Tough 1500

Resin for Resilient Prototyping

Tough 1500 Resin is the most resilient material in our functional family of Tough and Durable Resins. This resin produces stiff and pliable parts that bend and spring back quickly under cyclic loading.

Springy prototypes and assemblies

Snap fit and press fit connectors

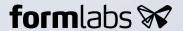
Polypropylene-like strength and stiffness





FLTO1501

* May not be available in all regions



MATERIAL PROPERTIES DATA

	METRIC ¹		IMPERIAL 1		METHOD
	Green ²	Post-Cured ³	Green ²	Post-Cured ³	
Tensile Properties			!		
Ultimate Tensile Strength	26 MPa	33 MPa	3771 psi	4786 psi	ASTM D638-14
Tensile Modulus	0.94 GPa	1.5 GPa	136 ksi	218 ksi	ASTM D638-14
Elongation at Break	69%	51%	69%	51%	ASTM D638-14
Flexural Strength	15 MPa	39 MPa	2175 psi	5656 psi	ASTM D 790-15
Flexural Properties					·
Flexural Modulus	0.44 GPa	1.4 GPa	58 ksi	203 ksi	ASTM D 790-15
Impact Properties					·
Notched IZOD	72 J/m	67 J/m	1.3 ft-lbf/in	1.2 ft-lbf/in	ASTM D256-10
Unnotched IZOD	902 J/m	1387 J/m	17 ft-lbf/in	26 ft-lbf/in	ASTM D4812-11
Temperature Properties					·
Heat Deflection Temp. @ 1.8 MPa	34 C	45 C	93 F	113 F	ASTM D 648-16
Heat Deflection Temp. @ 0.45 MPa	42 C	52 C	108 F	126 F	ASTM D 648-16
Thermal Expansion (0-150°C)	114 μm/m/°C	97 μm/m/°C	63 μin/in/°F	54 μin/in/°F	ASTM E 831-13

¹Material properties can vary with part geometry, print orientation, print settings, and temperature.

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%	0.8	Mineral oil (Light)	< 0.1
Acetone	19.1	Mineral oil (Heavy)	0.1
Bleach ~5% NaOCl	0.6	Salt Water (3.5% NaCl)	0.7
Butyl Acetate	5.1	Skydrol 5	0.5
Diesel Fuel	0.1	Sodium Hydroxide solution (0.025% PH 10)	0.7
Diethyl glycol Monomethyl Ether	5.3	Strong Acid (HCl conc)	4.4
Hydraulic Oil	0.2	Tripropylene glycol monomethyl ether	0.6
Hydrogen peroxide (3%)	0.7	Water	0.7
Isooctane (aka gasoline)	< 0.1	Xylene	3.2
Isopropyl Alcohol	3.2		

 $^{^{\}rm 2}\,{\rm Data}$ was obtained from green parts, printed using Form 2, 100 μm , Tough 1500 settings, without additional treatments.

 $^{^{\}rm 3}\,\mathrm{Data}$ was obtained from parts printed using Form 2, 100 μ m, Tough 1500 settings and post-cured with a Form Cure for 60 minutes at 70 °C.