

# 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**



**FLELCL01**

\* May not be available in all regions

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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

# Elastic 50A Resin

	METRIC <sup>1</sup>		IMPERIAL <sup>1</sup>		METHOD
	Green	Post-Cured <sup>2</sup>	Green	Post-Cured <sup>2</sup>	
<b>Tensile Properties</b>					
Ultimate Tensile Strength <sup>3</sup>	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 <sup>4</sup>	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)

<sup>1</sup> Material properties can vary with part geometry, print orientation, print settings, and temperature.

<sup>2</sup> 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.

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

<sup>4</sup> 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 size gain, %	24 hr weight gain, %	Solvent	24 hr size gain, %	24 hr weight gain, %
Acetic Acid 5%	< 1	2.8	Isooctane (aka gasoline)	< 1	3.5
Acetone	19.3	37.3	Mineral oil (light)	< 1	< 1
Isopropyl Alcohol	13.3	25.6	Mineral oil (Heavy)	< 1	< 1
Bleach ~5% NaOCl	< 1	2	Salt Water (3.5% NaCl)	< 1	1.7
Butyl Acetate	18.2	39.6	Sodium Hydroxide solution (0.025% PH 10)	< 1	2
Diesel Fuel	1.2	4.2	Water	< 1	2.3
Diethyl glycol Monomethyl Ether	12	28.6	Xylene	20.4	46.6
Hydraulic Oil	< 1	2.1	Strong Acid (HCl conc)	14.2	39.4
Skydrol 5	9.9	21.7			
Hydrogen peroxide (3%)	< 1	2.2			