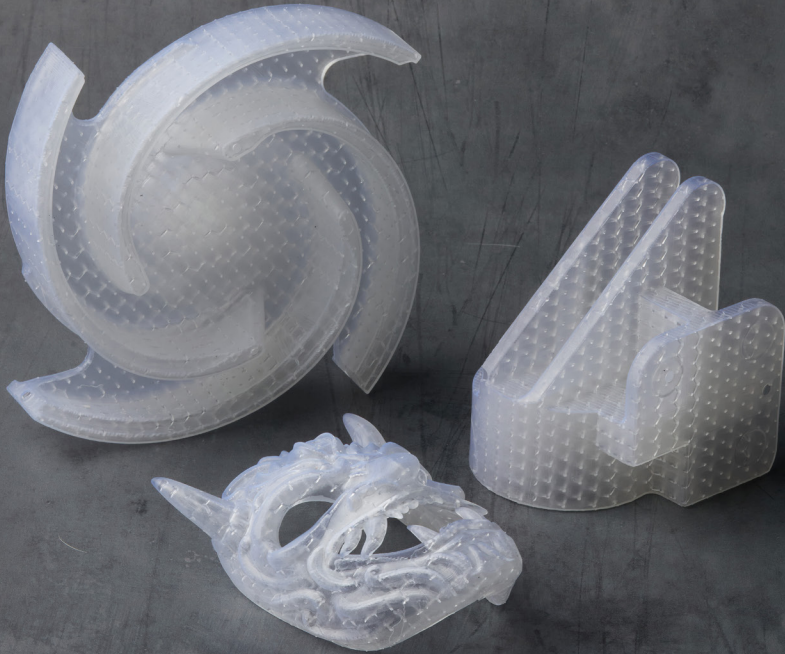


# Clear Cast Resin

3D Print Accurate, Low Ash Patterns for Investment Casting Directly in House

Clear Cast Resin is a resin designed for investment casting, to directly print patterns that can be invested and cast. It has an extremely low thermal expansion, low ash, and antimony free with no trace heavy metals.

## Patterns for investment casting



**V1** **FLCCCL01**

Prepared 12 . 08 . 2024

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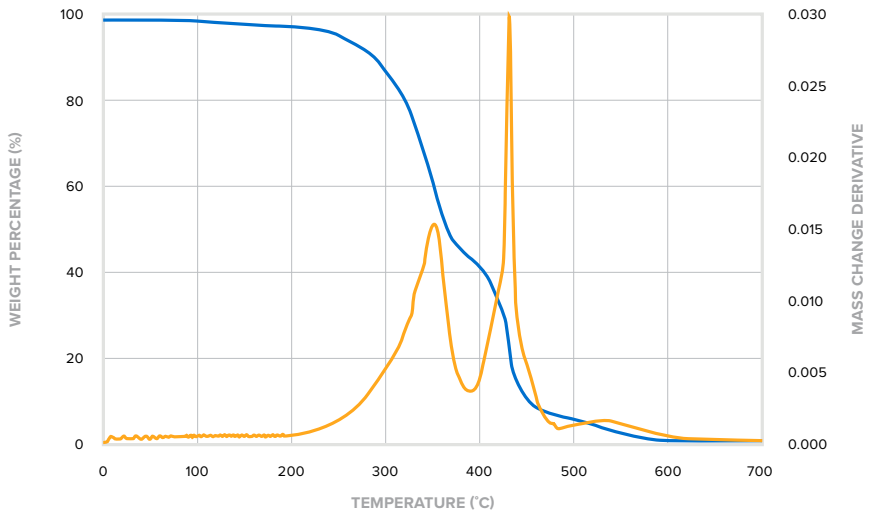
To the best of our knowledge the information contained herein is accurate. However, Formlabs, Inc. makes no warranty, expressed or implied, regarding the accuracy of these results to be obtained from the use thereof.

# MATERIAL PROPERTIES DATA

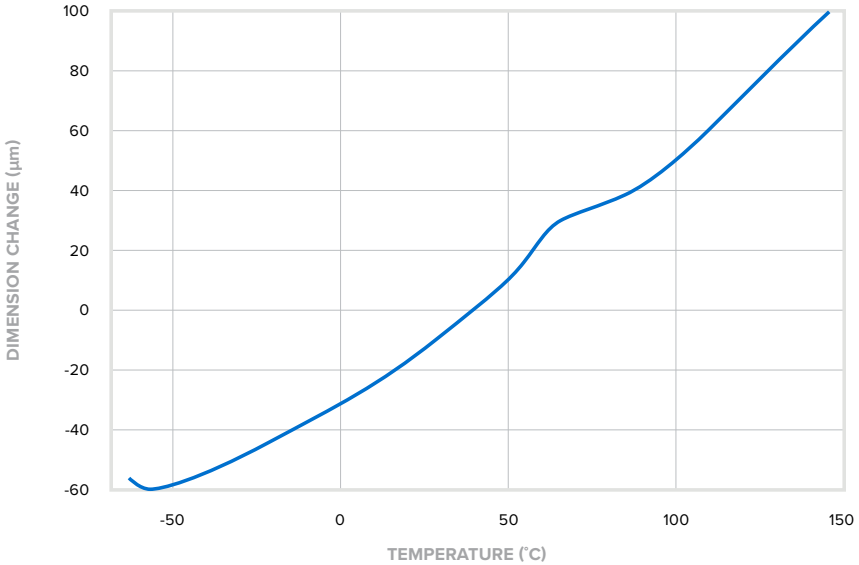
# Clear Cast Resin

	METRIC		IMPERIAL		METHOD
	Green	Post-Cured	Green	Post-Cured	
<b>Mechanical Properties</b>					
Ultimate Tensile Strength	38 MPa	65 MPa	5510 psi	9380 psi	ASTM D 638-14
Tensile Modulus	1.6 GPa	2.8 GPa	234 ksi	402 ksi	ASTM D 638-14
Elongation at Break	12%	6%	12%	6%	ASTM D 638-14
Flexural Modulus	1.3 GPa	2.2 GPa	181 psi	320 psi	ASTM D 790-15
Notched Izod	16 J/m	25 J/m	0.3 ft-lbf/in	0.46 ft-lbf/in	ASTM D 256-10
<b>Thermal Properties</b>					
Thermal Expansion, -30-140°C	-	94.8 $\mu\text{m}/\text{m}/^\circ\text{C}$	-	52.6 $\mu\text{in}/\text{in}/^\circ\text{F}$	ASTM E 831-19
Heat Deflection Temp. @ 1.8 MPa	43 °C	58 °C	109 °F	137 °F	ASTM D 648-16
Heat Deflection Temp. @ 0.45 MPa	50 °C	73 °C	121 °F	163 °F	ASTM D 648-16
<b>Burnout Characteristics</b>					
Ash Content	-	<0.20%	-	<0.20%	ASTM D 2584-18
Antimony <sup>2</sup>	-	<10 ppm	-	<10 ppm	ASTM E 1479-16
Detected Transition Metals (>10 ppm)	-	Al, Cu	-	Al, Cu	ASTM E 1479-16
High Concentration Transition Metals (>50 ppm)	-	none	-	none	ASTM E 1479-16

## Clear Cast Resin V1 TGA Trace



### Clear Cast Resin V1 TMA Trace



### SOLVENT COMPATIBILITY

Percent weight gain over 24 hours for a printed and post-cured 1 x 1 x 1 cm cube immersed in respective solvent:

Solvent	24 hr weight gain, %	Solvent	24 hr weight gain, %
Acetic Acid 5%	<1	Isooctane (aka gasoline)	<1
Acetone	sample cracked	Mineral oil (light)	<1
Isopropyl Alcohol	<1	Mineral oil (Heavy)	<1
Bleach ~5% NaOCl	<1	Salt Water (3.5% NaCl)	<1
Butyl Acetate	<1	Sodium Hydroxide solution (0.025% PH 10)	<1
Diesel Fuel	<1	Water	<1
Diethyl glycol Monomethyl Ether	1.7	Xylene	<1
Hydraulic Oil	<1	Strong Acid (HCl conc)	distorted
Skydrol 5	1	Xylene	< 0.1
Hydrogen peroxide (3%)	<1		

<sup>1</sup> Material properties may vary based on part geometry, print orientation, print settings, temperature, and disinfection or sterilization methods used.

<sup>2</sup> Material is antimony free to the limit of detection of the test



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