formlabs Rigid 4000 Resin Owner’s Manual

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Resin for Stiff, Strong, Engineering-Grade Prototypes

Glass-filled Rigid 4000 Resin prints with a smooth, polished finish and is ideal for stiff and strong parts that can withstand minimal deflection. Consider Rigid 4000 Resin for general loadbearing applications.

Material Properties	METRIC 1		IMPERIAL 1		METHOD
	Green 2	Post-Cured 3	Green 2	Post-Cured 3	
Tensile Properties	METRIC 1		IMPERIAL 1		METHOD
Ultimate Tensile Strength	33 MPa	69 MPa	4786 psi	10007 psi	ASTM D638-14
Tensile Modulus	2.1 GPa	4.1 GPa	305 ksi	595 ksi	ASTM D638-14
Elongation at Break	23%	5.3%	23%	5.3%	ASTM D638-14
Flexural Properties	METRIC 1		IMPERIAL 1		METHOD
Flexural Stress at 5% Strain	43 MPa	105 MPa	6236 psi	15229 psi	ASTM D790-15
Flexural Modulus	1.4 GPa	3.4 GPa	203 ksi	493 ksi	ASTM D790-15
Impact Properties	METRIC 1		IMPERIAL 1		METHOD
Notched Izod	16 J/m	23 J/m	0.3 ft-lb/in	0.43 ft-lb/in	ASTM D256-10
Thermal Properties	METRIC 1		IMPERIAL 1		METHOD
Heat Deflection Temp. @ 1.8 MPa	41 °C	60 °C	105 °F	140 °F	ASTM D648-16
Heat Deflection Temp. @ 0.45 MPa	48 °C	77 °C	118 °F	170 °F	ASTM D648-16
Thermal Expansion (0-150 °C)	64 µm/m/°C	63 µm/m/°C	36 µin/in/°F	35 µin/in/°F	ASTM E831-13

Contents

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, %
Acetic Acid 5%	0.8
Acetone	3.3
Isopropyl Alcohol	0.4
Bleach ~5% NaOCl	0.7
Butyl Acetate	< 0.1
Diesel Fuel	< 0.1
Diethyl glycol Monomethyl Ether	1.4
Hydraulic Oil	0.2
Skydrol 5	1.1
Hydrogen peroxide (3%)	0.9

Isooctane (aka gasoline)	< 0.1
Mineral oil (light)	0.2
Mineral oil (Heavy)	0.2
Salt Water (3.5% NaCl)	0.7
Sodium Hydroxide solution (0.025% PH 10)	0.7
Water	0.7
Xylene	< 0.1
Strong Acid (HCl conc)	5.3

1. Material properties can vary with part geometry, print orientation, print settings, and temperature.
2. Data was obtained from green parts, printed using Form 3, 100 µm, Rigid settings, without additional treatments.
3. Data was obtained from parts printed using Form 3, 100 µm, Rigid settings and post-cured with a Form Cure for 15 minutes at 80 °C.

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Documents / Resources

	formlabs Rigid 4000 Resin [pdf] Owner's Manual V1 FLRGWH01, Rigid 4000 Resin, 4000 Resin, Resin

References

- **User Manual**