PALITRA

INDUSTRIAL 3D PRINTING MADE EASY

RIZIUM™ Glass Fiber

Cyclic Olefin Copolymer (COC) blend with Glass Fiber 3D Printing Filament

Rizium™ GF is the only fiber-filled Cyclic Olefin Copolymer (COC) blend filament on the market—engineered specifically for engineers who need results, not problems.

It delivers fast, low-failure 3D printing with outstanding surface finish, dimensional stability, and near-isotropic strength—without the need for drying.

Ideal for demanding environments and production-ready applications where reliability, throughput, and cleanliness are critical.

1. Product Overview:

Rizium™ Glass Fiber is an advanced engineering-grade filament designed specifically for FFF 3D printing. Through its Cyclic Olefin Copolymer blend with glass fiber, it provides high throughput, hassle-free 3D printing creating parts that have stunning visual finish, near isotropic properties, very low moisture absorption, excellent chemical resistances, and certified printing safety.

Use Rizium™ to keep up with the demand and provide parts that are durable with a high-quality surface finish.

Rizium™ Glass Fiber will work with any printer that has hardened gears and nozzles. It is compatible with full color 3D printing from Palitra using an XRize system.

2. Why Choose Rizium™ GF:

Material Advantages:

- **Near-Isotropic Strength**
  Superior layer adhesion ensures parts are strong in all directions—not just XY.
- **High Rigidity for Structural Stability**
  Maintains stiffness under load—ideal for precision parts and mechanically demanding applications.
- **Outstanding Surface Finish**
  Smooth, professional parts right off the printer with nearly invisible layer lines.
- **No Drying Required**
  <0.01% moisture absorption means Rizium™ GF is always ready to print—even in humid environments.
- **High Strength at Low Density**
  Strong, durable parts without added weight—ideal for aerospace and robotics.
- **Dimensional Stability**
  Minimal elongation and low shrinkage keep parts accurate, even in high-tolerance applications.
- **Chemical Resistance**
  Withstands acids, alcohols, and ketones—perfect for lab, industrial, or field use.
- **Cold-Resistant**
  Performs reliably in subzero and cryogenic environments.
- **UV Stable and Rigid**
  Maintains form and function in outdoor or UV-exposed applications.
- **Low Outgassing**
  Safe for use in cleanrooms, electronics, and controlled environments.

Printing Advantages:

- **High-Speed Print Capability**
  Supports flow rates up to 30 mm³/s and speeds up to 250 mm/s—without sacrificing quality.
- **Warp-Resistant & Dimensional Accuracy**
  Low to no warping means more successful large parts and better batch consistency.
- **Low VOCs, Safe to Print Indoors**
  UL GREENGUARD 2904 certified—clean enough for classrooms, labs, and offices.
- **Support-Compatible**
  Works with breakaway and tree-style supports; even better with Rizium™ Support.
- **No Stringing & Clean Transitions**
  Produces neat, clean prints with fewer artifacts—even at high speeds.
- **Plug-and-Play Reliability**
  A forgiving print window that works well on most modern FFF printers with a hardened nozzle.

3. Applications:

Engineering, Manufacturing & Production

- **Prototyping & Functional Testing**
  Quickly iterate and test designs with parts that mimic production-level mechanical performance.
- **End-Use Parts**
  Print durable, dimensionally stable components ready for real-world use.
- **Tools, Jigs & Fixtures**
  Create production-line aids and precision tools that hold up to industrial wear and chemical exposure.
- **Replacement Parts & Field Repairs**
  On-demand manufacturing of strong, moisture-resistant parts for maintenance and service.

Chemical & Environmental Applications

- **Chemical Processing Equipment**
  Print components like fluid routing guides, housings, or brackets exposed to alcohols, acids, and ketones.

- **Environments with Chemical Exposure**
  Ideal for lab, industrial, or outdoor parts where aggressive cleaning or chemical handling occurs.
- **Submersion & Wet Environments**
  Low moisture absorption makes it suitable for splash zones, humid environments, or temporary submersion.

Cold Chain & Subzero Applications

- **Cold Storage Equipment**
  Print parts for freezers, refrigerated warehouses, or cryogenic systems that remain dimensionally stable.
- **Cryogenic-Compatible Components**
  Reliable in environments well below freezing, ideal for scientific, aerospace, or medical use.

Aerospace, Robotics & Electronics

- **Drones & UAV Frames**
  Lightweight, rigid parts with excellent surface quality for payload mounts, arms, or airframes.
- **Robotic End-Effectors & Brackets**
  Durable and impact-resistant for moving parts in automated systems.
- **Electronics & Sensor Enclosures**
  Clean, static-safe, and chemically resistant housings for industrial, consumer, or research electronics.
- **Optical Devices & Enclosures**
  Smooth surface finish and precision printing support light-sensitive or lab-grade equipment.

Medical, Cleanroom & Lab Use

- **Medical Device Prototypes (Non-Implantable)**
  Rapidly iterate ergonomically accurate or functional components with chemical safety.
- **Cleanroom-Safe Parts**
  GREENGUARD 2904-certified base material; suitable for electronics manufacturing, pharmaceutical, and controlled environments.
- **Lab Accessories**
  Chemically inert and structurally stable tools for research, diagnostics, and wet chemistry.

Education, R&D & Field Applications

- **STEM & Engineering Education**
  Easy-to-print, reliable filament for academic labs or student engineering programs.
- **Research Fixtures**
  Build one-off or iterative setups with confidence in part performance and printability.
- **Field-Service Tools & Components**
  Fast-printable parts for temporary or emergency use in remote conditions, with strong resistance to temperature and moisture variability.

4. Mechanical Properties:

Flexural Strength	87 MPa	12.7 Kpsi (max strain 23°C)	ISO 178, Method A
Flexural Modulus	2.9 GPa	416 Kpsi	ISO 178, Method A
Tensile Strength	57 MPa	8.2 Kpsi	ASTM D638
Tensile Elongation	1.9%	1.9%	ASTM D638
Tensile Modulus	3.6 GPa	524 Kpsi	ASTM D638
IZOD Impact, Unnotched	230 J/m	4.3 ft-lb/in	ASTM D256
IZOD Impact, Notched	83 J/m	1.6 ft-lb/in	ASTM D256

*Tests performed with parts printed on RIZE™ONE printer using solid infill in the X-Y Plane.

	Glass Transition	75°C
	Heat Deflection (HDT)	75°C
	Flame Classification	UL94-HB
	Specific Gravity	1.06 g/cm^3
	Moisture Absorption	<0.01%
	Chemically resistant to acids, alcohols, and ketones. See Section 5.	
	Venting Requirements	None
	Low VOC and Particulate Emissions	
	UL Greenguard 2904 Certified On Rize Printers	
	Filament Diameter	1.75 mm ±0.02 mm
	Packaging	50 in^3 820g spool
	Shelf Life	One Year
	Storage Requirements	Store in bag until ready to use and store in bag when not in use.
	Due to its low density, an 820g spool of Rizium™ GF offers a similar filament length to a 1kg PLA spool.	

Specifications are subject to change without notice. Data presented are actual measured values and not guaranteed specifications. They do not guarantee performance level under actual usage. Actual user results can vary based on part design, application, user, operating and testing conditions and more. Users are responsible for determining that Rizium™ materials are lawful and technically suitable for their applications and for disposal or recycling methods according to applicable environmental laws and regulations. Palitra makes no warranties of any kind, express or implied, including, but not limited to, the warranties of merchantability, fitness for a particular use or warranty against patent infringement.

5. Chemical Resistances:

O – Good	X – Poor	! – Use with caution
Alcohol	Methanol	O
	Ethanol	O
	IPA (isopropyl alcohol)	O
Ketone	Acetone	O
	MEK (Methyl Ethyl Ketone)	O
	Cyclohexanone	X
Ether	Ethyl Ether	X
	THF (Tetrahydrofuran)	X
Aromatic	Xylene	X
Hydrocarbon	n-Pentane	X
	n-Hexane	X
	Toluene	X
	Hydrocarbon Oil	X
Other Solvents	DOP (Dioctylphthalate)	X
	DMF (Dimethylformamide)	O
	DMSO (Dimethyl Sulfoxide)	O
	Methyl Cellosolve	O
	Limonene	X
Acid	Hydrochloric Acid (10%)	O
	Concentrated Hydrochloric Acid	O
	Sulfuric acid (10%)	O
	Concentrated Sulfuric Acid	X
	Acetic Acid (10%)	O
	Formic Acid (10%)	O
	Nitric Acid	O
	Phosphoric Acid	O
	Hydrofluoric Acid (7%), Nitric Acid (42%), Pure Water (51%)	O
Base	Caustic Soda (50%)	O
	Aqueous Ammonia (10%)	O
Other Chemicals	Formaldehyde (40%)	O
	Hydrogen Peroxide Water (30%)	O
	Ethylene Oxide	O
	Fluorinated Oil	O
	Silicone Oil	O
	1,2-Dichloroethane	X
Foods	Salad Oil	X
	Margarine	X
	Lemon Juice	O
Personal Care	Hair Liquid	O
	Hair Tonic	O
Detergent	Hair Shampoo	!
	Hair Rinse	O

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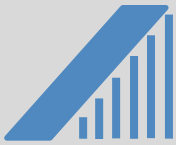
6. Printing Guidelines:

Printer		
	Enclosure	Not Necessary
	Nozzle	220°C - 260°C Hardened Steel or Wear Resistant
	Bed	90°C PEI, Textured, G10
	Cooling	20-70%
	Not ideal for systems with tight filament tube curves. Only use in multi-material systems that are rated fiber filled materials.	
Suggested Printing Parameters		
	Layer Height	.1mm to .3mm
	Part Cooling	20%-70%
	Print Speed	40mm/s to 250mm/s *
	Volumetric Flowrate	30 mm^3/s *
	Flow Ratio	1-1.05
	Infill Overlap	30%
	*Depending on hotend setup, measured on a Bambu Lab X1C	
Support		
	Support Type	Tree (preferred)
	Interface Layers	Min. of 3
	Interface Distance	.14 mm (0mm if using Rizium™ Support)
	Support Threshold	45°
	Need to support all bridges and angles for surface finish	

7. Storage & Shelf Life:

Store in supplied bag when not in use.

Shelf life of one year.

8. Considerations for Best Performance:

Due to its poor chemical resistance to hydrocarbons (oil and gas products), it is not an ideal material for automotive applications.

Not ideal for high temperature applications with its 75°C HDT.

The material does not excel at bridging and overhangs. Please support bridges and overhangs well and if you are using a dual nozzle system consider using Rizium™ Support, a breakaway support material, to give clean and smooth undersurfaces on parts.