Material Information

Rigid 10K Resin

Introduction
Formlabs Rigid 10K Resin is a highly glass-filled 3D printing material engineered for extreme stiffness, high thermal resistance, and exceptional dimensional stability. Its smooth matte finish delivers an injection-molded look, while its resistance to deformation under load ensures reliable performance in functional prototypes, tooling, and end-use parts.

Advantages
Rigid 10K Resin offers great stiffness, maintaining shape and dimensional accuracy under heavy loads, torque, and pressure. Its high thermal resistance allows it to perform in environments with sustained heat exposure, and its chemical resistance broadens its use in industrial and manufacturing settings.

Disadvantages
It is more brittle than resins designed for impact resistance or flexibility. Its glass-filled composition requires dedicated wash equipment to avoid cross-contamination with other resins, and the material's rigidity can make thin features more prone to fracture under sudden impact.

Tolerance
±200µm or 0.2%

Color
Solid White

Recommendation
Best suited for industrial-grade prototypes, short-run production tooling, and functional parts that require extreme stiffness, high heat resistance, and chemical durability. It is ideal for applications such as injection mold masters, aerodynamic test models, and fluid-contact components.

Material Specifications				
Property	Method	Green	Post-Cured for 60min at 70°C	Post-Cured for 60min at 70°C and 125min at 90°C
Tensile Strength	ASTM D638-14	55MPa	65MPa	53MPa
Tensile Modulus	ASTM D638-14	7.5GPa	10GPa	10GPa
Elongation at Break	ASTM D638-14	2%	1%	1%
Flexural Strength	ASTM D790-15	84MPa	126MPa	103MPa
Flexural Modulus	ASTM D790-15	6GPa	9GPa	10GPa
Notched Izod	ASTM D256-10	16J/m	16J/m	18J/m
Unnotched Izod	ASTM D4812-11	41J/m	47J/m	41J/m
Heat Deflection Temp. (1.8MPa)	ASTM D648-16	65°C	163°C	218°C
Heat Deflection Temp. (0.45MPa)	ASTM D648-16	56°C	82°C	110°C
Thermal Expansion, 0-150 °C	ASTM E831-13	48μm/m/°C	47μm/m/°C	46μm/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 10K Resin in the following industries and applications:

Injection molding and tooling:
Short-run injection mold masters, mold inserts, and thermoforming tools.

Aerospace and automotive testing:
Aerodynamic test models, high-load brackets, and heat-resistant housings.

Industrial equipment:
Fluid-contact manifolds, jigs, fixtures, and precision alignment tools.

Chemical processing:
Components exposed to solvents, fuels, or industrial cleaning agents.

High-performance prototyping:
Rigid, dimensionally stable prototypes simulating glass- or fiber-filled thermoplastics.