

Flexible 80A Resin V1.1

Resin for Hard Flexible Prototypes

Flexible 80A Resin is the most stiff soft-touch material in our library of Flexible and Elastic Resins, with an 80A Shore durometer to simulate the flexibility of rubber or TPU.

Balancing softness with strength, Flexible 80A Resin can withstand bending, flexing, and compression, even through repeated cycles. This material is well-suited for cushioning, damping, and shock absorption.

Cartilage and ligament anatomy

Seals, gaskets, masks

Handles, grips, overmolds



FLFL8001



FLFL8011

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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	METRIC ¹		IMPERIAL ¹		METHOD
	Green	Post-Cured ²	Green	Post-Cured ²	
Tensile Properties	METRIC ¹		IMPERIAL ¹		METHOD
Ultimate Tensile Strength ³	3.0 MPa	6.4 MPa	435 psi	928 psi	ASTM D412-16
Stress at 50% Elongation	1.5 MPa	2.0 MPa	218 psi	290 psi	ASTM D412-16
Stress at 100% Elongation	2.8 MPa	3.3 MPa	406 psi	479 psi	ASTM D412-16
Elongation at Break	110%	130%	110%	130%	ASTM D412-16
Tear Strength ⁴	6 kN/m	13 kN/m	34 lb/in	74 lb/in	ASTM D624-00
Compression Set (23 °C for 22 hours)	Not Tested	15%	Not Tested	16%	ASTM D395-03 (B)
Compression Set (70 °C for 22 hours)	Not Tested	6%	Not Tested	6%	ASTM D395-03 (B)
Pendulum Rebound	Not Tested	13%	Not Tested	13%	ASTM D7121
Bayshore Resilience	Not Tested	23%	Not Tested	23%	ASTM D2632
Other Properties	METRIC ¹		IMPERIAL ¹		METHOD
Shore A Hardness	67A	80A	67A	80A	ASTM 2240
Ross Flex Fatigue at 23 °C	556 cycles				90 degree deflection, notched, 100 cycles/minute
Thermal Properties	METRIC ¹		IMPERIAL ¹		METHOD
Glass transition temperature (Tg)	Not Tested	23 °C	Not Tested	74 °C	DMA
Viscosity at 25 °C	3350cPs				ASTM D7867

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%	0.9	Isooctane (aka gasoline)	1.6
Acetone	37.4	Mineral oil (light)	0.1
Isopropyl Alcohol	11.7	Mineral oil (Heavy)	< 0.1
Bleach ~5% NaOCl	0.6	Salt Water (3.5% NaCl)	0.5
Butyl Acetate	51.4	Sodium Hydroxide solution (0.025% PH 10)	0.6
Diesel Fuel	2.3	Water	0.7
Diethyl Glycol Monomethyl Ether	19.3	Xylene	64.1
Hydraulic Oil	1.0	Strong Acid (HCl conc)	28.6
Skydrol 5	10.7	Tripropylene Glycol Methyl Ether (TPM)	13.6
Hydrogen peroxide (3%)	0.7		

¹ Material properties may vary based on part geometry, print orientation, print settings, temperature, and disinfection or sterilization methods used.

² Data for post-cured samples were printed on a Form 4 printer with 100 µm Flexible 80A Resin V1.1 settings, washed in a Form Wash for 20 minutes in ~99% Isopropyl Alcohol, and post-cured at 60°C for 10 minutes in a Form Cure L V1.

³ Tensile testing was performed after 3+ hours at 23 °C, using a Die C specimen cut from sheets. Pull rate ~ 500 mm/min.

⁴ Tear testing was performed after 3+ hours at 23 °C, using a Die C tear specimen directly printed. Pull rate ~ 500 mm/min.