

Material Information



Flexible 80A Resin

Introduction

Formlabs Flexible 80A Resin is a stiff, soft-touch 3D printing material with an 80A Shore durometer, designed to simulate the flexibility of rubber or TPU. It offers a balance between pliability and strength, allowing parts to bend and compress while maintaining their shape over repeated cycles.

Advantages

It withstands repeated bending, stretching, and compression without cracking, and its Shore 80A hardness makes it suitable for applications that require a firm yet flexible material. Its transparency allows for visual inspection, while its durability supports functional testing and real-world use.

Disadvantages

Its flexibility can make support removal more delicate compared to rigid resins.

Tolerance

$\pm 200\mu\text{m}$ or 0.2%

Color

Glassy Translucent

Recommendation

Best suited for applications that require a firm, flexible material capable of withstanding repeated mechanical stress, such as grips, seals, cushioning elements, and wearable components. It is an excellent alternative to molded rubber or TPU for low-volume production and rapid prototyping.

Material Specifications			
Property	Method	Green	Post-Cured

Tensile Strength	ASTM D412-06 (A)	3.7MPa	8.9MPa
Stress at 50% Elongation	ASTM D412-06 (A)	1.5MPa	3.1MPa
Stress at 100% Elongation	ASTM D412-06 (A)	3.5MPa	6.3MPa
Elongation at Break	ASTM D412-06 (A)	100%	120%
Shore Hardness	ASTM 2240	70A	80A
Compression Set (23 °C for 22 hours)	ASTM D395-03 (B)	/	3%
Compression Set (70 °C for 22 hours)	ASTM D395-03 (B)	/	5%
Tear Strength	ASTM D624-00	11kN/m	24kN/m
Ross Flex Fatigue at 23 °C	ASTM D1052, (notched), 60° bending, 100 cycles/minute	/	>200,000 cycles
Ross Flex Fatigue at -10 °C	ASTM D1052, (notched), 60° bending, 100 cycles/minute	/	>50,000 cycles
Bayshore Resilience	ASTM D2632	/	28%
Glass transition temperature (Tg)	DMA	/	27°C

Attention

After curing, the part will take on a more yellow hue. Prolonged exposure to UV light can cause gradual material degradation, and over-washing in solvents may reduce mechanical performance. Additionally, its flexible nature can make support removal more delicate.

Applications

3DSPRO finds people using Flexible 80A Resin in the following industries and applications:

Wearable products and accessories:

Ergonomic grips, custom-fit straps, cushioning pads, and protective wraps.

Consumer electronics:

Overmolded housings, vibration-dampening mounts, tactile buttons, and flexible protective covers.

Industrial equipment:

Seals, gaskets, damping elements, and soft-touch handles for tools and machinery.

Medical and anatomical models:

Cartilage, tendon, and ligament replicas, patient-specific soft tissue models, and prosthetic liners.

Sports and lifestyle gear:

Shock-absorbing inserts, flexible protective gear, and custom-fit performance equipment.