



## Epoxy/Glass Laminate - Rod

ATLAS FIBRE ROD is uniformly dense and solid material. It is produced by the application of heat and pressure to layers of paper, cotton fabric, or glass cloth impregnated with a synthetic resin. The material is then turned and precision ground into rods of various grades, colors and diameters, all of which are readily machinable into finished parts.

The materials are exceptionally versatile because of their unusual combination of properties.

- **All grades are light in weight (about half the weight of aluminum)**
- **Will not soften appreciably under the reapplication of heat**
- **Dense and structurally strong**      • **Resistant to moisture**
- **Good electrical insulators**

### GRADE G-9 - Glass Melamine Rod:

A continuous woven glass fabric with a melamine resin. Grade G-9 has good mechanical properties plus high resistance to flame, heat, arcing and most strong alkali solutions  
*Grade G-9 recommended for use where good mechanical strength and superb electrical properties are needed under wet conditions.*

**Applications: Arc Chutes, Gaskets, Bus Insulators, Vanes**

### GRADE G-11 - High Temperature Glass Epoxy Rod:

A grade similar in composition and properties of Grade G-10/FR4, but more suitable for mechanical/electrical applications at elevated temperatures  
*Grade G-11 maintains more than 50% of its flexural strength at 300°F while maintaining all of its electrical properties.*

**Applications: Terminal Boards, Wear Blocks, Piston Rings**

### GRADE G-7 - High Temperature Glass Silicone Rod:

A continuous woven glass fabric laminated with a silicone resin to produce the most temperature resistant grade. Grade G-7 can be used where resistance to continuous operating temperatures of 425°F is required.

*Grade G-7 is self-extinguishing, has good electrical properties under humid conditions, and has excellent heat and arc resistance.*

**Applications: High Heat Insulators, Gaskets, Armature Barriers, Mechanical Insulators**

### GRADE G-10/FR 4 - Glass Epoxy Rod:

A continuous woven glass fabric laminated with an epoxy resin. Grade G-10/FR4 is extremely high in mechanical strength, has low moisture absorption and dissipative factors, and has superior electrical characteristics which are exhibited over a wide range of temperatures and humidities.

*Grade G-10/FR4 flame retardant and at 300°F retains 25% of its flexural strength while maintaining all of its electrical properties.*

**Applications: High Heat Insulators, Gaskets, Armature Barriers, Mechanical Insulators**



## Epoxy/Glass - Properties Table

	Glass Melamine G-9	Glass Epoxy G-10/FR4	Glass Epoxy G-11	Glass Silicone G-7
Specific Gravity	1.85	1.85	1.82	1.78
Tensile Strength (psi)	39,000	38,000	37,000	18,000
Comp. Strength (psi)	70,000	66,000	63,000	45,000
Flexural Strength(psi)	55,000	60,000	75,000	25,000
Hardness, M Scale	115	115	112	105
Bond Strength,Lbs	1900	2300	2200	900
Shear Strength	18,000	21,500	22,000	17,000
Dissipation Factor 10 <sup>6</sup> Cycles, Cond, A	.015	.032	.020	.003
Dielectric Strength 10 <sup>6</sup> Cycles, Cond, A	7.0	4.8	5.0	4.2
Electric Strength V/Mil Cond. A	450	800	900	400
Flammability Rating	94V-0	94V-0	94HB	94V-0
Max Oper.Temp°C	140	140	180	220
Coeff.Thermal Exp In/In° x 10 <sup>-5</sup>	1.5	1.0	1.1	1.0
Water Absorption % -24 Hrs	.6	.10	.20	.02
Military/Fed Spec	MIL 1-24768/1	MIL 1-24768/27	MIL 1-24768/3	MIL 1-24768/17
NEMA Type	GME	GEE-F	GEB	GSG

### Sizes:

*Diameter:* from 1/16" up to 6" (Varies with material type.)

*Lengths:* Grades XXX, CE, G-7, G-9, G10, G-11 - 4ft nominal. Grade LE over 1/2" diameter - 4ft nominal. Grade LE diameter and under - 6ft nominal. Longer or special lengths on request.

### Tolerances:

1/16" to 1-1/4" diameter inclusive + .001. 1-3/8" diameter and over + .003". Closer tolerance and sizes smaller than .062 diameter will be quoted on request.

### Colors:

All materials are available in natural color. Grades XXX, CE and LE are often available in Black at a 5% premium.