

**XUJUE ELECTRICAL**  
许绝电工股份有限公司



# Fiberglass Laminates

## Electronic & Electrical Insulation

Product Manual >

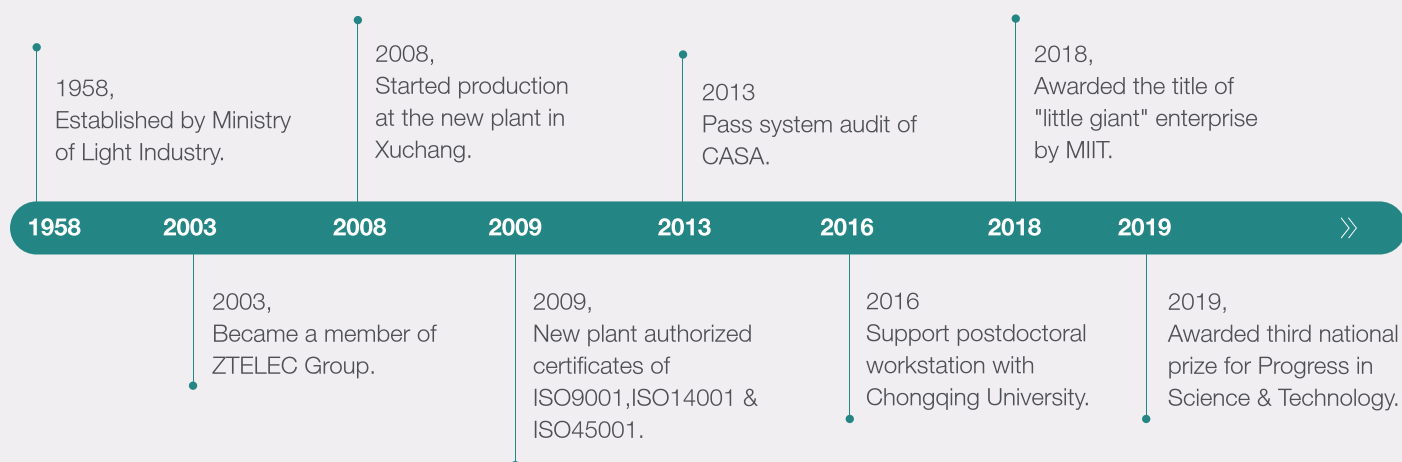


## 01 Group Introduction

Founded in 1958, Henan ZhongTian Electric Equipment Group (hereinafter referred to as Ztelec Group) was formerly an enterprise owned by the Ministry of Light Industry. Adhere to the core value concept of "Vision, Innovation and Responsibility", take "Power the world with green and reliability" as its own responsibility.

Focus on production and manufacturing over 60 years, the group has developed into an integrated group company specializing in four industries: MV& HV Electric Equipment, Composite Materials, Enamelled Wires and Photovoltaic Energy. Ztelec Group is represented by 7 manufacturing bases across 5 cities (Xuchang, Zhengzhou, Guiyang, Chengdu, Guangdong) in China, with more than 1500 employees word-wide.

### XUJUE Development Histroy





As one of the earliest members of the group, the Material Division has 3 production bases, 5 processing centers, developed over 80 kinds of products for different industries. With deep rooted knowledge in the design, development and operation of motors and transformers, Ztelec is a leading integrated solution provider for specialized products and customized service in the power, electronics, telecommunication and other industries. Working closely with our customers, Ztelec continues to lead the global market delivering high quality, innovative products and service solutions.

Ztelec is a Chinese enterprise committed to the development of globalization, committed to promoting open technologies and partner ecosystem, and actively practising the common values of meaning, inclusiveness and empowerment.

**7**

Manufacturing bases

**1500+**

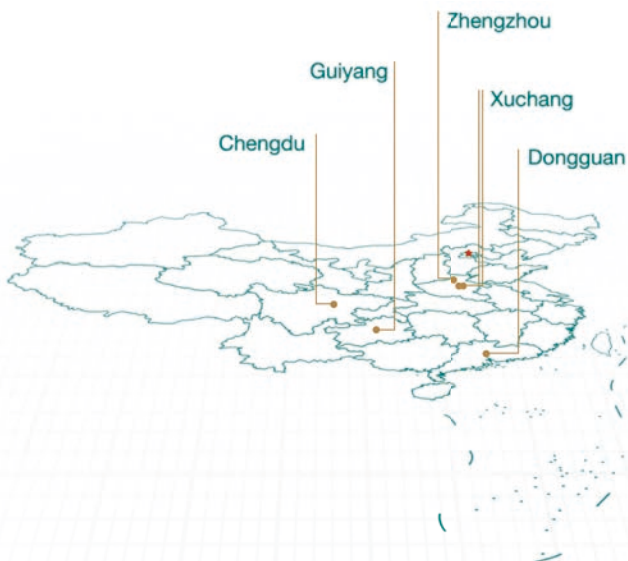
Number of employees

**1**

National postdoctoral  
research station

**2**

Provincial technology  
centers



**A LEADING MANUFACTURER  
SINCE 1958**



An aerial photograph of a dense, vibrant green forest. A light-colored, winding river or stream meanders through the trees, creating a complex, organic pattern. The lighting is bright, highlighting the various shades of green in the foliage.

## 02 SUSTAINABILITY AT ZTELEC

The continuous improvement of economy and environment in our community, the promotion life quality of our staff and their families are the sustained aims of Ztelec.

In order to achieve these aims, Ztelec has made great efforts on the balance among economic development and environment protection, including how to design and manufacture products; how to refine product and service; how to cooperate with local suppliers and to evaluate risks and opportunities; how to fulfill its responsibility and so on.



## 03 Our purpose



## + Our culture

### Customer First

- Partner with our customers
- Listen firstly
- Always smile and be enthusiastic

### Embrace Changes

- More choices, more laughs
- Believe there is always a better way
- Learn from failures as well as successes

### Devotion

- Grow faster with more shares
- Proud of your team
- Speak up and ask for help

### Care with Respect

- Take care of our people as well as their family
- Respect and value differences
- Direct speak and act with integrity





## 04 Flexible & high efficient manufacture

Make a quick response to the customers' special requirements on product color, size, delivery time, transportation, special technical property requirements, etc, provide customization service and shorten the delivery time.

Organize production in accordance with GB and international (IEC) standards, implement full-process control concept from warehousing raw material control to finished products inspection, focus on customers' experiences and needs, and provide products and service that exceed customers' expectation.



Guiyang Factory



Xuchang Factory

## 05 Testing

### Mechanical property testing

- + Tensile strength
- + Impact strength
- + Flexural strength
- + Shear strength
- + Elongation at break
- + Hardness
- + Bonding strength

### Electrical property testing

- + Breakdown voltage
- + Electrical strength
- + Proof tracking index
- + Electrical resistance
- + Dielectric constant

### Temperature resistance testing

- + Temperature index



## 06 Service

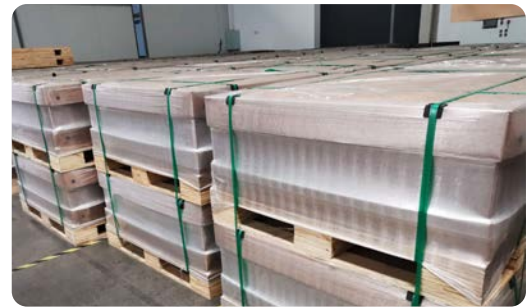
### Warehouse

- + In the warehouse, all the finished products should be protected from the pollution of water droplets, dust and sand. All the products are covered with plastic film during storage.



### Transport

- + The insulation materials are well packed with plastic film, hard cardboard and standard export fumigation-free pallets or wooden cases. The edges are protected with anti-collision strips to avoid damage during loading and unloading process.



### Shipping

- + The product will be delivered by truck or by sea once it has passed the tests. We take care of all the shipping documents needed depending on destinations and delivery terms. We also provide customized packaging for special applications or conditions.



### Quality

- + We have customized production according to the customers' demand, and we are able to achieve rapid delivery. All these abilities are originated from our decades' practice of TPS and continuous improvement of production equipment. We need to meet or exceed our customers' requirements, and our products can reach the requirements of IEC and GB. We have our own laboratory in this field (Our Chengdu laboratory in China was once a national testing center).



### Customer First

- + We cordially welcome our customers to participate in our joint-effort of R&D. We are not only concerned about the products, but also the application and efficiency of the products. We adopt reasonable prices and follow the strict quality standards, committing ourselves to providing cost effective and reliable products to our customers.





# What We Do

We integrate production, research and development and deep processing. Our business supplies different heat resistance classes of epoxy fiberglass laminates, including 3240,G10, FR4, G11, EPGC308, etc. In addition, we also manufacture customized special types and quality products.



## Portfolio of Products

Product	IEC	NEMA	Heat Resistance
3240 Fiberglass Laminates	-	-	Class B
G10 Fiberglass Laminates	EPGC201	G10	Class B
FR4 Fiberglass Laminates	EPGC 202	FR4	Class B
ESD Fiberglass Laminates	-	-	Class B
Halogen-Free FR4 Fiberglass Laminates	-	-	Class B
G11 Fiberglass Laminates	EPGC 203	G11	Class F
FR5 Fiberglass Laminates	EPGC 204	FR5	Class F
EPGC308 Fiberglass Laminates	EPGC308	-	Class H
EPGM203	-	-	Class F
Modified Diphenyl Ether Fiberglass Laminates	DPOGC301	-	Class H
Bismaleimide Fiberglass Laminates	BMI GC301/302	-	Class H
Silicone Fiberglass Laminates	SIGC202	G7	Class C
Modified Polyimide Fiberglass Laminates	PIGC301	-	Class C
Semiconductor Fiberglass Laminates	-	-	Class B / F
Magnetic Fiberglass Laminates	-	-	Class B / F / H
UPGM	UPGM 203-205	-	Class F





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## 3240 Fiberglass Laminates

This product is made of electrical alkali-free glass cloth impregnated with epoxy resin by hot pressing.

### Standard

- IEC 60893-3:2003
- GB/T 1303.4-2009

### Flame Resistance

HB

### Heat Resistance

Class B

### Regular Size

- 1020\*2020mm

### Raw Material

Adhesive / Epoxy resin  
Reinforcing material / Alkali free glass fiber cloth

### Certificate Available

UL ☐ RoHS ☐ HALOGEN ☐ MSDS ☒ CEMT ☒

Factory Inspection Report ☒

## Characteristics

- ✓ Good mechanical and electrical properties at both room temperature and elevated temperatures
- ✓ Epoxy (EP) resin matrix reinforced with fine fabrics

## Industries

-  Generator and Motor
-  Dry Transformer
-  Electrical Industry
-  Electrical Insulating Component



# Technical Data Sheet

Product name	3240 Epoxy Sheet / Epoxy Fiberglass Laminates	
SECTION I - MISC CHARACTERISTICS		
Density	g/cm³	2.00-2.10
Flammability	-	HB
Water absorption (5mm)	%	≤0.07
Chemical family	Resin	Epoxy
Reinforcement type	Glass fabrics	Alkali-free
Thermal characteristics	°C	≥130
Colour	Yellow	
SECTION II- MECHANICAL CHARACTERISTICS		
Bending strength	MPa	≥350
Tensile strength	MPa	≥300
Compressive strength ⊥	MPa	≥300
Modulus of elasticity	MPa	≥24000
Impact strength //	kJ/m²	≥33
SECTION III- ELECTRICAL CHARACTERISTICS		
Electrical strength ⊥	kV/mm, thickness≤3mm	≥10.2
Breakdown voltage //	kV	≥35
Proof tracking index	PTI	≥150
SECTION IV-HAZARDOUS INGREDIENTS		
Hazardous components	No OSHA hazardous ingredients	
SECTION V - REACTIVITY DATA		
Chemical stability	Stable under normal conditions	
Conditions to avoid	Avoid in use above 130°C	
Incompatible materials	Exposure to strong acids or bases will cause damage	
Hazardous polymerizations	Will not occur	
Storage and use effects	Conventional performance remains stable within 1 year. Long-term exposure to sunlight and high humidity will cause discoloration and performance degradation.	
SECTION VI- PRECAUTION		
Over exposure effects	Dust from machining products can irritate the eyes, nose, throat and lungs. Prolonged inhalation of dust can cause lung disease.	

Note: All information, recommendations and suggestions appearing herein concerning this product are average values ascertained at room temperature by regular statistical analysis. It is provided purely for information and shall not be regarded as binding unless expressly agreed otherwise.

DIMENSIONAL TOLERANCE		Tolerance of length & width is less than 5 mm	
Thickness (mm)	Tolerance (mm)	Thickness (mm)	Tolerance (mm)
0.5	±0.12	5.0	±0.52
1.0	±0.18	8.0	±0.72
2.0	±0.28	10.0	±0.82
3.0	±0.37	20.0	±1.30



# G10 Fiberglass Laminates

This product meets IEC standard and is used for applications requiring structural support and insulation properties.

## Standard

- IEC 60893-3:2003
- GB/T 1303.4-2009

## Flame Resistance

HB

## Heat Resistance

Class B

## Regular Size

- 1020\*1220/1020\*1020mm
- 1220\*2040/1020\*2040mm
- 1220\*2440mm

## Raw Material

Adhesive / Epoxy resin  
Reinforcing material / Electronic grade fiber glass cloth

## Certificate Available

UL ☐ RoHS ☒ REACH ☐ MSDS ☒ CEMT ☒  
Factory Inspection Report ☒

## Characteristics

- ✓ Good mechanical and electrical properties at both room temperature and elevated temperatures
- ✓ Epoxy (EP) resin matrix reinforced with an e-glass fine fabrics

## Industries

-  Generator and Motor
-  Dry Transformer
-  Electrical Industry
-  Electrical Insulating Component
-  Diagnosis Testing Industry
-  Battery Test
-  Solar Panel Industry



# Technical Data Sheet

Product name	NEMA GRADE G10 / EPGC 201	
SECTION I - MISC CHARACTERISTICS		
Density	g/cm³	1.95-2.10
Flammability	-	HB
Water absorption (5mm)	%	≤0.15
Chemical family	Resin	Epoxy
Reinforcement type	Glass fabrics	7628
Thermal characteristics	°C	130±5
Colour	Green (Natural), Yellow	
SECTION II- MECHANICAL CHARACTERISTICS		
Bending strength	MPa	≥400
Tensile strength	MPa	≥300
Compressive strength ⊥	MPa	≥350
Modulus of elasticity	MPa	≥24000
Impact strength //	kJ/m²	≥33
SECTION III- ELECTRICAL CHARACTERISTICS		
Electrical strength ⊥	kV/mm, thickness≤3mm	≥10.2
Breakdown voltage //	kV	≥35
Proof tracking index	PTI	≥200
SECTION IV-HAZARDOUS INGREDIENTS		
Hazardous components	No OSHA hazardous ingredients	
SECTION V - REACTIVITY DATA		
Chemical stability	Stable under normal conditions	
Conditions to avoid	Avoid longtime heating above 125°C	
Incompatible materials	Exposure to strong acids or bases will cause damage	
Hazardous polymerizations	Will not occur	
Storage and use effects	Conventional performance remains stable within 1 year. Long-term exposure to sunlight and high humidity will cause discoloration and performance degradation.	
SECTION VI- PRECAUTION		
Over exposure effects	Dust from machining products can irritate the eyes, nose, throat and lungs. Prolonged inhalation of dust can cause lung disease.	

Note: All information, recommendations and suggestions appearing herein concerning this product are average values ascertained at room temperature by regular statistical analysis. It is provided purely for information and shall not be regarded as binding unless expressly agreed otherwise.

DIMENSIONAL TOLERANCE		Tolerance of length & width is less than 5 mm	
Thickness (mm)	Tolerance (mm)	Thickness (mm)	Tolerance (mm)
0.5-0.8	±0.05	6.0-8.0	±0.50
1.0-1.8	±0.15	10.0-15.0	±0.75
2.0-2.8	±0.20	16.0-20.0	±1.00
3.0-5.0	±0.30	21.0-50.0	±2.00



## FR4 Fiberglass Laminates

This product has superior physical properties and outstanding performance in both medium-temperature and high-temperature environments, meets UL 94 V0 standard. It features exceptional flexural, impact and bond strength at temperatures up to 130°C.

### Standard

- IEC 60893-3:2003
- GB/T 1303.4-2009

### Flame Resistance

UL94-V0

### Heat Resistance

Class B

### Regular Size

- 1020\*1220/1020\*1020mm
- 1220\*2040/1020\*2040mm
- 1220\*2440mm

### Raw Material

Adhesive / Epoxy resin  
Reinforcing material / Electronic grade fiber glass cloth









### Certificate Available

UL ☐ RoHS ☒ REACH ☒ MSDS ☒ CEMT ☒  
Factory Inspection Report ☒

## Characteristics

- ✓ High-pressure laminate
- ✓ Extremely high mechanical & dielectric strength and low flammability
- ✓ Special epoxy (EP) resin matrix reinforced with an e-glass roving fabric

## Industries

-  Generator and Motor
-  Electrical Industry
-  Healthcare
-  HVDC Transmission
-  Electrical Insulating Component
-  Hydrogen Energy
-  New Energy Industry
-  Battery Test



# Technical Data Sheet

Product name	NEMA GRADE FR-4 / EPGC202	
SECTION I - MISC CHARACTERISTICS		
Density	g/cm³	1.95-2.10
Flammability	UL94	V0
Water absorption (5mm)	%	≤0.15
Chemical family	Resin	Epoxy
Reinforcement type	Glass fabrics	7628
Thermal characteristics	°C	≥130
Colour	Green (Natural), Yellow	
SECTION II- MECHANICAL CHARACTERISTICS		
Bending strength	MPa	≥400
Tensile strength	MPa	≥300
Compressive strength ⊥	MPa	≥350
Modulus of elasticity	MPa	≥24000
Impact strength //	kJ/m²	≥33
SECTION III- ELECTRICAL CHARACTERISTICS		
Electrical strength ⊥	kV/mm, thickness≤3mm	≥10.2
Breakdown voltage //	kV	≥35
Proof tracking index	PTI	≥200
SECTION IV-HAZARDOUS INGREDIENTS		
Hazardous components	No OSHA hazardous ingredients	
SECTION V - REACTIVITY DATA		
Chemical stability	Stable under normal conditions	
Conditions to avoid	Avoid longtime heating above 130°C	
Incompatible materials	Exposure to strong acids or bases will cause damage	
Hazardous polymerizations	Will not occur	
Storage and use effects	Conventional performance remains stable within 1 year. Long-term exposure to sunlight and high humidity will cause discoloration and performance degradation.	
SECTION VI- PRECAUTION		
Over exposure effects	Dust from machining products can irritate the eyes, nose, throat and lungs. Prolonged inhalation of dust can cause lung disease.	

Note: All information, recommendations and suggestions appearing herein concerning this product are average values ascertained at room temperature by regular statistical analysis. It is provided purely for information and shall not be regarded as binding unless expressly agreed otherwise.

DIMENSIONAL TOLERANCE		Tolerance of length & width is less than 5 mm	
Thickness (mm)	Tolerance (mm)	Thickness (mm)	Tolerance (mm)
0.5-0.8	±0.05	6.0-8.0	±0.50
1.0-1.8	±0.15	10.0-15.0	±0.75
2.0-2.8	±0.20	16.0-20.0	±1.00
3.0-5.0	±0.30	21.0-50.0	±2.00



## ESD Fiberglass Laminates

This product is made of glass fiber as the main material, adding resin, antistatic agent and other ingredients. Among them, it is an inorganic non-metallic material processed through many procedures.

### Standard

- IEC 60893-3:2003
- GB/T 1303.4-2009

### Flame Resistance

UL94-V0

### Heat Resistance

Class B

### Anti-static Index

$10^7\Omega$ - $10^9\Omega$

### Regular Size

- 1220\*1020mm
- 1220\*2040mm
- 1220\*2440mm

### Raw Material

Adhesive / Epoxy resin / Reinforcing material /  
Electronic grade fiber glass cloth






### Certificate Available

UL ☐ RoHS ☒ REACH ☐ MSDS ☒ CEMT ☒  
Factory Inspection Report ☒

## Characteristics

- ✓ Good mechanical and electrical properties at both room temperature and elevated temperatures
- ✓ Epoxy (EP) resin matrix is reinforced with an e-glass fine fabrics typical industries

## Industries

-  Diagnosis Test Industry
-  Semi-conductor Industry
-  PCB Manufacturing
-  Electrical Industry
-  Electrical Insulating Component
-  Battery Test



# Technical Data Sheet

Product name	ESD / ESD Fiberglass Laminates / Electrostatic Dissipative Laminates	
SECTION I - MISC CHARACTERISTICS		
Density	g/cm <sup>3</sup>	1.95-2.10
Flammability	UL94	V0
Water absorption (5mm)	%	≤ 0.15
Chemical family	Resin	Epoxy
Reinforcement type	Glass fabrics	7628
Thermal characteristics	°C	≥130
Colour	Black	
SECTION II- MECHANICAL CHARACTERISTICS		
Bending strength	MPa	≥400
Tensile strength	MPa	≥300
Compressive strength ⊥	MPa	≥400
Impact strength //	kJ/m <sup>2</sup>	≥33
SECTION III- ELECTRICAL CHARACTERISTICS		
Electrical strength ⊥	kV/mm, thickness≤3mm	≥10.2
Breakdown voltage //	kV	≥35
Insulation resistance after water immersion	Ω	≥1x10 <sup>7</sup>
Surface resistance	Ω	1x10 <sup>7</sup> ~10 <sup>9</sup>
SECTION IV-HAZARDOUS INGREDIENTS		
Hazardous components	No OSHA hazardous ingredients	
SECTION V - REACTIVITY DATA		
Chemical stability	Stable under normal conditions	
Conditions to avoid	Avoid longtime heating above130°C	
Incompatible materials	Exposure to strong acids or bases will cause damage	
Hazardous polymerizations	Will not occur	
Storage and use effects	Conventional performance remains stable within 1 year. Long-term exposure to sunlight and high humidity will cause performance degradation.	
SECTION VI- PRECAUTION		
Over exposure effects	Dust from machining products can irritate the eyes, nose, throat and lungs. Prolonged inhalation of dust can cause lung disease.	

Note: All information, recommendations and suggestions appearing herein concerning this product are average values ascertained at room temperature by regular statistical analysis. It is provided purely for information and shall not be regarded as binding unless expressly agreed otherwise.

DIMENSIONAL TOLERANCE		Tolerance of length & width is less than 5 mm	
Thickness (mm)	Tolerance (mm)	Thickness (mm)	Tolerance (mm)
0.5-0.8	±0.05	6.0-8.0	±0.50
1.0-1.8	±0.15	10.0-15.0	±0.75
2.0-2.8	±0.20	16.0-20.0	±1.00
3.0-5.0	±0.30	21.0-50.0	±2.00



# Halogen-Free FR4 Fiberglass Laminates

This product is an environmentally friendly insulating material, which is made of glass fiber cloth as reinforcement material and epoxy resin as matrix material. Compared with traditional FR4, halogen-free FR4 insulation sheet doesn't contain halogen elements, such as chlorine, bromine, thereby reducing the harm to the environment and human body.

## Standard

- IEC 60893-3:2003
- GB/Z 21213-2007

## Flame Resistance

UL94-V0

## Heat Resistance

Class B

## Regular Size

- 1220\*1020mm
- 1220\*2040mm

## Raw Material

Adhesive / High temperature resistant epoxy resin  
Reinforcing material / Electronic grade fiber glass cloth

## Certificate Available

UL ☐ RoHS ☒ HALOGEN ☒ MSDS ☒ CEMT ☐  
Factory Inspection Report ☒

## Characteristics

- ✓ Good mechanical and electrical properties at both room temperature and elevated temperatures
- ✓ Epoxy (EP) resin matrix reinforced with an e-glass fine fabrics
- ✓ Halogen-free resin

## Industries

-  Diagnosis Test Industry
-  Semi-conductor Industry
-  PCB Manufacturing
-  3C Industry
-  Railway Industry
-  Automobile Industry

# Technical Data Sheet

Product name		Halogen-free FR4 / Halogen-free laminates	
SECTION I - MISC CHARACTERISTICS			
Density		g/cm <sup>3</sup>	1.90-2.00
Flammability		UL94	V0
Water absorption (5mm)		%	≤0.15
Chemical family		Resin	Epoxy
Reinforcement type		Glass fabrics	7628
Thermal characteristics		°C	≥130
Colour		Green (Natural), Yellow	
SECTION II - MECHANICAL CHARACTERISTICS			
Bending strength		MPa	≥400
Tensile strength		MPa	≥300
Compressive strength ⊥		MPa	≥350
Modulus of elasticity		MPa	≥24000
Impact strength //		kJ/m <sup>2</sup>	≥33
SECTION III - ELECTRICAL CHARACTERISTICS			
Electrical strength ⊥		kV/mm, thickness≤3mm	≥10.2
Breakdown voltage //		kV	≥35
Surface resistivity	After getting wet	MΩ	≥10 <sup>4</sup>
Volume resistivity	After getting wet	MΩ · cm	≥10 <sup>6</sup>
Proof tracking index		PTI	≥200
SECTION IV - HOLOGEN CONTENT			
Halogen Content	Br	ppm	<900
	Cl		<900
	Br+Cl		<1500
SECTION V - HAZARDOUS INGREDIENTS			
Hazardous components		No OSHA hazardous ingredients	
SECTION VI - REACTIVITY DATA			
Chemical stability		Stable under normal conditions	
Conditions to avoid		Avoid longtime heating above 130°C	
Incompatible materials		Exposure to strong acids or bases will cause damage	
Hazardous polymerizations		Will not occur	
Storage and use effects		Conventional performance remains stable within 1 year. Long-term exposure to sunlight and high humidity will cause discoloration and performance degradation.	
SECTION VII - PRECAUTION			
Over exposure effects		Dust from machining products can irritate the eyes, nose, throat and lungs. Prolonged inhalation of dust can cause lung disease.	

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# G11 Fiberglass Laminates

This product is specially-formulated to meet the exacting standards of electronic and power generation applications and provides excellent physical, mechanical and electrical properties at both room and elevated temperatures. It can withstand temperature of 155°C for a long time.

## Standard

- IEC 60893-3:2003
- GB/T 1303.4-2009

## Flame Resistance

HB

## Heat Resistance

Class F

## Regular Size

- 1220\*1020/1020\*1020mm
- 1220\*2040/1020\*2040mm
- 1220\*2440mm

## Raw Material

Adhesive / High temperature resistant epoxy resin  
Reinforcing material / Electronic grade fiber glass cloth





## Certificate Available

UL ☐ RoHS ☒ REACH ☐ MSDS ☒ CEMT ☐  
Factory Inspection Report ☒

## Characteristics

- ✓ Good mechanical and electrical properties at both room temperature and elevated temperatures
- ✓ Epoxy (EP) resin matrix reinforced with an e-glass fine fabrics

## Industries

-  Generator and Motor
-  Dry Transformer
-  Electrical Industry
-  Electrical Insulating Component

# Technical Data Sheet

Product name	NEMA GRADE G11 / EPGC 203	
SECTION I - MISC CHARACTERISTICS		
Density	g/cm <sup>3</sup>	1.95-2.05
Flammability	-	HB
Water absorption (5mm)	%	≤0.12
Chemical family	Resin	Epoxy
Reinforcement type	Glass fabrics	7628
Thermal characteristics	°C	≥155
Colour	Green (Natural), Yellow	
SECTION II- MECHANICAL CHARACTERISTICS		
Bending strength	MPa	≥450
Tensile strength	MPa	≥350
Compressive strength ⊥	MPa	≥450
Modulus of elasticity	MPa	≥24000
Impact strength //	kJ/m <sup>2</sup>	≥33
SECTION III- ELECTRICAL CHARACTERISTICS		
Electrical strength ⊥	kV/mm, thickness≤3mm	≥15
Breakdown voltage //	kV	≥45
Proof tracking index	PTI	≥200
SECTION IV-HAZARDOUS INGREDIENTS		
Hazardous components	No OSHA hazardous ingredients	
SECTION V - REACTIVITY DATA		
Chemical stability	Stable under normal conditions	
Conditions to avoid	Avoid longtime heating above 155°C	
Incompatible materials	Exposure to strong acids or bases will cause damage	
Hazardous polymerizations	Will not occur	
Storage and use effects	Conventional performance remains stable within 1 year. Long-term exposure to sunlight and high humidity will cause discoloration and performance degradation.	
SECTION VI- PRECAUTION		
Over exposure effects	Dust from machining products can irritate the eyes, nose, throat and lungs. Prolonged inhalation of dust can cause lung disease.	

Note: All information, recommendations and suggestions appearing herein concerning this product are average values ascertained at room temperature by regular statistical analysis. It is provided purely for information and shall not be regarded as binding unless expressly agreed otherwise.

DIMENSIONAL TOLERANCE		Tolerance of length & width is less than 5 mm	
Thickness (mm)	Tolerance (mm)	Thickness (mm)	Tolerance (mm)
0.5-0.8	±0.05	6.0-8.0	±0.50
1.0-1.8	±0.15	10.0-15.0	±0.75
2.0-2.8	±0.20	16.0-20.0	±1.00
3.0-5.0	±0.30	21.0-50.0	±2.00



## FR5 Fiberglass Laminates

This product is similar to G10/FR4 but has a higher operating temperature and superior mechanical properties at elevated temperatures. The main difference between NEMA Grades G11 and FR5 is that FR5 is flame retardant while G11 is not.

### Standard

- IEC 60893-3:2003
- GB/T 1303.4-2009

### Flame Resistance

UL94-V0

### Heat Resistance

Class F

### Regular Size

- 1220\*1020/1020\*1020mm
- 1220\*2040/1020\*2040mm
- 1220\*2440mm

### Raw Material

Adhesive / High temperature resistant epoxy resin  
Reinforcing material / Electronic grade fiber glass cloth







### Certificate Available

UL ☐ RoHS ☒ REACH ☐ MSDS ☒ CEMT ☐  
Factory Inspection Report ☒

## Characteristics

- ✓ High-pressure laminates
- ✓ Extremely high mechanical & dielectric strength and low flammability
- ✓ Special epoxy (EP) resin matrix reinforced with an e-glass roving fabric

## Industries

-  Generator and Motor
-  Electrical Industry
-  Healthcare
-  HVDC Transmission
-  Electrical Insulating Component
-  Hydrogen Energy



# Technical Data Sheet

Product name	NEMA GRADE FR5 / EPGC 204	
SECTION I - MISC CHARACTERISTICS		
Density	g/cm³	1.95-2.10
Flammability	UL94	V0
Water absorption (5mm)	%	≤0.15
Chemical family	Resin	Epoxy
Reinforcement type	Glass fabrics	7628
Thermal characteristics	°C	≥155
Colour	Green, Yellow	
SECTION II- MECHANICAL CHARACTERISTICS		
Bending strength	MPa	≥450
Tensile strength	MPa	≥350
Compressive strength ⊥	MPa	≥450
Modulus of elasticity	MPa	≥24000
Impact strength //	kJ/m²	≥33
SECTION III- ELECTRICAL CHARACTERISTICS		
Electrical strength ⊥	kV/mm, thickness≤3mm	≥15
Breakdown voltage //	kV	≥45
Proof tracking index	PTI	≥200
SECTION IV-HAZARDOUS INGREDIENTS		
Hazardous components	No OSHA hazardous ingredients	
SECTION V - REACTIVITY DATA		
Chemical stability	Stable under normal conditions	
Conditions to avoid	Avoid longtime heating above 155°C	
Incompatible materials	Exposure to strong acids or bases will cause damage	
Hazardous polymerizations	Will not occur	
Storage and use effects	Conventional performance remains stable within 1 year.Long-term exposure to sunlight and high humidity will cause discoloration and performance degradation.	
SECTION VI- PRECAUTION		
Over exposure effects	Dust from machining products can irritate the eyes, nose, throat and lungs. Prolonged inhalation of dust can cause lung disease.	

Note: All information, recommendations and suggestions appearing herein concerning this product are average values ascertained at room temperature by regular statistical analysis. It is provided purely for information and shall not be regarded as binding unless expressly agreed otherwise.

DIMENSIONAL TOLERANCE		Tolerance of length & width is less than 5 mm	
Thickness (mm)	Tolerance (mm)	Thickness (mm)	Tolerance (mm)
0.5-0.8	±0.05	6.0-8.0	±0.50
1.0-1.8	±0.15	10.0-15.0	±0.75
2.0-2.8	±0.20	16.0-20.0	±1.00
3.0-5.0	±0.30	21.0-50.0	±2.00



# EPGC308 Fiberglass Laminates

This product is made of chemically treated electrical alkali-free glass fiber cloth as the base material and high Tg epoxy resin as the adhesive by hot pressing.

## Standard

- IEC 60893-3:2003
- GB/T 1303.4-2009

## Flame Resistance

HB

## Heat Resistance

Class H

## Regular Size

- 1020\*2020mm

## Raw Material

Adhesive / Epoxy resin  
Reinforcing material / Electronic grade fiber glass cloth

## Certificate Available

UL ☐ RoHS ☐ REACH ☐ MSDS ☒ CEMT ☒  
Factory Inspection Report ☒

## Characteristics

- ✓ Good mechanical and electrical properties at both room temperature and elevated temperatures
- ✓ Epoxy (EP) resin matrix reinforced with an e-glass fine fabrics

## Industries

-  Generator and Motor
-  Electrical Industry
-  Electrical Insulating Component
-  Oil and Gas

# Technical Data Sheet

Product name	EPGC308	
SECTION I - MISC CHARACTERISTICS		
Density	g/cm <sup>3</sup>	1.90-2.00
Flammability	-	HB
Water absorption (5mm)	%	≤0.08
Chemical family	Resin	Epoxy
Reinforcement type	Glass fabrics	7628
Thermal characteristics	°C	180
Colour	Yellow	
SECTION II- MECHANICAL CHARACTERISTICS		
Bending strength	MPa	≥500
Tensile strength	MPa	≥375
Compressive strength ⊥	MPa	≥450
Impact strength //	kJ/m <sup>2</sup>	≥50
SECTION III- ELECTRICAL CHARACTERISTICS		
Electrical strength ⊥	kV/mm, thickness≤3mm	≥15
Breakdown voltage //	kV	≥45
Insulatin resistance after water immersion	MΩ	5.0x10 <sup>4</sup>
Proof tracking index	PTI	≥400
SECTION IV-HAZARDOUS INGREDIENTS		
Hazardous components	No OSHA hazardous ingredients	
SECTION V - REACTIVITY DATA		
Chemical stability	Stable under normal conditions	
Conditions to avoid	Avoid longtime heating above 180°C	
Incompatible materials	Exposure to strong acids or bases will cause damage	
Hazardous polymerizations	Will not occur	
Storage and use effects	Conventional performance remains stable within 1 year.Long-term exposure to sunlight and high humidity will cause discoloration and performance degradation.	
SECTION VI- PRECAUTION		
Over exposure effects	Dust from machining products can irritate the eyes, nose, throat and lungs. Prolonged inhalation of dust can cause lung disease.	

Note: All information, recommendations and suggestions appearing herein concerning this product are average values ascertained at room temperature by regular statistical analysis. It is provided purely for information and shall not be regarded as binding unless expressly agreed otherwise.

DIMENSIONAL TOLERANCE		Tolerance of length & width is less than 5 mm	
Thickness (mm)	Tolerance (mm)	Thickness (mm)	Tolerance (mm)
0.5	±0.12	5.0	±0.52
1.0	±0.18	8.0	±0.72
2.0	±0.28	10.0	±0.82
3.0	±0.37	20.0	±1.30





## EPGM203

This product is glass fiber mat bonded with high temperature epoxy resin. It has the ability to maintain excellent mechanical and electrical properties at high temperature. It can be widely used in motors, generators, can also be used to produce the machining parts etc.

### Standard

- IEC 60893-3-2:2011
- GB/T 1303.4-2009

### Flame Resistance

HB

### Heat Resistance

Class F

### Regular Size

- 1020\*1220mm
- 1020\*2040mm

### Raw Material

Adhesive / Epoxy resin  
Reinforcing material / E-glass mat

### Certificate Available







UL ☐ RoHS ☐ REACH ☐ MSDS ☒ CEMT ☒

Factory Inspection Report ☒

## Characteristics

- ✓ Epoxy (EP) resin matrix reinforced with an e-glass mat
- ✓ Good mechanical and electrical properties at both room temperature and elevated temperatures

## Industries

-  Generator and Motor
-  Renewable Energy
-  Electrical Industry
-  Wind Energy
-  Electrical Insulating Component
-  Hydrogen Energy

# Technical Data Sheet

Product name	EPGM 203	
SECTION I - MISC CHARACTERISTICS		
Density	g/cm³	1.90-2.05
Flammability	-	HB
Water absorption (5mm)	%	≤0.13
Chemical family	Resin	Epoxy
Reinforcement type	Glass fabrics	E-glass mat
Thermal characteristics	°C	≥155
Colour	Yellow	
SECTION II- MECHANICAL CHARACTERISTICS		
Bending strength ⊥ (Room temperature)	MPa	≥320
Bending strength ⊥ (150°C )	MPa	≥160
Charpy impact strength //	kJ/m²	≥50
SECTION III- ELECTRICAL CHARACTERISTICS		
Electrical strength at 90 °C in oil ⊥	kV/mm, thickness≤3mm	≥9
Breakdown voltage //	kV, thickness>3mm	≥35
SECTION IV-HAZARDOUS INGREDIENTS		
Hazardous components	No OSHA hazardous ingredients	
SECTION V - REACTIVITY DATA		
Chemical stability	Stable under normal conditions	
Conditions to avoid	Avoid longtime heating above 155°C	
Incompatible materials	Exposure to strong acids or bases will cause damage	
Hazardous polymerizations	Will not occur	
Storage and use effects	Conventional performance remains stable within 1 year.Long-term exposure to sunlight and high humidity will cause discoloration and performance degradation.	
SECTION VI- PRECAUTION		
Over exposure effects	Dust from machining products can irritate the eyes, nose, throat and lungs. Prolonged inhalation of dust can cause lung disease.	

Note: All information, recommendations and suggestions appearing herein concerning this product are average values ascertained at room temperature by regular statistical analysis. It is provided purely for information and shall not be regarded as binding unless expressly agreed otherwise.

DIMENSIONAL TOLERANCE		Tolerance of length & width is less than 5 mm	
Thickness (mm)	Tolerance (mm)	Thickness (mm)	Tolerance (mm)
2.0	±0.35	12.0	±0.90
5.0	±0.55	16.0	±1.10
8.0	±0.70	20.0	±1.30
10.0	±0.80	30.0	±1.45



# Modified Diphenyl Ether Fiberglass Laminates

This product is made of alkali-free glass fiber cloth for electrical use, impregnated with phenol-modified diphenyl ether resin by baking and hot pressing. It has high mechanical and dielectric properties, good radiation resistance, and is suitable for insulating structural parts in motors and electrical equipment.

## Standard

- GB/Z 21215-2007

## Flame Resistance

HB

## Heat Resistance

Class H

## Regular Size

- 1020\*2020mm

## Raw Material

Adhesive / Modified diphenyl ether resin  
Reinforcing material / Alkali free glass fiber cloth

## Certificate Available

UL ☐ RoHS ☒ REACH ☐ MSDS ☒ CEMT ☒

Factory Inspection Report ☒

## Characteristics

- ✓ Good mechanical and electrical properties at both room temperature and elevated temperatures
- ✓ Diphenyl ether resin matrix reinforced with alkali-free glass fabric

## Industries

-  Dry Transformers
-  Electrical Industry
-  Electrical Insulating Component
-  Generator



# Technical Data Sheet

Product name		Modified Dipheny Ether Fiberglass Laminates	
SECTION I - MISC CHARACTERISTICS			
Density	g/cm <sup>3</sup>	1.85-2.05	
Flammability	-	HB	
Water absorption	%	≤0.5	
Reinforcement type	-	Glass fabrics	
Thermal characteristics	°C	180	
Colour	-	Brown	
SECTION II- MECHANICAL CHARACTERISTICS			
Bending strength ⊥ (Room temperature)	MPa	≥400	
Bending strength ⊥ (180°C ± 2°C)	MPa	≥300	
Tensile strength	MPa	≥320	
Izod impact strength	kJ/m <sup>2</sup>	≥60	
Charpy impact strength	kJ/m <sup>2</sup>	≥40	
Bond strength	N	≥4900	
SECTION III- ELECTRICAL CHARACTERISTICS			
Breakdown voltage at 90°C transformer oil //	kV	≥35	
Electric strength at 90 °C±2°C oil ⊥ (Thicknes: 3.0mm)	MV/m,thickness≤3mm	≥16	
Relative permittivity (1mhz)	-	≤5.5	
Dissipation factor (1 mhz)	-	≤0.05	
Surface resistivity	Under normal conditions		≥1.0×10 <sup>6</sup>
	After immersion	Ω	≥1.0×10 <sup>4</sup>
	180 °C		≥1.0×10 <sup>4</sup>
Volume resistivity	Under normal conditions		≥1.0×10 <sup>5</sup>
	After immersion	M. Ωm	≥1.0×10 <sup>3</sup>
	180 °C		≥1.0×10 <sup>3</sup>
Insulation resistance	Under normal conditions		≥1.0×10 <sup>4</sup>
	After immersion	MΩ	≥1.0×10 <sup>2</sup>
SECTION IV-HAZARDOUS INGREDIENTS			
Hazardous components		No OSHA hazardous ingredients	
SECTION V - REACTIVITY DATA			
Hazardous components		Stable under normal conditions	
Conditions to avoid		Avoid longtime heating above 180°C	
Incompatible materials		Exposure to strong acids or bases will cause damage	
Hazardous polymerizations		Will not occur	
Storage and use effects		Conventional performance remains stable within 1 year. Long-term exposure to sunlight and high humidity will cause performance degradation.	
SECTION VI- PRECAUTION			
Over exposure effects		Dust from machining products can irritate the eyes, nose, throat and lungs. Prolonged inhalation of dust can cause lung disease.	

Note: All information, recommendations and suggestions appearing herein concerning this product are average values ascertained at room temperature by regular statistical analysis. It is provided purely for information and shall not be regarded as binding unless expressly agreed otherwise.

DIMENSIONAL TOLERANCE		Tolerance of length & width is less than 5 mm	
Thickness (mm)	Tolerance (mm)	Thickness (mm)	Tolerance (mm)
0.5	±0.12	5.0	±0.52
1.0	±0.18	8.0	±0.72
2.0	±0.28	10.0	±0.82
3.0	±0.37	20.0	±1.30



# Bismaleimide Fiberglass Laminates

This product is made of electrical alkali-free glass fiber cloth impregnated with bismaleimide resin by baking and hot pressing.

## Standard

- GB/T1303.10-2009

## Flame Resistance

HB

## Heat resistance

Class H

## Regular Size

1020\*2020mm

## Raw Material

Adhesive / Bismaleimide resin

Reinforcing material / Alkali free glass fiber cloth

## Certificate Available





UL ☐ RoHS ☐ REACH ☐ MSDS ☒ CEMT ☐

Factory Inspection Report ☒

## Characteristics

- ✓ Good mechanical and electrical properties at both room temperature and elevated temperatures
- ✓ Bismaleimide resin matrix reinforced with alkali-free glass fabric

## Industries

-  Dry Transformer
-  Electrical Industry
-  Electrical Insulating Component
-  Generator
-  Semi-conductor Industry

# Technical Data Sheet

Product name		Bismaleimide Fiberglass Laminates	
SECTION I - MISC CHARACTERISTICS			
Density	g/cm <sup>3</sup>	1.85-2.05	
Flammability	-	HB	
Water absorption	%	≤0.5	
Reinforcement type	-	Glass fabrics	
Thermal characteristics	°C	180	
Colour	-	Brown	
SECTION II- MECHANICAL CHARACTERISTICS			
Bending strength ⊥ (Room temperature)	MPa	≥400	
Bending strength ⊥ (180°C ± 2°C)	MPa	≥300	
Izod impact strength	kJ/m <sup>2</sup>	≥60	
Charpy impact strength	kJ/m <sup>2</sup>	≥40	
Bond strength	N	≥4900	
Tensile strength	MPa	≥300	
SECTION III- ELECTRICAL CHARACTERISTICS			
Breakdown voltage at 90°C oil (parallel) //		kV	≥35
Electric strength at 90 °C±2°C oil ⊥		MV/m,thickness≤3mm	≥10
Relative permittivity (1mhz)		-	≤5.5
Dissipation factor (1 mhz)		-	≤0.05
Surface resistivity	Under normal conditions	Ω	≥1.0×10 <sup>6</sup>
	After immersion		≥1.0×10 <sup>4</sup>
	180 °C		≥1.0×10 <sup>4</sup>
Volume resistivity	Under normal conditions	M. Ωm	≥1.0×10 <sup>5</sup>
	After immersion		≥1.0×10 <sup>3</sup>
	180 °C		≥1.0×10 <sup>3</sup>
Insulation resistance	Under normal conditions	MΩ	≥1.0×10 <sup>4</sup>
	After immersion		≥1.0×10 <sup>2</sup>
Tracking resistance		PTI	≥275
SECTION IV-HAZARDOUS INGREDIENTS			
Hazardous components		No OSHA hazardous ingredients	
SECTION V - REACTIVITY DATA			
Hazardous components		Stable under normal conditions	
Conditions to avoid		Avoid longtime heating above 180°C	
Incompatible materials		Exposure to strong acids or bases will cause damage	
Hazardous polymerizations		Will not occur	
Storage and use effects		Conventional performance remains stable within 1 year. Long-term exposure to sunlight and high humidity will cause performance degradation.	
SECTION VI- PRECAUTION			
Over exposure effects		Dust from machining products can irritate the eyes, nose, throat and lungs. Prolonged inhalation of dust can cause lung disease.	

Note: All information, recommendations and suggestions appearing herein concerning this product are average values ascertained at room temperature by regular statistical analysis. It is provided purely for information and shall not be regarded as binding unless expressly agreed otherwise.

DIMENSIONAL TOLERANCE		Tolerance of length & width is less than 5 mm	
Thickness (mm)	Tolerance (mm)	Thickness (mm)	Tolerance (mm)
0.5	±0.12	5.0	±0.52
1.0	±0.18	8.0	±0.72
2.0	±0.28	10.0	±0.82
3.0	±0.37	20.0	±1.30



# Silicone Fiberglass Laminates

This product is made of KH550 treated alkali-free fiberglass cloth impregnated with methyl, phenyl and siloxane resins by hot pressing.

## Standard

- IEC 60893-3-6:2003
- GB/T 1303.8-2009

## Flame Resistance

UL94-V0

## Heat Resistance

Class C

## Regular Size

- 1020\*2020mm

## Raw Material

Adhesive / methyl, phenyl and siloxane resins  
Reinforcing material / Alkali free glass fiber cloth

## Certificate Available

UL ☐ RoHS ☐ REACH ☐ MSDS ☒ CEMT ☒  
Factory Inspection Report ☒

## Characteristics

- ✓ Good electrical properties under humid conditions
- ✓ Excellent heat and arc resistance
- ✓ Self-extinguishing
- ✓ Good dielectric loss properties under dry conditions
- ✓ Good electrical properties under humid conditions

## Industries

-  Heating Insulation
-  Appliance Insulation
-  Electrical Industry



# Technical Data Sheet

Product name		NEMA GRADE G7 / SIGC202 / 3250	
SECTION I - MISC CHARACTERISTICS			
Density		g/cm <sup>3</sup>	1.85-2.05
Flammability		UL94	V0
Water absorption (5mm)		%	≤0.5
Reinforcement type		Glass fabrics	Alkali free glass fiber cloth
Thermal characteristics		°C	200
Colour		White	
SECTION II- MECHANICAL CHARACTERISTICS			
Bending strength	Normal	MPa	≥120
	≥180°C±2°C		≥100
Impact strength //		kJ/m <sup>2</sup>	≥25
SECTION III- ELECTRICAL CHARACTERISTICS			
Breakdown voltage at 90°C oil //		kV	≥25
Dielectric constant (1MHz)		-	≤6
Dielectric loss factor (1MHz)		-	≤0.07
Insulation resistance after immersion in water		MΩ	1.0x10 <sup>3</sup>
SECTION IV-HAZARDOUS INGREDIENTS			
Hazardous components		No OSHA hazardous ingredients	
SECTION V - REACTIVITY DATA			
Chemical stability		Stable under normal conditions	
Conditions to avoid		Avoid longtime heating above 200°C	
Incompatible materials		Exposure to strong acids or bases will cause damage	
Hazardous polymerizations		Will not occur	
Storage and use effects		Conventional performance remains stable within 1 year.Long-term exposure to sunlight and high humidity will cause discoloration and performance degradation.	
SECTION VI- PRECAUTION			
Over exposure effects		Dust from machining products can irritate the eyes, nose, throat and lungs. Prolonged inhalation of dust can cause lung disease.	

Note: All information, recommendations and suggestions appearing herein concerning this product are average values ascertained at room temperature by regular statistical analysis. It is provided purely for information and shall not be regarded as binding unless expressly agreed otherwise.

DIMENSIONAL TOLERANCE		Tolerance of length & width is less than 5 mm	
Thickness (mm)	Tolerance (mm)	Thickness (mm)	Tolerance (mm)
0.5	±0.12	5.0	±0.52
1.0	±0.18	8.0	±0.72
2.0	±0.28	10.0	±0.82
3.0	±0.37	20.0	±1.30



# Modified Polyimide Fiberglass Laminates

This product is made of KH560 treated alkali-free fiberglass cloth impregnated with special polyimide thermosetting resin by hot pressing.

## Standard

- IEC 60893-3-7:2003
- GB/T 1303.9-2009

## Flame Resistance

HB40

## Heat Resistance

Class C

## Regular Size

- 1020\*2020mm

## Raw Material

Adhesive / Special polyimide thermo setting resin  
Reinforcing material / Alkali free glass fiber cloth

## Certificate Available

UL ☐ RoHS ☐ REACH ☐ MSDS ☒ CEMT ☒  
Factory Inspection Report ☒

## Characteristics

- ✓ Heat resistant
- ✓ High mechanical strength
- ✓ High impact resistance
- ✓ High stiffness
- ✓ Good dimensional stability

## Industries

-  Semi-conductor Industry
-  Electronics
-  Aerospace
-  Automobile Industry

# Technical Data Sheet

Product name		PIGC301 / Modified polyimide fiberglass laminates	
SECTION I - MISC CHARACTERISTICS			
Density		g/cm <sup>3</sup>	1.90-2.00
Flammability		-	HB40
Water absorption (5mm)		%	≤0.5
Chemical family		Resin	Modified polyimide resin
Reinforcement type		Glass fabrics	Alkali free glass fiber cloth
Thermal characteristics		°C	200
Colour		-	Brown
SECTION II- MECHANICAL CHARACTERISTICS			
Bending strength	Normal	MPa	≥400
	200±5°C		≥300
Impact strength ( charpy )		kJ/m <sup>2</sup>	≥70
SECTION III- ELECTRICAL CHARACTERISTICS			
Parallel layer to breakdown voltage (90°C transformer oil)		kV	≥35
Dielectric strength (90°C transformer oil)	0.5mm-1.0mm	MV/m	≥14.0
	1.1mm-2.0mm		≥11.2
	2.1mm-3.0mm		≥10.0
Parallel layer to insulation resistance, immersed in water for 24 hours		MΩ	≥1.0x10 <sup>2</sup>
Dielectric constant (1MHz)		-	≤5.5
Dielectric loss factor (1MHz)		-	≤0.05
SECTION IV-HAZARDOUS INGREDIENTS			
Hazardous components		No OSHA hazardous ingredients	
SECTION V - REACTIVITY DATA			
Chemical stability		Stable under normal conditions	
Conditions to avoid		Avoid longtime heating above 200°C	
Incompatible materials		Exposure to strong acids or bases will cause damage	
Hazardous polymerizations		Will not occur	
Storage and use effects		Conventional performance remains stable within 1 year. Long-term exposure to sunlight and high humidity will cause discoloration and performance degradation.	
SECTION VI- PRECAUTION			
Over exposure effects		Dust from machining products can irritate the eyes, nose, throat and lungs. Prolonged inhalation of dust can cause lung disease.	

Note: All information, recommendations and suggestions appearing herein concerning this product are average values ascertained at room temperature by regular statistical analysis. It is provided purely for information and shall not be regarded as binding unless expressly agreed otherwise.

DIMENSIONAL TOLERANCE		Tolerance of length & width is less than 5 mm	
Thickness (mm)	Tolerance (mm)	Thickness (mm)	Tolerance (mm)
0.5	±0.12	5.0	±0.52
1.0	±0.18	8.0	±0.72
2.0	±0.28	10.0	±0.82
3.0	±0.37	20.0	±1.30



# Semiconductor Fiberglass Laminates

This product is made of electrical alkali-free glass fiber cloth impregnated with epoxy resin and conductive components after baking and hot pressing.

## Standard

XJDG-JS-04· Z-2024

## Regular Size

• 1020\*2020mm

## Heat Resistance

Class B / F

## Raw Material

Adhesive / Epoxy resin

Reinforcing material / Carbon black glass fiber cloth

## Certificate Available




UL ☐ RoHS ☐ REACH ☐ MSDS ☒ CEMT ☐

Factory Inspection Report ☒

## Characteristics

- ✓ High mechanical strength
- ✓ Shows conductivity both parallel and perpendicular to the layers in its construction

## Industries

-  Generator and motor
-  Power Generating Industry
-  PCB Industry



# Technical Data Sheet

Product name	Semiconductor Fiberglass Laminates	
SECTION I - MISC CHARACTERISTICS		
Density	g/cm <sup>3</sup>	1.70-1.90
Flammability	-	HB
Water absorption (5mm)	%	≤0.8
Reinforcement type	-	Glass fabrics
Thermal characteristics	°C	130/155
Colour	-	Black
SECTION II- MECHANICAL CHARACTERISTICS		
Bending strength	MPa	≥340
Impact strength//	kJ/m <sup>2</sup>	≥33
SECTION III- ELECTRICAL CHARACTERISTICS		
Surface resistivity	kΩ/square	1 - 100
Volume resistivity (normal condition)	kΩ.cm	1 - 50
SECTION IV-HAZARDOUS INGREDIENTS		
Hazardous components	No OSHA hazardous ingredients	
SECTION V - REACTIVITY DATA		
Chemical stability	Stable under normal conditions.	
Conditions to avoid	Avoid longtime heating above 130°C/155°C	
Incompatible materials	Exposure to strong acids or bases will cause damage	
Hazardous polymerizations	Will not occur	
Storage and use effects	Conventional performance remains stable within 1 year. Long-term exposure to sunlight and high humidity will cause performance degradation.	
SECTION VI- PRECAUTION		
Over exposure effects	Dust from machining products can irritate the eyes, nose, throat and lungs. Prolonged inhalation of dust can cause lung disease.	

Note: All information, recommendations and suggestions appearing herein concerning this product are average values ascertained at room temperature by regular statistical analysis. It is provided purely for information and shall not be regarded as binding unless expressly agreed otherwise.

DIMENSIONAL TOLERANCE		Tolerance of length & width is less than 5 mm	
Thickness (mm)	Tolerance (mm)	Thickness (mm)	Tolerance (mm)
0.5	±0.12	5.0	±0.52
1.0	±0.18	8.0	±0.72
2.0	±0.28	10.0	±0.82
3.0	±0.37	20.0	±1.30



# Magnetic Fiberglass Laminates

This product is made of electrical glass cloth with alkali-free that impregnated with epoxy resin under pressure, with high mechanical strength, heat resistance and good magnetic permeability.

## Standard

JB/T 13478-2018

## Heat Resistance

- 3331: Class B
- 3341: Class F
- 3351: Class H

## Regular Size

- 1020×1220mm
- 915×1220mm

## Raw Material

Adhesive / High temperature resistant epoxy resin  
Reinforcing material / Alkali free glass fiber cloth



## Certificate Available

UL ☐ RoHS ☐ REACH ☐ MSDS ☒ CEMT ☐  
Factory Inspection Report ☒

## Characteristics

- ✓ Magnetic conductive
- ✓ High mechanical strength
- ✓ Good heat resistance

## Industries

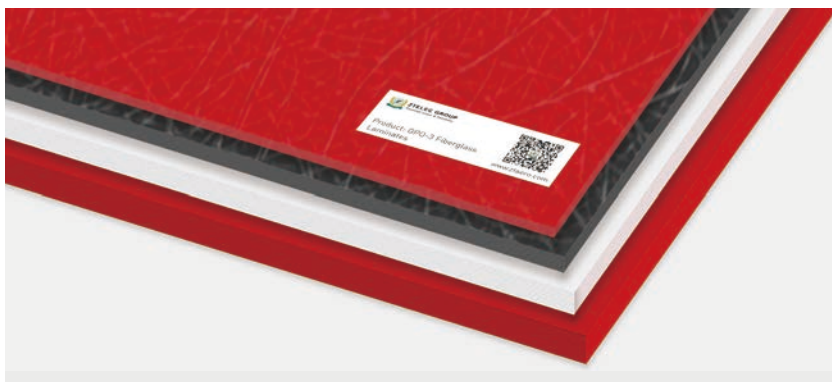
-  Motor and Generator
-  Power Generating Industry

# Technical Data Sheet

Product name			Magnetic fiberglass laminates			
Index			Unit	XJ-3331	XJ-3341	XJ-3351
SECTION I - MISC CHARACTERISTICS						
Density			g/cm <sup>3</sup>	≥2.8	≥3.0	≥2.8
Flammability			-	HB		
Water absorption (5mm)			%	≤1.0	≤1.0	≤1.0
Reinforcement type			-	Glass Fabrics		
Thermal characteristics			°C	≥130	≥155	≥180
Colour			-	Black		
Thermal stability(180°C /24h)			No flow, no deformation, color difference after baking is allowed.			
SECTION II- MECHANICAL CHARACTERISTICS						
Bending strength	MD	23°C ±2°C	MPa	-	-	≥195
		150-180°C±2°C		-	-	≥100 ( 180°C±2°C )
	CMD	23°C ±2°C		≥105	≥150	≥150
		150-180°C±2°C		-	≥120 ( 150°C±2°C )	≥80 ( 180°C±2°C )
Impact strength//			kJ/m <sup>2</sup>	≥40	≥40	≥40
SECTION III- ELECTRICAL CHARACTERISTICS						
Relative magnetic permeability(1.6x10 <sup>4</sup> A/m)			-	To be agreed upon by supply and demand		
Volume resistivity(Under normal conditions)			Ω.cm	-	≥1.0x10 <sup>6</sup>	-
SECTION IV-HAZARDOUS INGREDIENTS						
Hazardous components			No OSHA hazardous ingredients			
SECTION V - REACTIVITY DATA						
Chemical stability			Stable under normal conditions.			
Conditions to avoid			Avoid longtime heating above 130°C/155°C/180°C			
Incompatible materials			Exposure to strong acids or bases will cause damage			
Hazardous polymerizations			Will not occur			
Storage and use effects			Conventional performance remains stable within 1 year. Long-term exposure to sunlight and high humidity will cause performance degradation.			
SECTION VI- PRECAUTION						
Over exposure effects			Dust from machining products can irritate the eyes, nose, throat and lungs. Prolonged inhalation of dust can cause lung disease.			

Note: All information, recommendations and suggestions appearing herein concerning this product are average values ascertained at room temperature by regular statistical analysis. It is provided purely for information and shall not be regarded as binding unless expressly agreed otherwise.

DIMENSIONAL TOLERANCE		Tolerance of length & width is less than 5 mm	
Thickness (mm)	Tolerance (mm)	Thickness (mm)	Tolerance (mm)
0.5	±0.12	5.0	±0.52
1.0	±0.18	8.0	±0.72
2.0	±0.28	10.0	±0.82
3.0	±0.37	20.0	±1.30



## UPGM

This product is a kind of hard insulation sheet made of impregnating alkali-free glass fiber mat with unsaturated polyester resin paste and being laminated with appropriate additives under high temperature.

### Standard

- GB/T 1303.7-2009
- IEC 60893-3-5:2009

### Heat Resistance

- Class F

### Thickness

0.3~30mm

### Regular Size

- 1000mmx2000mm
- 1250mmx2000mm
- 1250mmx2500mm






### Certificate Available

UL ☐ RoHS ☐ REACH ☐ MSDS ☒ CEMT ☐  
 Factory Inspection Report ☒

## Characteristics

- ✓ Polyester (UP) resin matrix
- ✓ Reinforced with an e-glass roving mat

## Industries

-  Generator and Motor
-  Electrical Industry
-  Switchboard
-  Renewable Energy
-  Electrical Insulating Component



# Technical Data Sheet

Product name		Unit	UPGM203	UPGM204	UPGM205
SECTION I - MISC CHARACTERISTICS					
Flammability		UL94	V0	-	V0
Water absorption		%	≤0.13		
Colour		-	White / Black / Grey / Red		
SECTION II- MECHANICAL CHARACTERISTICS					
Bending strength	Normal conditions	MPa	≥130	≥250	≥250
	130°C±2°C		≥65	-	-
	150°C±2°C		-	≥125	≥125
Thermal characteristics (180°C/24h)		-	≥155	-	≥155
Impact strength of simply supported beams		kJ/m²	≥40	≥50	≥50
Cantilever beam impact strength of parallel layer		kJ/m²	≥30	≥44	≥44
Tensile strength		Mpa	≥100	≥100	≥100
Compressive strength ⊥		MPa	≥200		
SECTION III- ELECTRICAL CHARACTERISTICS					
Electric strength at 90°C ±2°C oil,≤3mm ⊥		kV/mm	≥9		
Breakdown voltage at 90°C oil //		kV	≥35		
Insulatin resistance after water immersion		MΩ	≥6*10²		
Proof tracking index		PTI	≥500		
Arc resistance		sec	≥180		
SECTION IV-HAZARDOUS INGREDIENTS					
Hazardous components		No OSHA hazardous ingredients			
SECTION V - REACTIVITY DATA					
Chemical stability		Stable under normal conditions.			
Conditions to avoid		Avoid longtime heating above 155°C			
Incompatible materials		Exposure to strong acids or bases will cause damage			
Hazardous polymerizations		Will not occur			
Storage and use effects		Conventional performance remains stable within 1 year. Long-term exposure to sunlight and high humidity will cause performance degradation.			
SECTION VI- PRECAUTION					
Over exposure effects		Dust from machining products can irritate the eyes, nose, throat and lungs. Prolonged inhalation of dust can cause lung disease.			

Note: All information, recommendations and suggestions appearing herein concerning this product are average values ascertained at room temperature by regular statistical analysis. It is provided purely for information and shall not be regarded as binding unless expressly agreed otherwise.

DIMENSIONAL TOLERANCE		Tolerance of length & width is less than 5 mm			
Thickness (mm)	Tolerance (mm)	Thickness (mm)	Tolerance (mm)		
2.0	±0.25	12.0	±0.90		
5.0	±0.55	16.0	±1.10		
8.0	±0.70	20.0	±1.30		
10.0	±0.80	30.0	±1.45		

# Customized Processing Service

All the products are produced according to IEC standard and GB standard. We have our own testing lab to test the mechanical properties, electrical properties and thermal properties of the products. We also have strict quality control on the the raw materials and semi-finished products. Also test all batches of finished products to make sure that the products can meet the customers' requirements.





The data stated above are average values verified on the basis of regular statistical tests and controls. All information in this publication is based on current technical knowledge and experience. Due to the large number of possible influences during processing and application, it does not exempt the user/processor from carrying out their own tests and trials. Responsibility for the evaluation of the end product for the intended use and compliance with the applicable relevant legal requirements lies exclusively with the user/processor as well as the distributor of the respective product/end product. Suggested uses do not constitute an assurance of suitability for the recommended purpose. The information in this publication and our declarations in connection with this publication do not constitute acceptance of a guaranteed or warranted characteristic. Guarantee declarations require our separate express written declaration in order to be effective. We reserve the right to adapt the product to technical progress and new developments.

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