formlabs

GENERAL PURPOSE RESIN

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**

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Material Properties	METRIC [1]			IMPERIAL [1]			METHOD
	Green	Post-Cured for 5 min at ambient temperature [2]	Post-Cured for 15 min at 60 °C [3]	Green	Post-Cured for 5 min at ambient temperature [2]	Post-Cured for 15 min at 140 °F [3]	
Tensile Properties	METRIC [1]			IMPERIAL [1]			METHOD
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
Flexural Properties	METRIC [1]			IMPERIAL [1]			METHOD
Flexural Strength	82 MPa	91 MPa	103 MPa	11893 psi	13198 psi	14938 psi	ASTM D790-15
Flexural Modulus	2000 MPa	2450 MPa	2750 MPa	290 ksi	355 ksi	399 ksi	ASTM D790-15
Impact Properties	METRIC [1]			IMPERIAL [1]			METHOD
Notched Izod	31 J/m	29 J/m		0.580 ft-lb/in	0.542 ft-lb/in		ASTM D4812-11
Thermal Properties	METRIC [1]			IMPERIAL [1]			METHOD
Heat Deflection Temp. @ 1.8 MPa	54 °C		57 °C	129 °F		135 °F	ASTM D648-16
Heat Deflection Temp. @ 0.45 MPa	61 °C		69 °C	142 °F		156 °F	ASTM D648-16

Polished Optical Properties	Post-Cured for 5 min at ambient temperature [2]	Post-Cured for 15 min at 60 °C [3]	
Transmission @ 2 mm	**85%**	**85%**	ASTM D1003-21
a* @ 2 mm	-4.02	-4.31	ASTM E1348-15
b* @ 2 mm	7.52	5.58	ASTM E1348-15
Transmission @ 10 mm	**59%**	**59%**	ASTM D1003-21
a* @ 10 mm	-4.25	-3.98	ASTM E1348-15
b* @ 10 mm	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, %	Solvent	24 hr weight gain, %
Acetic Acid 5%	0.9	Hydrogen peroxide (3%)	0.9	Sodium Hydroxide solution (0.025% PH 10)	0.8
Acetone	5.1	Isooctane (aka gasoline)	< 0.1	Strong Acid (HCl conc)	0.5
Bleach ~5% NaOCl	0.7	Isopropyl Alcohol	0.3	Tripropylene glycol monomethyl ether	0.5
Butyl Acetate	0.3	Mineral oil (Heavy)	0.2	Water	0.9
Diesel Fuel	0.1	Mineral oil (Light)	0.2	Xylene	< 0.1
Diethyl glycol Monomethyl Ether	1.1	Salt Water (3.5% NaCl)	0.8		
Hydraulic Oil	0.1	Skydrol 5	0.7		

[1] Material properties may vary based on part geometry, print orientation, print settings, temperature, and disinfection or sterilization methods used.

[2] 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.

[3] 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.