

Material Information

Rigid 4000 Resin



Introduction

Formlabs Rigid 4000 Resin is a glass-filled 3D printing material that delivers PEEK-like stiffness, excellent dimensional stability, and a smooth matte finish. It resists deformation under load, torque, and pressure, making it ideal for producing strong, precise, and load-bearing prototypes or end-use parts.

Advantages

Rigid 4000 Resin offers a balanced combination of stiffness, strength, and detail resolution, enabling the production of functional parts that maintain their shape under mechanical stress. Its resistance to heat and chemicals broadens its suitability for industrial applications. The smooth matte finish improves aesthetics and usability.

Disadvantages

It is more brittle than resins designed for high impact resistance or flexibility. Thin features may be prone to fracture under sudden shock, and the glass-filled composition requires dedicated wash equipment to prevent contamination of other resins.

Tolerance

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

Color

Solid White

Recommendation

Best suited for engineering-grade prototypes, jigs, fixtures, and end-use parts that require high stiffness, strength, and dimensional stability. It is ideal for mounts, brackets, thin-walled parts, and functional components that must resist deformation under load.

Material Specifications			
Property	Method	Green	Post-Cured
Tensile Strength	ASTM D638-14	33MPa	69MPa
Tensile Modulus	ASTM D638-14	2.1GPa	4.1GPa
Elongation at Break	ASTM D638-14	23%	5.3%
Flexural Stress at 5% Strain	ASTM D790-15	43MPa	103MPa
Flexural Modulus	ASTM D790-15	1.4GPa	3.4GPa
Notched Izod	ASTM D256-10	16J/m	23J/m
Heat Deflection Temp. (1.8MPa)	ASTM D648-16	41°C	60°C
Heat Deflection Temp. (0.45MPa)	ASTM D648-16	48°C	77°C
Thermal Expansion, 0-150 °C	ASTM E831-13	64µm/m/°C	63µm/m/°C

Attention

Due to the characteristics of resin materials, products printed with resin materials will gradually turn yellow and become brittle after long-term exposure to direct sunlight. If you want to avoid this from happening, you may need to move it out of direct sunlight or add 3D Plus™ services (such as coating) to block out the sunlight.

Applications

3DSPRO finds people using Rigid 4000 Resin in the following industries and applications:

Industrial tooling and fixtures:

Precision jigs, fixtures, and alignment tools for manufacturing and assembly.

Mechanical assemblies:

Mounts, brackets, and load-bearing components require high stiffness.

Thin-walled parts:

Lightweight yet rigid housings, covers, and structural panels.

Chemical and thermal exposure:

Components for environments with moderate heat and chemical contact.

Prototyping for high-performance plastics:

Models simulating the stiffness of PEEK or glass-filled thermoplastics.