formlabs

ENGINEERING RESIN

Flexible 50A Resin V1

Resin for Soft Flexible Parts

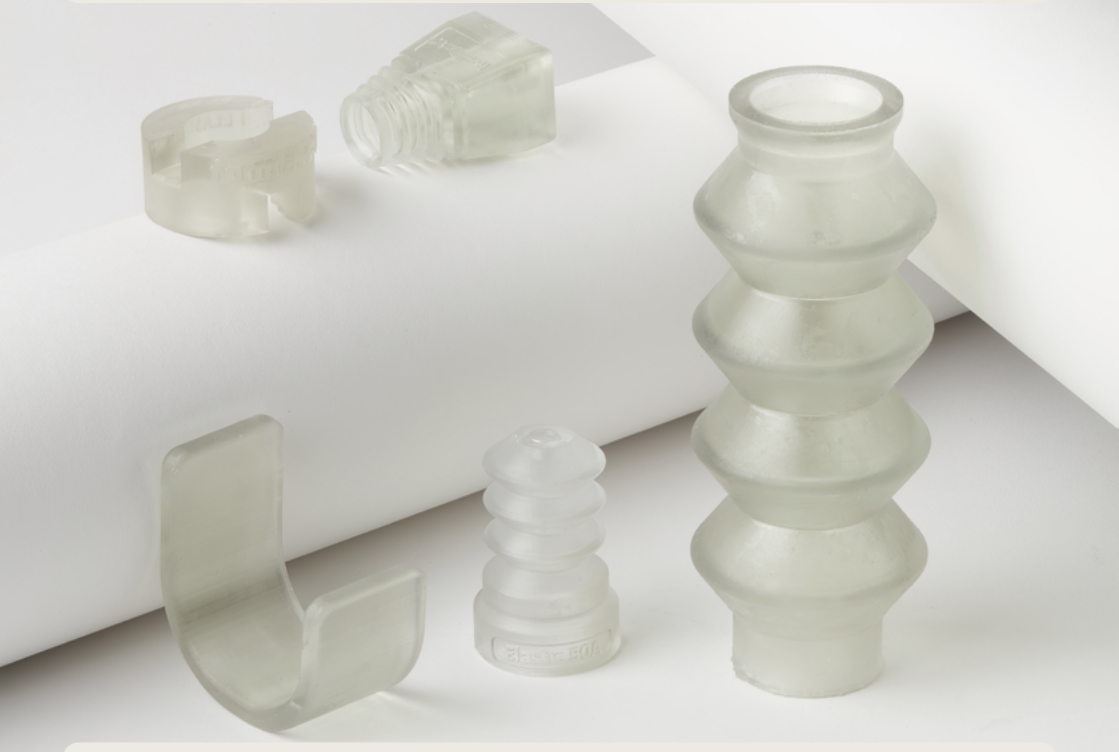
This pliable material is suitable for prototyping transparent parts normally produced with softer rubbers and silicones. Choose Flexible 50A Resin V1 for parts that will bend, stretch, compress, and require transparency.

Compliant features for robotics

Wearables and consumer goods prototyping

Medical models and devices

Special effects props and models



V2 **FLELCL02**

Prepared 24/01/2024

Rev. 01 24/01/2024

Material Properties	METRIC [1]		IMPERIAL [1]		METHOD
	Green [2]	Post-Cured [3]	Green [2]	Post-Cured [3]	
Mechanical Properties	METRIC [1]		IMPERIAL [1]		METHOD
Ultimate Tensile Strength [3]	1.7 MPa	3.4 MPa	249 psi	487 psi	ASTM D412-06 (A)
Stress at 50% Elongation	0.5 MPa	0.9 MPa	74 psi	134 psi	ASTM D412-06 (A)
Stress at 100% Elongation	0.9 MPa	1.7 MPa	133 psi	246 psi	ASTM D412-06 (A)
Elongation at Break	160%				ASTM D412-06 (A)
Shore Hardness	44	55	44	55	ASTM 2240
Compression Set (23 °C for 22 hours)	Not Tested	2.1%	Not Tested	2.1%	ASTM D395-03 (B)
Compression Set (70 °C for 22 hours)	Not Tested	3.1%	Not Tested	3.1%	ASTM D395-03 (B)
Tear Strength [4]	8.2 kN/m	12.3 kN/m	46.8 lb/in	70.2 lb/in	ASTM D624-00
Ross Flex Fatigue at 23 °C	Not Tested	800	Not Tested	800	ASTM D1052, (notched), 60° bending, 100 cycles/minute
Bayshore Resilience	Not Tested	18%	Not Tested	18%	ASTM D2632
Thermal Properties	METRIC [1]		IMPERIAL [1]		METHOD
Glass transition temperature (Tg)	Not Tested	-34.5 °C	Not Tested	-30.1 °F	DMA
General Properties					
Density	1.01				
Color	Clear				
Viscosity (35 °C)	1400 cPs				

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%	1.5	Isooctane (aka gasoline)	15.6
Acetone	43.4	Mineral oil (light)	0.7
Isopropyl Alcohol	39.2	Mineral oil (Heavy)	0.4
Bleach ~5% NaOCl	0.6	Salt Water (3.5% NaCl)	0.6
Butyl Acetate	133.1	Sodium Hydroxide solution (0.025% PH 10)	0.7
Diesel Fuel	7.9	Water	0.7
Diethyl Glycol Monomethyl Ether	31.4	Xylene	163.9
Hydraulic Oil	3.9	Strong Acid (HCl conc)	45.6
Skydrol 5	41.2	Tripropylene Glycol Methyl Ether (TPM)	43.6
Hydrogen peroxide (3%)	0.9		

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

[2] Data was obtained from parts printed using Form 3, 100 µm, Flexible 50A Resin V1 settings, Flexible 50A Resin V1 post-processing steps.

[3] Tensile testing was performed after 3+ hours at 23 °C, using a Die C specimen cut from sheets.

[4] Tear testing was performed after 3+ hours at 23 °C, using a Die C tear specimen directly printed.