



TECHNICAL SPECIFICATIONS

2026 MATERIAL RESOURCE KIT

Material data sheets & capabilities overview

Glass epoxy, phenolic and melamine laminates — sheets, rods, tubes and fabricated parts, manufactured and machined in the U.S. since 1957.

ISO 9001:2015

AS9100D REGISTERED

800-323-1408

atlasfibre.com

The Leading Supplier of Thermoset Composite Materials

Sheet, Rod, & Tube for Demanding Applications

Atlas Fibre supplies NEMA-grade and MIL-spec thermoset composite materials in sheet, rod, and tube for distributors, fabricators, OEMs, engineers, and sourcing teams. Our inventory includes glass epoxy, glass silicone, glass polyester, and phenolic materials used in applications requiring electrical insulation, mechanical strength, dimensional stability, wear resistance, and performance in demanding environments.



COMMON MATERIALS SUPPLIED

PHENOLICS

Paper & fabric reinforced

Grades

XX · XXX · L · LE · C · CE

Best for

Electrical insulation, structural panels, gears, bushings

GLASS MELAMINE

Glass fabric reinforced

Grade

G-9

Best for

Electrical insulators, switchgear, industrial equipment

GLASS EPOXIES

Woven fiberglass reinforced

Grades

G-10 · G-11 · FR-4

Best for

PCBs, aerospace, arc barriers, high-temp insulators

AVAILABLE FORMATS

Sheet

Available from .004" through 6" thick, with sizes up to 48" × 96". Thicknesses up to 8" may be available.

Rod

Available from .031" through 6" diameter. Lengths up to 8' available.

Tube

Custom inside and outside diameters available to requested specifications.

NEMA & MIL-SPEC MATERIAL REFERENCE

MIL-SPEC	GRADE	TYPE
MIL-I-24768/1	G9	GME
MIL-I-24768/2	G10	GEE
MIL-I-24768/3	G-11	GEB
MIL-I-24768/10	XXX	PBE
MIL-I-24768/11	XX	PBG
MIL-I-24768/13	LE	FBE

MIL-SPEC	GRADE	TYPE
MIL-I-24768/14	CE	FBG
MIL-I-24768/15	L	FBI
MIL-I-24768/16	C	FBM
MIL-I-24768/17	G-7	GSG
MIL-I-24768/18	G-3	GPG
MIL-I-24768/27	FR4	GEE-F

CHECK MATERIAL AVAILABILITY

Connect with Atlas Fibre for current availability, pricing, and quick estimates on thermoset composite sheet, rod, and tube.

847-674-1234

AtlasFibre.com

Composite Machining

Complex Parts. Precision Results. Production Ready.

Atlas Fibre machines precision components from thermoset composites and advanced plastics for demanding applications where material performance, dimensional consistency, and production reliability matter. With in-house material supply, advanced machining capacity, and documented quality systems, Atlas Fibre supports customers from material selection and prototyping through repeat production.



AT A GLANCE

100+ CNC SYSTEMS	120k SQ. FT.	70 YEARS	10'x10' PARTS UP TO	AS9100 CERTIFIED	ITAR REGISTERED
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MACHINING & MATERIAL CAPABILITIES

Atlas Fibre supplies thermoset composites and produces finished components in-house, helping customers reduce qualification risk, improve traceability, and simplify the path from grade selection to finished part production. With deep inventory, material expertise, and precision machining under one roof, Atlas Fibre gives customers a more dependable resource for moving from specification to production with confidence.

Precision Machining

CNC milling, turning, routing, and multi-axis machining for prototype, short-run, and production requirements. Supports tight-tolerance components, complex geometries, blanket orders, scheduled releases, and Kanban requirements.

Multiplex Parallel Routing

For high-volume and repeat production programs, Atlas Fibre's multiplex routing platform machines multiple components in a single cycle to increase throughput, improve repeatability, and lower per-part cost.

Quality & Inspection

Advanced inspection equipment, documented processes, and reporting — including CMM inspection, 3D scanning, laser micrometers, optical comparators, and first-piece, in-process, and final inspection.

QUALITY DOCUMENTATION

FAIR **PPAP** **PQP** **SSA**

Additional reporting options upon request. Documented processes and inspection workflows support demanding quality requirements.

INDUSTRIES & APPLICATION

 Aerospace Structural laminates, radomes, insulators	 Defense Durable components, electrical insulation	 Semiconductor Test fixtures, insulators, wafer handling
 Automotive Lightweight parts, wear-resistant uses	 Energy Systems Battery and power distribution insulation	 Electrical Switchgear, transformer, standoffs

START A TECHNICAL REVIEW

Have a print, material requirement, or repeat production need? Share your drawing or specs to start a conversation about material selection and manufacturability.

847-674-1234

AtlasFibre.com

PHYSICAL DATA

IMPERIAL

METRIC

Specific Gravity	1.35	—
Tensile Strength	17,000 psi	117 MPa
Compressive Strength	35,000 psi	241 MPa
Flexural Strength	34,000 psi	234 MPa
Hardness - M Scale	120	—
Bond Strength	1,500 psi	10 MPa
Shear Strength	11,500 psi	79 MPa
Flammability Rating	94HB	—
Maximum Operating Temperature	284°F	140°C
Coefficient of Thermal Expansion °C (x 10-5)	1.20	—
Water Absorption - 24 hours	2.00	—
Izod Impact Strength @ 49°C -LW	0.80	—

ELECTRICAL DATA

IMPERIAL

METRIC

Dissipation Factor - 106 cycles Condition A	0.040	—
Dielectric Constant - 106 cycles Condition A	5.30	—
Electric Strength V/MIL Condition A	750	—
Dielectric Breakdown -A	—	—
Permittivity -A	—	—

Atlas Fibre LLC provides this data as information only and does not imply any warranty for its use or application. Test data for an individual batch or product must be requested specifically and agreed to in writing and is available for a fee.

PRODUCT DESCRIPTION

Laminate sheet comprised of a phenolic resin binder and a saturating kraft (paper) substrate. It qualifies to NEMA XX and MIL-I-24768/11.

With high mechanical strength and exceptional electrical insulation properties in dry or humid environments, this material is versatile for various electrical and mechanical applications due to its ease of fabrication.

AVAILABLE FORMS & STOCK SIZES

XX is stocked in sheet (0.010"–4.000" thick, up to 48" x 96"), rod (Ø 0.062"–6.000") and tube (Ø 0.250"–12.000" ID) in lengths to 48", and is supplied as precision blanks or CNC routed and Swiss-turned machined components.

CERTIFIED & TRACEABLE

Conforms to NEMA XX specifications. Batch test data ships with every order, verified annually by independent third-party lab assessment. No cut-to-size or sanding minimums.



TYPICAL APPLICATIONS

- › Electrical insulating panels and washers
- › Terminal boards and switch bases
- › Punched insulating components
- › Coil and transformer insulation
- › General-purpose machined parts

REQUEST A QUOTE

Stock Material. Precision Parts.

XX is available from stock, cut to size or precision machined to your specifications. Request a quote or call 847-674-1234 to connect with an Atlas Fibre representative.

atlasfibre.com/
material/xx



PHYSICAL DATA

IMPERIAL

METRIC

Specific Gravity	1.38	—
Tensile Strength	13,000 psi	89 MPa
Compressive Strength	35,000 psi	241 MPa
Flexural Strength	22,000 psi	151 MPa
Hardness - M Scale	101	—
Bond Strength	1,200 psi	8 MPa
Shear Strength	12,800 psi	88 MPa
Flammability Rating	94HB	—
Maximum Operating Temperature	284°F	140°C
Coefficient of Thermal Expansion °C (x 10 ⁻⁵)	1.50	—
Water Absorption - 24 hours	0.57	—
Izod Impact Strength @ 49°C -LW	0.55	—

ELECTRICAL DATA

IMPERIAL

METRIC

Dissipation Factor - 106 cycles Condition A	0.035	—
Dielectric Constant - 106 cycles Condition A	5.10	—
Electric Strength V/MIL Condition A	700	—
Dielectric Breakdown -A	—	—
Permittivity -A	—	—

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PRODUCT DESCRIPTION

Laminate sheet comprised of phenolic resin and a high alpha saturating paper substrate. XXX qualifies to NEMA XXX and MIL-I-24768/10.

With high mechanical strength and exceptional electrical insulation properties in dry or humid environments, this material is versatile for various electrical and mechanical applications due to its ease of fabrication.

AVAILABLE FORMS & STOCK SIZES

XXX is stocked in sheet (0.010"–4.000" thick, up to 48" × 96"), rod (Ø 0.062"–6.000") and tube (Ø 0.250"–12.000" ID) in lengths to 48", and is supplied as precision blanks or CNC routed and Swiss-turned machined components.

CERTIFIED & TRACEABLE

Conforms to NEMA XXX specifications. Batch test data ships with every order, verified annually by independent third-party lab assessment. No cut-to-size or sanding minimums.



TYPICAL APPLICATIONS

- › Terminal boards and insulating panels
- › High-humidity electrical insulation
- › Radio-frequency and electronic components
- › Punched and machined insulating parts
- › Switch and relay bases

REQUEST A QUOTE

Stock Material. Precision Parts.

XXX is available from stock, cut to size or precision machined to your specifications. Request a quote or call 847-674-1234 to connect with an Atlas Fibre representative.

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material/xxx



PHYSICAL DATA

IMPERIAL

METRIC

Specific Gravity	1.34	—
Tensile Strength	14,000 psi	96 MPa
Compressive Strength	35,000 psi	241 MPa
Flexural Strength	23,000 psi	158 MPa
Hardness - M Scale	105	—
Bond Strength	1,700 psi	11 MPa
Shear Strength	13,500 psi	93 MPa
Flammability Rating	94HB	—
Maximum Operating Temperature	257°F	125°C
Coefficient of Thermal Expansion °C (x 10 ⁻⁵)	1.04	—
Water Absorption - 24 hours	1.04	—
Izod Impact Strength @ 49°C -LW	1.70	—

ELECTRICAL DATA

IMPERIAL

METRIC

Dissipation Factor - 106 cycles Condition A	—	—
Dielectric Constant - 106 cycles Condition A	—	—
Electric Strength V/MIL Condition A	—	—
Dielectric Breakdown -A	—	—
Permittivity -A	—	—

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PRODUCT DESCRIPTION

Laminate sheet comprised of a phenolic resin and a woven linen (cotton) substrate. This Linen Phenolic material qualifies to NEMA L and MIL-I-24768/15.

With high mechanical strength and exceptional electrical insulation properties in dry or humid environments, this material is versatile for various electrical and mechanical applications due to its ease of fabrication.

AVAILABLE FORMS & STOCK SIZES

L is stocked in sheet (0.010"–4.000" thick, up to 48" × 96"), rod (Ø 0.062"–6.000") and tube (Ø 0.250"–12.000" ID) in lengths to 48", and is supplied as precision blanks or CNC routed and Swiss-turned machined components.

CERTIFIED & TRACEABLE

Conforms to NEMA L specifications. Batch test data ships with every order, verified annually by independent third-party lab assessment. No cut-to-size or sanding minimums.



TYPICAL APPLICATIONS

- › Gears, cams and rollers
- › Bushings and bearing surfaces
- › Quiet-running mechanical drives
- › Insulating spacers
- › General machined mechanical parts

REQUEST A QUOTE

Stock Material. Precision Parts.

It is available from stock, cut to size or precision machined to your specifications. Request a quote

or call 847-674-1234 to connect with an Atlas Fibre representative.

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material1/1



PHYSICAL DATA

	IMPERIAL	METRIC
Specific Gravity	1.34	—
Tensile Strength	13,000 psi	89 MPa
Compressive Strength	36,000 psi	248 MPa
Flexural Strength	18,000 psi	124 MPa
Hardness - M Scale	100	—
Bond Strength	1,900 psi	13 MPa
Shear Strength	13,500 psi	93 MPa
Flammability Rating	94HB	—
Maximum Operating Temperature	257°F	125°C
Coefficient of Thermal Expansion °C (x 10-5)	1.80	—
Water Absorption - 24 hours	1.90	—
Izod Impact Strength @ 49°C -LW	1.35	—

ELECTRICAL DATA

	IMPERIAL	METRIC
Dissipation Factor - 106 cycles Condition A	0.65	—
Dielectric Constant - 106 cycles Condition A	5.70	—
Electric Strength V/MIL Condition A	625	—
Dielectric Breakdown -A	—	—
Permittivity -A	—	—

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PRODUCT DESCRIPTION

Laminate sheet comprised of a phenolic resin and a woven linen (cotton) substrate. This Linen Phenolic material qualifies to NEMA LE and MIL-I-24768/13.

With high mechanical strength and exceptional electrical insulation properties in dry or humid environments, this material is versatile for various electrical and mechanical applications due to its ease of fabrication.

AVAILABLE FORMS & STOCK SIZES

LE is stocked in sheet (0.010"–4.000" thick, up to 48" × 96"), rod (Ø 0.062"–6.000") and tube (Ø 0.250"–12.000" ID) in lengths to 48", and is supplied as precision blanks or CNC routed and Swiss-turned machined components.

CERTIFIED & TRACEABLE

Conforms to NEMA LE specifications. Batch test data ships with every order, verified annually by independent third-party lab assessment. No cut-to-size or sanding minimums.



TYPICAL APPLICATIONS

- › Precision-machined gears and pinions
- › Bushings, bearings and wear pads
- › Insulating washers and spacers
- › Rotating machinery components
- › Terminal boards

REQUEST A QUOTE

Stock Material. Precision Parts.

LE is available from stock, cut to size or precision machined to your specifications. Request a quote or call 847-674-1234 to connect with an Atlas Fibre representative.

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material/le



PHYSICAL DATA

IMPERIAL

METRIC

Specific Gravity	1.35	—
Tensile Strength	11,200 psi	77 MPa
Compressive Strength	37,000 psi	255 MPa
Flexural Strength	22,000 psi	151 MPa
Hardness - M Scale	103	—
Bond Strength	2,000 psi	14 MPa
Shear Strength	14,000 psi	96 MPa
Flammability Rating	94HB	—
Maximum Operating Temperature	257°F	125°C
Coefficient of Thermal Expansion °C (x 10 ⁻⁵)	1.10	—
Water Absorption - 24 hours	1.60	—
Izod Impact Strength @ 49°C -LW	1.95	—

ELECTRICAL DATA

IMPERIAL

METRIC

Dissipation Factor - 106 cycles Condition A	—	—
Dielectric Constant - 106 cycles Condition A	—	—
Electric Strength V/MIL Condition A	—	—
Dielectric Breakdown -A	—	—
Permittivity -A	—	—

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PRODUCT DESCRIPTION

Canvas Phenolic (C) is a laminate sheet comprised of a phenolic resin binder and woven canvas (cotton) substrate. It qualifies to NEMA C and MIL-I-24768/16.

With high mechanical strength and exceptional electrical insulation properties in dry or humid environments, this material is versatile for various electrical and mechanical applications due to its ease of fabrication.

AVAILABLE FORMS & STOCK SIZES

C is stocked in sheet (0.010"–4.000" thick, up to 48" × 96"), rod (Ø 0.062"–6.000") and tube (Ø 0.250"–12.000" ID) in lengths to 48", and is supplied as precision blanks or CNC routed and Swiss-turned machined components.

CERTIFIED & TRACEABLE

Conforms to NEMA C specifications. Batch test data ships with every order, verified annually by independent third-party lab assessment. No cut-to-size or sanding minimums.



TYPICAL APPLICATIONS

- › Heavy-duty gears and sprockets
- › Bushings, bearings and wear blocks
- › Structural mechanical supports
- › Insulating pads and spacers
- › Machined industrial components

REQUEST A QUOTE

Stock Material. Precision Parts.

C is available from stock, cut to size or precision machined to your specifications. Request a quote

or call 847-674-1234 to connect with an Atlas Fibre representative.

atlasfibre.com/
material/c



PHYSICAL DATA

IMPERIAL

METRIC

Specific Gravity	1.37	—
Tensile Strength	10,000 psi	—
Compressive Strength	36,000 psi	248 MPa
Flexural Strength	17,000 psi	117 MPa
Hardness - M Scale	100	—
Bond Strength	1,900 psi	15 MPa
Shear Strength	14,000 psi	96 MPa
Flammability Rating	94HB	—
Maximum Operating Temperature	257°F	125°C
Coefficient of Thermal Expansion °C (x 10 ⁻⁵)	2.00	—
Water Absorption - 24 hours	2.00	—
Izod Impact Strength @ 49°C -LW	1.70	—

ELECTRICAL DATA

IMPERIAL

METRIC

Dissipation Factor - 106 cycles Condition A	0.048	—
Dielectric Constant - 106 cycles Condition A	5.50	—
Electric Strength V/MIL Condition A	550	—
Dielectric Breakdown -A	—	—
Permittivity -A	—	—

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PRODUCT DESCRIPTION

Canvas Phenolic (CE) is a laminate sheet comprised of a phenolic resin binder and woven canvas (cotton) substrate. It qualifies to NEMA CE and MIL-I-24768/14.

With high mechanical strength and exceptional electrical insulation properties in dry or humid environments, this material is versatile for various electrical and mechanical applications due to its ease of fabrication.

AVAILABLE FORMS & STOCK SIZES

CE is stocked in sheet (0.010"–4.000" thick, up to 48" × 96"), rod (Ø 0.062"–6.000") and tube (Ø 0.250"–12.000" ID) in lengths to 48", and is supplied as precision blanks or CNC routed and Swiss-turned machined components.

CERTIFIED & TRACEABLE

Conforms to NEMA CE specifications. Batch test data ships with every order, verified annually by independent third-party lab assessment. No cut-to-size or sanding minimums.



TYPICAL APPLICATIONS

- › Impact-resistant mechanical parts
- › Gears, cams and rollers
- › Bushings, bearings and wear strips
- › Insulating spacers and pads
- › Rotating and reciprocating components

REQUEST A QUOTE

Stock Material. Precision Parts.

CE is available from stock, cut to size or precision machined to your specifications. Request a quote or call 847-674-1234 to connect with an Atlas Fibre representative.

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material/ce



PHYSICAL DATA

	IMPERIAL	METRIC
Specific Gravity	1.85	—
Tensile Strength	42,000 psi	290 MPa
Compressive Strength	76,000 psi	524 MPa
Flexural Strength	55,000 psi	379 MPa
Hardness - M Scale	110	—
Bond Strength	1,500 psi	10 MPa
Shear Strength	18,000 psi	124 MPa
Flammability Rating	94HB	—
Maximum Operating Temperature	284°F	140°C
Coefficient of Thermal Expansion °C (x 10-5)	1.00	—
Water Absorption - 24 hours	2.00	—
Izod Impact Strength @ 49°C -LW	12.00	—

ELECTRICAL DATA

	IMPERIAL	METRIC
Dissipation Factor - 106 cycles Condition A	0.023	—
Dielectric Constant - 106 cycles Condition A	7.30	—
Electric Strength V/MIL Condition A	600	—
Dielectric Breakdown -A	—	—
Permittivity -A	—	—

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PRODUCT DESCRIPTION

Laminate sheet comprised of a phenolic resin binder and woven fiberglass substrate. It qualifies to NEMA G-3 and MIL-I-24768/18.

With high mechanical strength and exceptional electrical insulation properties in dry or humid environments, this material is versatile for various electrical and mechanical applications due to its ease of fabrication.

AVAILABLE FORMS & STOCK SIZES

G3 is stocked in sheet (0.010"–4.000" thick, up to 48" × 96"), rod (Ø 0.062"–6.000") and tube (Ø 0.250"–12.000" ID) in lengths to 48", and is supplied as precision blanks or CNC routed and Swiss-turned machined components.

CERTIFIED & TRACEABLE

Conforms to NEMA G3 specifications. Batch test data ships with every order, verified annually by independent third-party lab assessment. No cut-to-size or sanding minimums.


TYPICAL APPLICATIONS

- › Electrical panel and switchgear components
- › Terminal boards and insulating plates
- › Mechanical bearing and wear parts
- › Arc-resistant barriers
- › Transformer hardware

REQUEST A QUOTE
Stock Material. Precision Parts.

G3 is available from stock, cut to size or precision machined to your specifications. Request a quote or call 847-674-1234 to connect with an Atlas Fibre representative.

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materials/g3



PHYSICAL DATA

IMPERIAL

METRIC

Specific Gravity	1.78	—
Tensile Strength	18,000 psi	124 MPa
Compressive Strength	45,000 psi	310 MPa
Flexural Strength	25,000 psi	172 MPa
Hardness - M Scale	105	—
Bond Strength	900 psi	6 MPa
Shear Strength	17,000 psi	117 MPa
Flammability Rating	94V-0	—
Maximum Operating Temperature	428°F	220°C
Coefficient of Thermal Expansion °C (x 10-5)	1.00	—
Water Absorption - 24 hours	0.20	—
Izod Impact Strength @ 49°C -LW	6.50	—

ELECTRICAL DATA

IMPERIAL

METRIC

Dissipation Factor - 106 cycles Condition A	0.003	—
Dielectric Constant - 106 cycles Condition A	4.20	—
Electric Strength V/MIL Condition A	400	—
Dielectric Breakdown -A	—	—
Permittivity -A	—	—

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PRODUCT DESCRIPTION

A laminate sheet made from high-performance silicone resin and a woven fiberglass substrate, qualifying for NEMA G-7 and MIL-I-24768/17 standards.

This material features high heat resistance, low dissipation factor, excellent arc resistance, flame resistance, and low smoke evolution. It meets Class "H" insulation needs and is used in high-frequency telecom equipment, transformers, and high-heat items.

AVAILABLE FORMS & STOCK SIZES

G7 is stocked in sheet (0.010"–4.000" thick, up to 48" x 96"), rod (Ø 0.062"–6.000") and tube (Ø 0.250"–12.000" ID) in lengths to 48", and is supplied as precision blanks or CNC routed and Swiss-turned machined components.

CERTIFIED & TRACEABLE

Conforms to NEMA G7 specifications. Batch test data ships with every order, verified annually by independent third-party lab assessment. No cut-to-size or sanding minimums.



TYPICAL APPLICATIONS

- › Class H high-temperature insulation
- › High-frequency telecom components
- › Transformer and coil insulation
- › Welding and heat shields
- › Flame- and arc-resistant barriers

REQUEST A QUOTE

Stock Material. Precision Parts.

G7 is available from stock, cut to size or precision machined to your specifications. Request a quote or call 847-674-1234 to connect with an Atlas Fibre representative.

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materials/g7



PHYSICAL DATA

IMPERIAL

METRIC

Specific Gravity	1.85	—
Tensile Strength	39,000 psi	269 MPa
Compressive Strength	70,000 psi	483 MPa
Flexural Strength	55,000 psi	379 MPa
Hardness - M Scale	115	—
Bond Strength	1,900 psi	13 MPa
Shear Strength	18,000 psi	124 MPa
Flammability Rating	94V-0	—
Maximum Operating Temperature	284°F	140°C
Coefficient of Thermal Expansion °C (x 10-5)	1.50	—
Water Absorption - 24 hours	0.60	—
Izod Impact Strength @ 49°C -LW	12.50	—

ELECTRICAL DATA

IMPERIAL

METRIC

Dissipation Factor - 106 cycles Condition A	0.015	—
Dielectric Constant - 106 cycles Condition A	7.00	—
Electric Strength V/MIL Condition A	450	—
Dielectric Breakdown -A	—	—
Permittivity -A	—	—

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PRODUCT DESCRIPTION

Laminate sheet comprised of flame retardant melamine resin and a woven fiberglass glass substrate. It qualifies to NEMA G9 and MIL-I-24768/1.

High strength, excellent arc resistance, and electrical insulating properties allows G9 to be used as a mechanical support in electrical equipment, switchgear, and slot wedges where Class "B" insulation is required.

AVAILABLE FORMS & STOCK SIZES

G9 is stocked in sheet (0.010"-4.000" thick, up to 48" x 96"), rod (Ø 0.062"-6.000") and tube (Ø 0.250"-12.000" ID) in lengths to 48", and is supplied as precision blanks or CNC routed and Swiss-turned machined components.

CERTIFIED & TRACEABLE

Conforms to NEMA G9 specifications. Batch test data ships with every order, verified annually by independent third-party lab assessment. No cut-to-size or sanding minimums.



TYPICAL APPLICATIONS

- › Mechanical supports in electrical equipment
- › Switchgear and arc barriers
- › Rotor slot wedges
- › Class B insulation components
- › Terminal boards and standoffs

REQUEST A QUOTE

Stock Material. Precision Parts.

G9 is available from stock, cut to size or precision machined to your specifications. Request a quote or call 847-674-1234 to connect with an Atlas Fibre representative.

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material/g9





G-10

MIL-I-24768/2

TYPE GEE

PHYSICAL DATA

	IMPERIAL	METRIC
Specific Gravity	1.8	—
Tensile Strength	40,000 psi	275 MPa
Compressive Strength	65,000 psi	448 MPa
Flexural Strength	75,000 psi	517 MPa
Hardness - M Scale	110	—
Bond Strength	2,200 psi	15 MPa
Shear Strength	19,000 psi	131 MPa
Flammability Rating	94HB	—
Maximum Operating Temperature	284°F	140°C
Coefficient of Thermal Expansion °C (x 10-5)	1.00	—
Water Absorption - 24 hours	0.11	—
Izod Impact Strength @ 49°C -LW	14.00	—

ELECTRICAL DATA

	IMPERIAL	METRIC
Dissipation Factor - 106 cycles Condition A	0.020	—
Dielectric Constant - 106 cycles Condition A	5.00	—
Electric Strength V/MIL Condition A	800	—
Dielectric Breakdown -A	—	—
Permittivity -A	—	—

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PRODUCT DESCRIPTION

G-10 is a laminate sheet comprised of a halogen free epoxy resin and woven fiberglass substrate. It qualifies to NEMA G10 and MIL-I-24768/2.

With high mechanical strength and exceptional electrical insulation properties in dry or humid environments, this material is versatile for various electrical and mechanical applications due to its ease of fabrication.

AVAILABLE FORMS & STOCK SIZES

G-10 is stocked in sheet (0.010"–4.000" thick, up to 48" × 96"), rod (Ø 0.062"–6.000") and tube (Ø 0.250"–12.000" ID) in lengths to 48", and is supplied as precision blanks or CNC routed and Swiss-turned machined components.

CERTIFIED & TRACEABLE

Conforms to NEMA G-10 specifications. Batch test data ships with every order, verified annually by independent third-party lab assessment. No cut-to-size or sanding minimums.



TYPICAL APPLICATIONS

- › Terminal boards and insulating washers
- › Rotor spacers and slot wedges
- › Transformer and switchgear insulation
- › Structural supports in electronics assemblies
- › Cryogenic and aerospace tooling components

REQUEST A QUOTE

Stock Material. Precision Parts.

G-10 is available from stock, cut to size or precision machined to your specifications. Request a quote or call 847-674-1234 to connect with an Atlas Fibre representative.

atlasfibre.com/
material/g-10



PHYSICAL DATA

	IMPERIAL	METRIC
Specific Gravity	1.85	—
Tensile Strength	66,000 psi	455 MPa
Compressive Strength	38,000 psi	262 MPa
Flexural Strength	60,000 psi	413 MPa
Hardness - M Scale	115	—
Bond Strength	2,300 psi	15 MPa
Shear Strength	21,500 psi	148 MPa
Flammability Rating	94V-0	—
Maximum Operating Temperature	284°F	140°C
Coefficient of Thermal Expansion °C (x 10-5)	1.00	—
Water Absorption - 24 hours	0.10	—
Izod Impact Strength @ 49°C -LW	14.00	—

ELECTRICAL DATA

	IMPERIAL	METRIC
Dissipation Factor - 106 cycles Condition A	0.022	—
Dielectric Constant - 106 cycles Condition A	4.80	—
Electric Strength V/MIL Condition A	800	—
Dielectric Breakdown -A	—	—
Permittivity -A	—	—

Atlas Fibre LLC provides this data as information only and does not imply any warranty for its use or application. Test data for an individual batch or product must be requested specifically and agreed to in writing and is available for a fee.

PRODUCT DESCRIPTION

A laminate sheet crafted from flame retardant epoxy resin and woven fiberglass substrate, meeting NEMA FR4 and MIL-I-24768/27 specifications.

With high mechanical strength and exceptional electrical insulation properties in dry or humid environments, this material is versatile for various electrical and mechanical applications due to its ease of fabrication.

AVAILABLE FORMS & STOCK SIZES

FR-4 is stocked in sheet (0.010"–4.000" thick, up to 48" × 96"), rod (Ø 0.062"–6.000") and tube (Ø 0.250"–12.000" ID) in lengths to 48", and is supplied as precision blanks or CNC routed and Swiss-turned machined components.

CERTIFIED & TRACEABLE

Conforms to NEMA FR-4 specifications. Batch test data ships with every order, verified annually by independent third-party lab assessment. No cut-to-size or sanding minimums.



TYPICAL APPLICATIONS

- › Printed circuit board substrates
- › Arc shields and barrier strips
- › Motor and generator insulation
- › Test fixtures and probe plates
- › Flame-retardant electrical enclosures

REQUEST A QUOTE

Stock Material. Precision Parts.

FR-4 is available from stock, cut to size or precision machined to your specifications. Request a quote or call 847-674-1234 to connect with an Atlas Fibre representative.

atlasfibre.com/
materials/fr-4



PHYSICAL DATA

IMPERIAL

METRIC

Specific Gravity	1.82	—
Tensile Strength	37,000 psi	255 MPa
Compressive Strength	63,000 psi	434 MPa
Flexural Strength	75,000 psi	517 MPa
Hardness - M Scale	112	—
Bond Strength	2,200 psi	15 MPa
Shear Strength	22,000 psi	151 MPa
Flammability Rating	94HB	—
Maximum Operating Temperature	356°F	180°C
Coefficient of Thermal Expansion °C (x 10-5)	1.10	—
Water Absorption - 24 hours	0.20	—
Izod Impact Strength @ 49°C -LW	12.00	—

ELECTRICAL DATA

IMPERIAL

METRIC

Dissipation Factor - 106 cycles Condition A	0.020	—
Dielectric Constant - 106 cycles Condition A	5.00	—
Electric Strength V/MIL Condition A	900	—
Dielectric Breakdown -A	—	—
Permittivity -A	—	—

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PRODUCT DESCRIPTION

G-11 is a laminate sheet comprised of a halogen free epoxy resin and woven fiberglass substrate. It qualifies to NEMA G11 and MIL-I-24768/3.

With high mechanical strength and exceptional electrical insulation properties in dry or humid environments, this material is versatile for various electrical and mechanical applications due to its ease of fabrication.

AVAILABLE FORMS & STOCK SIZES

G-11 is stocked in sheet (0.010"–4.000" thick, up to 48" × 96"), rod (Ø 0.062"–6.000") and tube (Ø 0.250"–12.000" ID) in lengths to 48", and is supplied as precision blanks or CNC routed and Swiss-turned machined components.

CERTIFIED & TRACEABLE

Conforms to NEMA G-11 specifications. Batch test data ships with every order, verified annually by independent third-party lab assessment. No cut-to-size or sanding minimums.



TYPICAL APPLICATIONS

- › High-temperature slot wedges and spacers
- › Class H rotating machinery insulation
- › Transformer coil supports
- › Aerospace structural insulators
- › Downhole and high-heat tooling

REQUEST A QUOTE

Stock Material. Precision Parts.

G-11 is available from stock, cut to size or precision machined to your specifications. Request a quote or call 847-674-1234 to connect with an Atlas Fibre representative.

atlasfibre.com/
material/g-11



PHYSICAL DATA

	VALUE	UNIT
Specific Gravity	1.81	—
Water Absorption -.25"	<0.6	%
Temperature Index	280 / 536	°C / °F
Rockwell Hardness	117	M scale
Bond Strength	>1,450 / 658	LBS / kgs
Izod Impact Strength – LW	>17 Ft. lbs. / in.	
Izod Impact Strength – CW	>14 Ft. lbs. / in.	
Compressive Strength -Flatwise	>60,000 / 414	PSI / MPa
Shear Strength -A -1.125"	>20,000 / 138	PSI / MPa

ELECTRICAL DATA

	VALUE	UNIT
Dielectric Breakdown -Condition A	>65,000	Volts
Dielectric Strength -Step by Step -.125"	>450	VPM
Arc Resistance	>180	Seconds

FLEXURAL STRENGTH

	VALUE	UNIT
Lengthwise (LW) -Condition Ambient	>60,000 / 414	PSI / MPa
Crosswise (CW) -Condition Ambient	>60,000 / 414	PSI / MPa
LW & CW at 150C / 302F x 1 hour	>50,000 / 345	PSI / MPa
LW & CW at 220C / 428F x 1 hour	>35,000 / 241	PSI / MPa
LW & CW at 260C / 500F x 1 hour	>30,000 / 207	PSI / MPa

PRODUCT DESCRIPTION

A heat-resistant laminate sheet made from epoxy resin and woven fiberglass, offering excellent thermal stability, mechanical strength, and electrical insulation.

With superior heat resistance and strong electrical insulation, this material is ideal for high-temperature environments and precision mechanical or electrical applications.

AVAILABLE FORMS & STOCK SIZES

Matrix HT is stocked in sheet from 0.010" to 4.000" thick in sizes up to 48" x 96", and supplied as precision blanks cut to size and sanded to thickness, or as CNC routed and Swiss-turned machined components.

CERTIFIED & TRACEABLE

Conforms to NEMA Matrix HT specifications. Batch test data ships with every order, verified annually by independent third-party lab assessment. No cut-to-size or sanding minimums.



TYPICAL APPLICATIONS

- › High-temperature structural insulators
- › Downhole and oil & gas tooling
- › Aerospace and defense components
- › Transformer and switchgear insulation
- › Precision high-heat machined parts

PHYSICAL DATA

	IMPERIAL	METRIC
Specific Gravity	1.81	—
Tensile Strength	8,000 psi	55 MPa
Compressive Strength	33,100 psi	228 MPa
Flexural Strength	28,800 psi	199 MPa
Hardness - M Scale	62	—
Bond Strength	1,400 psi	9.65 MPa
Shear Strength	11,600 psi	80 MPa
Flammability Rating	UL 94 V-0	—
Maximum Operating Temperature	311F	155°C
Coefficient of Thermal Expansion °C (x 10-5)	1.1	—
Water Absorption - 24 hours	0.4	—
Izod Impact Strength @ 49°C -LW	8.9	—

ELECTRICAL DATA

	IMPERIAL	METRIC
Dissipation Factor (106 cycles Condition A)	0.013	—
Dielectric Constant (106 cycles Condition A)	4.75	—
Dielectric Strength (Perpendicular to Laminations)	—	—
Breakdown Voltage (Parallel to Laminations)	450 VPM	—
Permittivity -A	4.1	—
Tracking Index Resistance	600V	—
Water Saturated Insulation Resistance (D-24/23)	.5 x 10 ¹¹ Ohms	—

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Test data for an individual batch or product must be requested specifically and agreed to in writing and is available for a fee.

PRODUCT DESCRIPTION

A laminate sheet made from flame-retardant polyester resin and fiberglass reinforcement, meeting NEMA GPO-3 and MIL-I-24768/6 specifications.

With high mechanical strength and superior electrical insulating properties, especially in humid environments, this material is ideal for diverse electrical and mechanical applications, offering excellent machinability.

AVAILABLE FORMS & STOCK SIZES

GPO-3 is stocked in sheet from 0.010" to 4.000" thick in sizes up to 48" x 96", and supplied as precision blanks cut to size and sanded to thickness, or as CNC routed and Swiss-turned machined components.

CERTIFIED & TRACEABLE

Conforms to NEMA GPO-3 specifications. Batch test data ships with every order, verified annually by independent third-party lab assessment. No cut-to-size or sanding minimums.



TYPICAL APPLICATIONS

- › Switchgear and arc-resistant barriers
- › Bus bar supports and insulators
- › Motor control center components
- › Transformer insulation panels
- › Machined electrical enclosures

