 3D printers, as well as the Photocentric Liquid Crystal Dental and Opus printers.

Best Used for:

- Jewellery
- Dentistry

Unique Features:

- Reliable casting performance
- No ash residue
- Highly accurate printed and cast parts with a smooth surface finish

Properties

Tensile Properties

Tensile Modulus *	1380 MPa	ASTM D638
Ultimate Tensile Strength *	19.5 MPa	ASTM D638
Elongation at break *	2-3%	ASTM D638

Flexural Properties

Flexural Strength *	22 MPa	ASTM D790
Flexural Modulus *	632 MPa	ASTM D790

Impact Properties

Impact Strength Notched Izod *	1.2 kJ/m2	ISO 180
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General Properties

Hardness *	75 Shore D	ASTM D2240
Viscosity	630 cPs	At 25°C Brookfield spindle 3
Density	1.20 g/cm3	
Storage	10<T>50°C	

* Mechanical properties stated based on fully cured material.

Resin Preparation prior to Print

- Heat the resin to 30°C in the bottle.
- Shake the resin bottle for 2 minutes before pouring into the resin vat.
- Stir resin in vat with vat cleaning tool for pigment drop out etc. before and between prints if the print is immediate and vat is not being emptied.

Printer and Resin Profiling

Photocentric UV Printers

- To print with Photocentric UV printers, choose 'UV Castable Violet' and the desired layer thickness when preparing your print file in Photocentric Studio.

3rd Party UV Printers

- Photocentric UV high-performance resins have been formulated to be compatible with a wide range of 3rd Party Printers. This list is continually updated, for the most up-to-date information, please visit our UV Resin Compatibility Page. All resins are functional at a wavelength of 385-405 nm.
- Please see below instruction on how to calculate appropriate exposure time with regards to your 3rd party UV printer and purchased resin

UV Resin Layer Exposure Guidelines

Overview

This guide will assist you in establishing a layer exposure time for a desired resin and layer thickness based on the characteristics of Photocentric's UV Resin range and your UV 3D printer.

Each resin requires a specific energy to cure a certain layer thickness. 'Energy' is defined by multiplying 'light output intensity' of your printer and a 'given time of exposure'. The equation below simply explains the matter:

$$\text{Energy [mJ/cm}^2\text{]} = \text{Light Output Intensity [mW/cm}^2\text{]} \times \text{Exposure Time [s]}$$

Your UV 3D printer manufacturer will provide you with light output intensity value.

Layer Thickness (µm)	50
A UV 3D printer with 5mW/cm ² light output intensity	16 sec
Ec(mJ/cm ²)	12.5
Dp(mm)	0.025

NOTE: Bear in mind the exposure time vs energy is not a linear trend, and this data is intended strictly as a guideline. Settings may need to be further optimised to suit each printer.

Post-Processing

To reach the full mechanical properties of the material, parts printed using UV Castable resin will need to be post-processed.

1. Remove the print platform from the printer and place into the wash unit.
2. Follow resin cleaner/solvent TDS for relevant wash cycles. You can use 'Photocentric Wash15' or 'Photocentric Air Wash L'.
3. Rinse parts with water to remove excess resin and solvent.
4. Where possible, use compressed air to dry the parts, if not, leave them to dry naturally.
5. Place the parts into an oven at 100°C for 4 hours, or until the surface of the part is smooth.
6. Remove the platform from the oven and place on to a suitable flat surface.
7. To remove parts from the platform, use a scraper or suitable cutters and take care to not damage the part/(s).

Casting Guidelines

Ransom & Randolph Plasticast investment powder has been tested with a water to powder ratio of 38:100. An investment vacuum mixer is recommended.

Mixing by hand

1. Add powder to a bowl of water.
2. Mix for 3 minutes and pour into the flask.
3. Agitate under vacuum for 2 minutes to let air bubbles out.

Mixing by a vacuum mixer

1. Mix for 5 minutes and pour into flask.
2. Agitate under vacuum for 1 minute to let any air bubbles out.

Leave the flask undisturbed on a stable surface to set for 3 hours.

Burnout Cycle

1. 6 hours at 150°C.
2. Immediately increase to the maximum temperature (780°C for Plasticast).
3. Hold at the maximum temperature for 8 hours.
4. Cool down for 2 hours to the casting temperature and hold for 1 hour.

