ENGINEERING RESIN

Elastic 50A

Resin for Soft Flexible Parts

Our softest Engineering Resin, this 50A Shore durometer material is suitable for prototyping parts normally produced with silicone. Choose Elastic Resin for parts that will bend, stretch, compress, and hold up to repeated cycles without tearing.

Compliant features for robotics

Wearables and consumer goods prototyping

Medical models and devices

Special effects props and models

V1 **FLELCL01** * **May not be available in all regions**

formlabs

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MATERIAL PROPERTIES DATA

Elastic 50A Resin

	METRIC [1]		IMPERIAL [1]		METHOD
	Green	Post-Cured [2]	Green	Post-Cured [2]	
Mechanical Properties					
Ultimate Tensile Strength [3]	1.61 MPa	3.23 MPa	234 psi	468 psi	ASTM D 412-06 (A)
Stress at 50% Elongation	0.92 MPa	0.94 MPa	133 psi	136 psi	ASTM D 412-06 (A)
Stress at 100% Elongation	1.54 MPa	1.59 MPa	233 psi	231 psi	ASTM D 412-06 (A)
Elongation at Break	100%	160%	100%	160%	ASTM D 412-06 (A)
Tear Strength [4]	8.9 kN/m	19.1 kN/m	51 lbf/in	109 lbf/in	ASTM D 624-00
Shore Hardness	40A	50A	40A	50A	ASTM 2240
Compression Set 23°C for 22 hours	2%	2%	2%	2%	ASTM D 395-03 (B)
Compression Set 70°C for 22 hours	3%	9%	3%	9%	ASTM D 395-03 (B)

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

[2] Data was obtained from parts printed using Form 2, 100 µm, Elastic settings, washed in Form Wash for 20 minutes and post-cured with Form Cure at 60 °C for 20 minutes.

[3] Tensile testing was performed after 3+ hours at 23 °C, using a Die C dumbbell and 20 in/min cross head speed.

[4] Tear testing was performed after 3+ hours at 23 °C, using a Die C tear specimen and a 20 in/min cross head speed.

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%	2.8	Mineral oil (Light)	< 1.0
Acetone	37	Mineral oil (Heavy)	< 1.0
Bleach ~5% NaOCl	2.0	Salt Water (3.5% NaCl)	< 1.0
Butyl Acetate	40	Skydrol 5	1.1
Diesel Fuel	4.2	Sodium Hydroxide solution (0.025% PH 10)	< 1.0
Diethyl glycol Monomethyl Ether	29	Strong Acid (HCl conc)	< 1.0
Hydraulic Oil	2.1	Tripropylene glycol monomethyl ether	23
Hydrogen peroxide (3%)	2.2	Water	< 1.0
Isooctane (aka gasoline)	3.5	Xylene	< 1.0
Isopropyl Alcohol	26		