

ENGINEERING RESIN

# Flexible 80A

## Flexible 80A 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.

Handles, grips, overmolds

Cartilage and ligament anatomy

Seals, gaskets, masks



FLFL8001

formlabs 

Prepared 05 . 29 . 2020  
Rev 01 05 . 29 . 2020

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.

# Flexible 80A Resin Material Properties Data

	METRIC <sup>1</sup>		IMPERIAL <sup>1</sup>		METHOD
	Green	Post-Cured <sup>2</sup>	Green	Post-Cured <sup>2</sup>	
<b>Mechanical Properties</b>					
Ultimate Tensile Strength <sup>3</sup>	3.7 MPa	8.9 MPa	539 psi	1290 psi	ASTM D 412-06 (A)
Stress at 50% Elongation	1.5 MPa	3.1 MPa	218 psi	433 psi	ASTM D 412-06 (A)
Stress at 100% Elongation	3.5 MPa	6.3 MPa	510 psi	909 psi	ASTM D 412-06 (A)
Elongation at Break	100%	120%	100%	120%	ASTM D 412-06 (A)
Shore Hardness	70A	80 A	70A	80 A	ASTM 2240
Compression Set (23 °C for 22 hours)	Not Tested	3%	Not Tested	3%	ASTM D 624-00
Compression Set (70 °C for 22 hours)	Not Tested	5%	Not Tested	5%	ASTM D 395-03 (B)
Tear Strength <sup>4</sup>	11 kN/m	24 kN/m	61 lbf/in	137 lbf/in	ASTM D 395-03 (B)
Ross Flex Fatigue at 23 °C	Not Tested	>200,000 cycles	Not Tested	>200,000 cycles	ASTM D1052, (notched), 60° bending, 100 cycles/minute
Ross Flex Fatigue at -10 °C	Not Tested	>50,000 cycles	Not Tested	>50,000 cycles	ASTM D1052, (notched), 60° bending, 100 cycles/minute
Bayshore Resilience	Not Tested	28%	Not Tested	28%	ASTM D2632
<b>Thermal Properties</b>					
Glass transition temperature (Tg)	Not Tested	27 °C	Not Tested	27 °C	DMA

<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 3, 100 µm, Flexible 80A settings, washed in Form Wash for 10 minutes and postcured with Form Cure at 60 °C for 10 minutes.

<sup>3</sup>Tensile testing was performed after 3+ hours at 23 °C, using a Die C specimen cut from sheets.

<sup>4</sup>Tear testing was performed after 3+ hours at 23 °C, using a Die C tear specimen directly printed.

## 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 Hour Weight Gain (%)	Solvent	24 Hour Weight Gain (%)
Acetic Acid, 5 %	0.9	Hydrogen Peroxide (3 %)	0.7
Acetone	37.4	Isooctane (aka gasoline)	1.6
Isopropyl Alcohol	11.7	Mineral Oil, light	0.1
Bleach, ~5 % NaOCl	0.6	Mineral Oil, heavy	<0.1
Butyl Acetate	51.4	Salt Water (3.5 % NaCl)	0.5
Diesel	2.3	Sodium hydroxide (0.025 %, pH = 10)	0.6
Diethyl glycol monomethyl ether	19.3	Water	0.7
Hydraulic Oil	1.0	Xylene	64.1
Skydrol 5	10.7	Strong Acid (HCl Conc)	28.6
Tripropylene Glycol Methyl Ether	13.6		