

# Clear Resin V5

An optimally-balanced Clear Resin for transparent applications

Clear Resin V5 is an exceptionally clear and color-neutral General Purpose Resin, offering an optimal balance of fast print speed, high dimensional accuracy, and presentation-ready appearance.

Clear Resin V5 creates highly transparent and colorless parts that can be polished to near optical transparency. Create parts that are stiff and strong with a smooth surface finish that rivals acrylic.

Clear Resin V5 is a new material formulation that leverages the Form 4 ecosystem to print three times faster than the previous version.

**Transparent enclosures, optical components, and lighting prototypes**

**Parts showcasing internal features**

**Molds, masters, and other rapid tooling**

**Fluidic devices**



V5

FLGPCL05

\* May not be available in all regions

Prepared March 20, 2024

Rev. 01 March 20, 2024

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 Resin V5

	METRIC <sup>1</sup>			IMPERIAL <sup>1</sup>			METHOD
	Green	Post-Cured 5 min (Ambient) <sup>2</sup>	Post-Cured 15 min at 60 °C <sup>3</sup>	Green	Post-Cured 5 min (Ambient) <sup>2</sup>	Post-Cured 15 min at 140 °F <sup>3</sup>	
<b>Tensile Properties</b>							
Ultimate Tensile Strength	46 MPa	51 MPa	60 MPa	6672 psi	7340 psi	8702 psi	ASTM D638-14
Tensile Modulus	2200 MPa	2575 MPa	2750 MPa	319 ksi	373 ksi	399 ksi	ASTM D638-14
Elongation at Break	13%	10%	8%	13%	10%	8%	ASTM D638-14
<b>Flexural Properties</b>							
Flexural Strength	83 MPa	92 MPa	105 MPa	12038 psi	13343 psi	15229 psi	ASTM D790-15
Flexural Modulus	2100 MPa	2450 MPa	2700 MPa	305 ksi	355 ksi	392 ksi	ASTM D790-15
<b>Impact Properties</b>							
Notched Izod	32 J/m	29 J/m	29 J/m	0.598 ft-lbs/in	0.542 ft-lbs/in	0.542 ft-lbs/in	ASTM D4812-11
<b>Thermal Properties</b>							
Heat Deflection Temp. @ 1.8 MPa	47 °C	49 °C	59 °C	117 °F	120 °F	138 °F	ASTM D648-16
Heat Deflection Temp. @ 0.45 MPa	52 °C	56 °C	74 °C	126 °F	133 °F	165 °F	ASTM D648-16
		<b>5 min (Ambient)</b>			<b>15 min at 60 °C</b>		
<b>Polished Optical Properties</b>							
<b>Transmission @ 2mm</b>		<b>85%</b>			<b>85%</b>		ASTM D1003-21
a* @ 2mm		-4.02			-4.31		ASTM E1348-15
b* @ 2mm		7.52			5.58		ASTM E1348-15
<b>Transmission @ 10mm</b>		<b>59%</b>			<b>59%</b>		ASTM D1003-21
a* @ 10mm		-4.25			-3.98		ASTM E1348-15
b* @ 10mm		5.98			5.94		ASTM E1348-15

**Transmission refers to the amount of visible light that passes through the part**

a\* and b\* are more commonly associated with the CIELAB color space, where they denote axes for color measurement:

a\* axis: Ranges from green to red, with negative values indicating green and positive values indicating red.

b\* axis: Ranges from blue to yellow, with negative values indicating blue and positive values indicating yellow.

## 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%	0.9	Mineral oil (Heavy)	0.2
Acetone	5.1	Mineral oil (Light)	0.2
Bleach ~5% NaOCl	0.7	Salt Water (3.5% NaCl)	0.8
Butyl Acetate	0.3	Skydrol 5	0.7
Diesel Fuel	0.1	Sodium Hydroxide solution (0.025% PH 10)	0.8
Diethyl glycol Monomethyl Ether	1.1	Strong Acid (HCl conc)	0.5
Hydraulic Oil	0.1	Tripropylene glycol monomethyl ether	0.5
Hydrogen peroxide (3%)	0.9	Water	0.9
Isooctane (aka gasoline)	< 0.1	Xylene	< 0.1
Isopropyl Alcohol	0.3		

<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> Data was obtained from parts printed on a Form 4 printer with 100 µm Clear Resin V5 settings, washed in a Form Wash for 5 minutes in ≥99% Isopropyl Alcohol, and post-cured at room temperature for 5 minutes in a Form Cure.

<sup>3</sup> Data was obtained from parts printed on a Form 4 printer with 100 µm Clear Resin V5 settings, washed in a Form Wash for 5 minutes in ≥99% Isopropyl Alcohol, and post-cured at 60°C for 15 minutes in a Form Cure.