

Professional Manufacturer & Exporter of Electrical Insulation Material.

Zhejiang Hecheng Electric Technology Co.,Ltd, registered in year 2017, has been doing electrical insulation materials since 2005. It was called Yongkang Haotai Industry & Trade Co.,Ltd.

About us

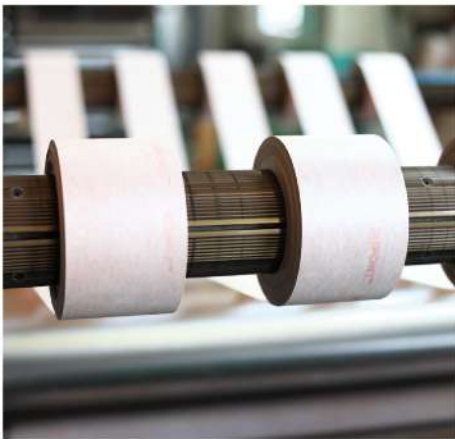
The company is located in Yongkang city, the Centre of Zhejiang Province of East China, covering an area of 4,000 square meters. Hecheng enjoys very convenient transportation access either to Ningbo port or to Shanghai port. Next to the Yongkang HSR Station, it takes only 2.5 hours to visit our factory from Shanghai Hongqiao Airport by High-Speed Rail.

ISO 9001:2008 international quality system certificate was awarded to Haotai in year 2008. After years of establishment, "HAOTAI" is now one of famous brand in the line for electrical insulation papers and films applied in motors/electric transformers/power wind and various high-end electronics.



General Introduction

Zhejiang Hecheng Electric Technology Co.,Ltd,



Company main products cover diamond pattern paper (also known as DDP, DDPP and DPRCP, etc.), Diamond Dotted Film, Diamond Dotted Nomex Paper, DMD Flexible Laminate sheets (class B, class F, class H, DMD Prepreg, DMD 100% saturated, and Diamond Dotted DMD), NMN(Dupont Nomex with PET Film laminates), AMA(Chinese Aramid Paper with Mylar Laminates), MMM(PET film composites), crepe paper and paper tubes, transformer pressboards etc.

Quality Control

Our Labs & Certificates



Hecheng/Haotai owns superior processing\testing equipment and specialized laboratories. 4 main lamination machines can fulfill a daily output of 12tons with the available maximum width of 2000mm. And 4 main slitting machines can provide slitted width from 4mm to 1900mm. We carry out full inspection and testing before/during/after production, which testing records are all kept for 2 years. Tracking of every batch of cargo is accomplished by these records. Thus products improvements or OEM are easily made according to every customer's unique needs.

ISO 9001



SGS ROHS



MSDS



REACH



AAA



UL



Our Great Partners

All production in accordance with the international technology standard strictly, qualified in RoHS/ SGS, MSDS and UL. The company focus on the international market and 95% of the annual sales volume is for exporting. Customers of Hecheng/Haotai insulation materials cover countries all over the world. Leading brands producing motors or dry transformers or oil-immersed transformers come and seek cooperation with Hecheng/Haotai. We successfully won qualified supplier certificate from the leading brands such as CG, ABB, HYOSUNG, HYUNDAI, LG and more.



We take account of user's cost concerns and product performance and we follow the value that "customer's success is our business".

For more information, visit our website www.haotai-insulations.com



OIL-FILLED TRANSFORMERS

Electrical insulations for oil-filled transformers from Hecheng

Transformer's performance depends heavily on its insulation system; therefore the insulation is perhaps the most critical transformer part. The internal insulation system of oil-filled transformer is based on pure mineral oil, and cellulose in the form of paper, pressboard, and sometimes selected natural wood.



Hecheng offers pure cellulose based paper and paper products for oil-filled transformers.

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- Some materials may not be listed in this catalogue, please inquire for more info

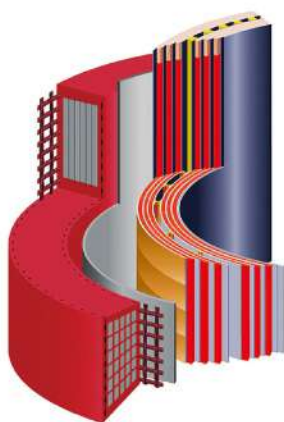




DRY TYPE TRANSFORMERS

Electrical insulations for dry-type distribution transformers.

Electrical insulation materials are key part of transformers, as they must withstand the thermal, electrical, mechanical, and environmental stresses during the transformer's operating life. Hence the lifetime of a transformer is largely depends on the reliability of the insulation used. Ventilated dry type transformers (VDT) and cast resin transformers continue to grow in popularity around the world.

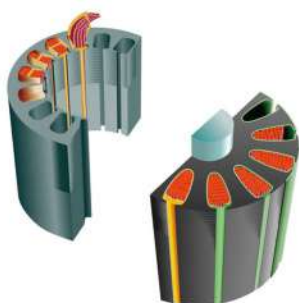


Hecheng offers a broad range of insulation materials for dry-type distribution transformers.

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Hecheng offers a broad range of insulation materials for motors.

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- Some materials may not be listed in this catalogue, please inquire for more info





MOTORS

Electrical insulations for motors.

When it comes to motor insulation, Hecheng offers single layer and multilayer flexible materials for electrical insulations. They can be supplied in sheet or roll form. And because of the characters of these materials, it can be easily formed or punched to establish a wide range of uses like slot liners, phase insulation, turn insulation, coil separators and so on.



Electrical grade diamond
dotted insulating paper
with "B" stage epoxy resin
dots

Diamond Dotted Presspaper

Description:

This product is manufactured from insulation press paper and partially coated with epoxy resin on one or both sides. The dots are arranged to have diamond pattern consisting of 9.5mm x9.5mm diamonds with 15.9mm center spacing. This design improves the mechanical strength of oil-immersed transformer windings without reducing partial discharge levels.

Advantages:

In the process of coil desiccation, the coated epoxy-resin would be melted in a certain temperature and become adhesive. With the temperature increased, the melted resin would cure to C-stage, and firmly adhere each adjoining layer of the coil. If a short circuit occurs in the coil, the resin bonding strength would sufficiently prevent the discharge of each winding layer, which ensures the long-term mechanical and physical properties of the insulation structure. As the resin coating distributes in a diamond-dotted pattern, little quantity of the resin would soak into the insulating paper during melting and curing process, which ensures the elimination of air content in the insulating paper and guarantees the soakage of oil, minimizing the damages of corona and partial discharge.

Hecheng DDP can also be supplied in the "thermally upgraded" version, which is called TU DDP. It is achieved by adding a small quantity of nitrogenous additive.

Applications:

It is suitable for turn-to-turn insulation of coil wires on oil-immersed power transformers and suitable for layer insulation of coils on distribution transformers.

Forms of supply:

Available width: DDP strip minimum 4mm to master roll 1900mm

Curing condition for Hecheng DDP: cured for 90℃±5℃ by 3 hours first, then for 125℃±5℃ by 6 hours.

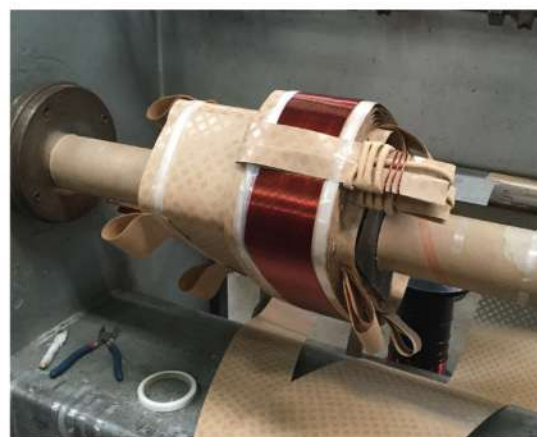
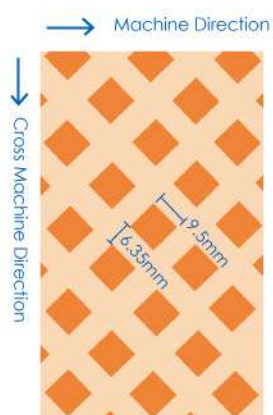
Storage and Shelf Life: Minimum 12 months, to be stored in dry, clean warehouse, avoid direct sunlight and heat.

DDP Technical Data

Property		Unit	Value										
Thickness		mm	0.08	0.13	0.15	0.18	0.20	0.25	0.30	0.35	0.38	0.45	0.50
		mil	3	5	6	7	8	10	12	14	15	18	20
Density		g/cm ³	0.85~1.10										
One side coating		μm	6~12										
Moisture content		%	4.0~8.0										
Ash content		%	≤1.0										
Water extraction of Electrical conductivity		mS/m	≤10										
PH Water extract			6.5~8.5										
Oil absorption		%	≥20										
Bond strength		Kpa	≥650										
Tensile strength	TD	N/10mm	60	100	110	130	160	200	≥250				
	MD		30	50	55	70	80	100	≥120				
BDV		KV	0.88	1.37	1.50	2.00	2.10	2.25	≥2.50				

Thickness tolerance: 10%

Test of Insulation paper according to IEC60641-3-2:2008





Electrical grade diamond dotted insulating film with "B" stage epoxy resin dots

Diamond Dotted Polyester Film (DDM)

Description:

It is also known as DPF. The use of this B-stage resin coated film increases the mechanical strength of transformer coils. It is produced by coating modified epoxy resin in diamond dot patterns on electrical insulating film. The size of the dots are carefully designed and arranged to cover only 36% of the surface, remaining 64% free for optimum SF6 gas distribution.

Advantages:

After curing, the prepreg resin cures from stage B (prepreg) to stage C (cured), adhering to any metallic surface and creating micro channels for optimal gas distribution. The bonding strength is adequate to support effective gluing in unsupported coil design.

Applications:

- Dry type transformer layer insulation
- Oil filled transformer layer insulation
- SF6 high current voltage transformer wire winding insulation or layer insulation film
- Motor slot insulation, or phase insulation film
- Also suitable for Automobile, Electronic application

DDM Technical Data:

Item		Unit	Value		
Nominal thickness		mm	0.05	0.075	0.10
Thickness tolerance		mm	±0.005	±0.01	±0.01
Standard width		mm	1000mm		
Tensile Strength	Lengthwise	N/10mm	≥100	≥110	≥150
	Crosswise		≥90	≥100	≥130
Breakdown voltage		kv	≥6	≥8	≥9
Bond strength		kpa	≥350		
Curing temperature and time			90℃±5℃/16h or 130℃±5℃/6h		
Storage life			6 months, room temperature, dry and well-ventilated environment		

Insulating Presspaper

Cellulose based insulation papers in accordance with IEC60641-2

Description:

Insulating presspaper is manufactured from 100% wood pulp in accordance with international standards.

Presspaper Technical Data:

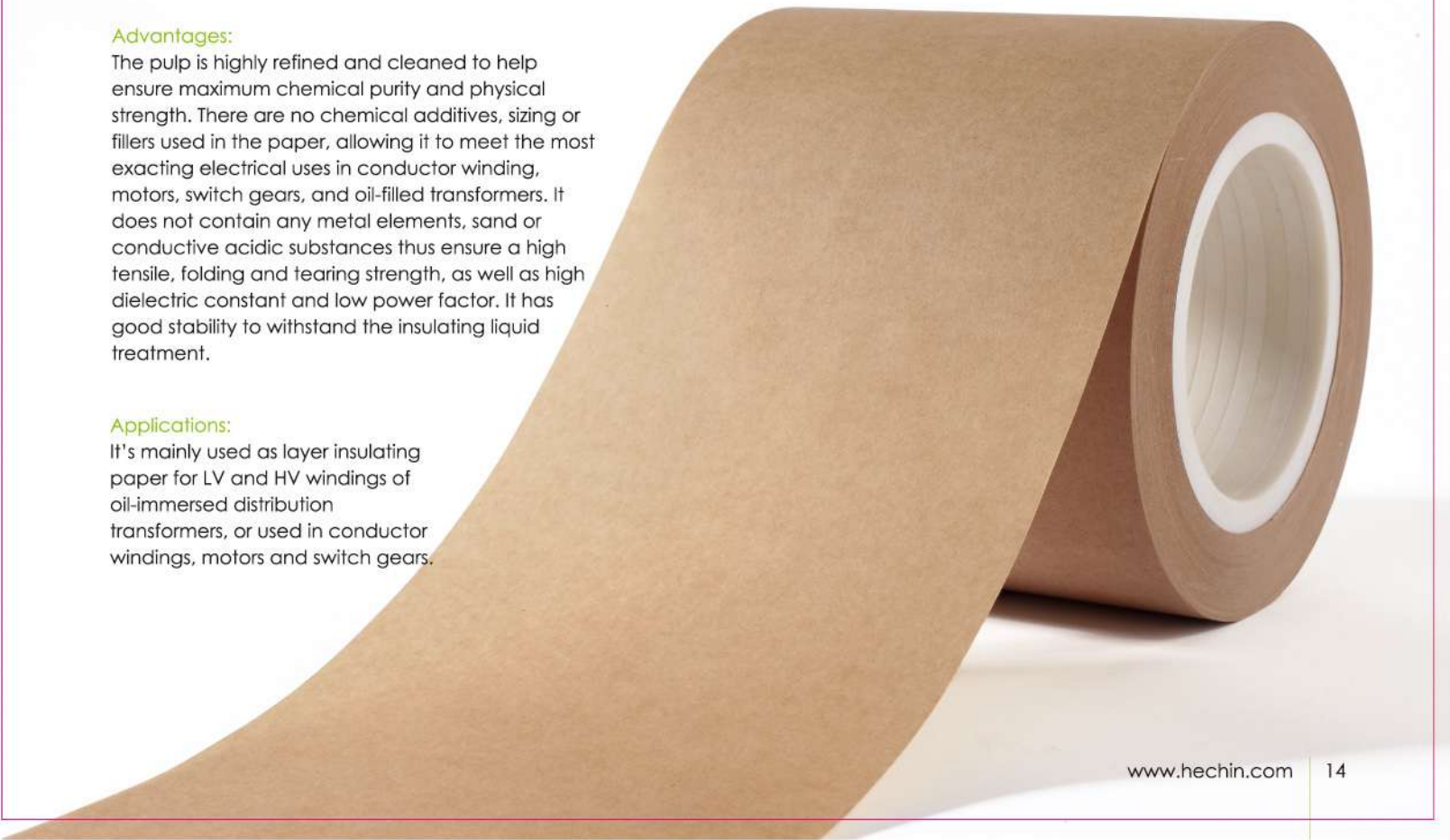
Property			Unit	Value							
Nominal thickness			mm	0.10	0.15	0.20	0.25	0.30	0.35	0.45	0.50
Thickness tolerance			%	≤10.0							
Nominal grammage			g/cm³	1.00~1.20							
Shear Strength	Not bended	MD	Mpa	≥80							
		TD		≥40							
	Bended	MD		≥60							
		TD		≥35							
Elongation	Not bended	MD	%	≥1.0	≥1.0	≥1.5	≥2.0	≥2.0	≥2.0	≥2.0	≥2.0
		TD		≥6.0	≥6.0	≥6.0	≥7.0	≥7.0	≥7.0	≥7.0	≥7.0
	Bended	MD	%	≥1.0	≥1.0	≥1.0	≥1.0	≥1.5	≥1.5	≥1.5	≥1.5
		TD		≥5	≥5	≥5	≥5	≥5	≥5	≥5	≥5
Shrinkage	MD		%	≤1.0							
	TD			≤1.5							
	Thickness direction			≤7.0							
Moisture content			%	≤8.0							
Ash content			%	≤1.0							
Electrical conductivity of Aquesous extract			ms/m	≤8.0							
Aquesous extract(ph)				6~9							
Oil absorption			%	≥10							
Electrical strength		in air	MV/m	≥9	≥9	≥9	≥10	≥10	≥10	≥10	≥10
		in oil	MV/m	≥60	≥60	≥60	≥60	≥60	≥60	≥60	≥60

Advantages:

The pulp is highly refined and cleaned to help ensure maximum chemical purity and physical strength. There are no chemical additives, sizing or fillers used in the paper, allowing it to meet the most exacting electrical uses in conductor winding, motors, switch gears, and oil-filled transformers. It does not contain any metal elements, sand or conductive acidic substances thus ensure a high tensile, folding and tearing strength, as well as high dielectric constant and low power factor. It has good stability to withstand the insulating liquid treatment.

Applications:

It's mainly used as layer insulating paper for LV and HV windings of oil-immersed distribution transformers, or used in conductor windings, motors and switch gears.



Precompressed Insulating Boards

According with IEC60641-3-1.B.3.1B

Description:

Pressboard is made of 100% imported unbleached sulphate wood pulp. It is an indispensable dielectric material of the insulating structure of a transformer or other power transmission equipment.

Advantages:

Because of the strong hydrogen bond of the fiber, it ensures excellent insulation performance, aging resistance and mechanical properties.

Pressboard Technical Data:

Property		Unit	Specification	Standard
Thickness tolerance		%	≤1.6mm	±7.5
			>1.6-5.0	±5.0
Apparent density		g/cm³	1.0-1.25	
Tensile strength	Machine direction	N/mm²	≤1.6mm	≥80
			>1.6-3.0mm	≥85
			>3.0-5.0mm	≥90
	Cross machine direction	N/mm²	≤1.6mm	≥45
			>1.6-3.0mm	≥50
			>3.0-5.0mm	≥55
Elongation	Machine direction	%	≥3.0	
	Cross machine direction		≥4.0	
Shrinkage	Machine direction	%	≤0.7	
	Cross machine direction		≤1.0	
	Thickness direction		≤6.0	
Ash content		%	≤0.7	
Oil absorption rate		%	≤1.6mm	≥13.0
			>1.6-3.0mm	≥11.0
			>3.0-5.0mm	≥9.0
Electric conductivity water extract		MS/m	≤1.6mm	≤5.0
			>1.6-3.0mm	≤6.0
			>3.0-5.0mm	≤8.0
Ph water extract		/	6.0-9.0	
Voltage resistant strength (in oil)		Kv/mm	≤1.6mm	≥40
			>1.6-5.0mm	≥35
Moisture content		%	≤6.0	
Tolerance of cutting size		mm	±10mm	
Skewness tolerance		mm	±10mm	
ply bond		/	When tearing, one or several layers bursting with obviously rough signs&coming-out fibers	

- HD Pressboard G4 according with IEC60641-3-1.B.3.1A available.Please inquire for details

Laminated Pressboard with Phenolic Resin Bonding

According to IEC60763-3-1:2010 LB3.1A.2

Laminated Pressboard Technical Data:

Property		unit	Standard
Thickness Tolerance		%	<5.0
Apparent density		g/cm ³	1.15-1.35
Bending Strength	Machine direction	MPa	≥100
	Cross machine direction	MPa	≥85
Shrinkage	Machine direction	%	≤0.4
	Cross machine direction	%	≤0.6
	Thickness direction	%	≤4.0
compressibility		%	≤3.0
Compressibility recoverable part		%	≥60
Oil absorption rate		%	≥5.0
Electric conductivity water extract		Ms/m	≤10
PH water extract		/	5.0-8.0
Voltage resistant strength (In oil)		Kv/mm	≥8.0
Moisture content		%	≤5.0
Tolerance	Thickness T	mm	±5%(T≤12)
		mm	±4%(T>12)
	Length L	mm	±15
	Width B	mm	±15

Description:

Laminated pressboard is manufactured by hot pressing the high quality pressboard (according with IEC 60641) with modified phenolic resin impregnated adhesive paper into boards of greater thickness from 6.0mm to 150.0mm.

Advantage:

Compared with laminated wood, its mechanical strength, insulation performance has obvious advantages.

Application:

Laminated pressboards are primarily used for platforms and static rings, bars, pressure plates, spacers and more.



High Elongation Crepe Paper

Accordance with IEC60554-3-3

Applications:

Typical applications including magnet wire insulation, layer insulation, shielding in power, distribution and instrument transformers.



Description: Crepe paper is produced from electrical insulating kraft papers weighing 25-180g/㎡, and have an elongation around 60%. The crepe paper in roll form is available in base paper thickness of 0.050, 0.075, & 0.125mm.

The standard width of rolls is 900mm with a tolerance of ± 5 mm and standard inner and outer diameter of roll is 76mm/700mm. Slitting services available on width 25mm, 30mm, 40mm and 70mm with ID 42mm and OD 200mm.

Advantages:

The extensibility of crepe paper makes it perfect insulation for irregular shapes and surfaces, where a proper insulation cannot be reached by flat papers.

Crepe paper technical data:

Property		Unit	Value		
Base paper			electrical kraft paper		
Base paper standard			IEC60554-3		
Base paper thickness and tolerance		um	50um $\pm$ 0.5	75um $\pm$ 4.0	125um $\pm$ 7.0
Creped thickness and tolerance		mm	0.35mm $\pm$ 0.05	0.45mm $\pm$ 0.05	0.80mm $\pm$ 0.10
Crepe quantity		pc/10mm	8-12		
Grammage		g/m ²	$\geq$ 120	$\geq$ 180	$\geq$ 270
Density		g/m ³	0.8-0.9	0.85-0.95	
Tensile strength	MD	kN/m	$\geq$ 3.9	$\geq$ 6.2	$\geq$ 10.5
	CD	kN/m	$\geq$ 1.9	$\geq$ 3.1	$\geq$ 4
Oil contamination		%	non-pollution ($\Delta \tan \delta < 0.001$)		
Elongation	MD	%	$\geq$ 1.6	$\geq$ 2.0	$\geq$ 2.0
	CD	%	$\geq$ 4.0	$\geq$ 5.4	$\geq$ 4.0
Dielectric loss		(tg δ 100℃)%	$\leq$ 0.50		
Water content		%	6-9	6-8	5-8
Ash content		%	$\leq$ 0.28	$\leq$ 0.7	$\leq$ 0.5
PH in extract			6.0-7.5	6.5-8.0	6.0-8.0
Conductivity in extract		MS/m	$\leq$ 8.0		
Air permeability		um/pa.g	$\leq$ 0.225	$\leq$ 0.51	$\leq$ 0.51

Flexible Crepe Paper Tube

Crepe paper tube is made with electrical grade crepe paper. It has proven dielectric performances and is typically used in power and distribution transformers lead insulations. It is one of the most important solid insulation materials used in transformers.

These tubes have extremely good compatibility with liquid dielectrics. The spiral wound of the tubing enhances the tube durability and flexibility during installation, and can be bend under extreme conditions without collapsing.

It is available in a variety sizes from ID from 3mm to 40mm, with length 1000mm or 2000mm. Wall thickness varies from 1mm to 3mm or can be customized for your specific applications.

ID/OD Size

4x6	4x8	4x9	5x7	5x8	6x8	6x9	8x10	8x11	8x12	9x12	10x12	10x16	11x15	12x14
13x16	13x17	14x16	14x17	16x22	17x21	20x24	21x25	22x26	23x29	25x30	25x31	31x37	37x43	

- Tolerance: ID: -0, +0.50 (mm)
OD: -0.5, +1.0
L: ±30



6020/6021 Polyester Film for Electrical Insulation

Transparent or milky white color in accordance with IEC60674-3-2

Index		Unit	Value	
Tensile strength(MD and TD)	25~100μm	Mpa	≥150	
	> 100~190μm		≥140	
	> 190μm		≥110	
Break elongation(MD and TD)	25~50μm	%	≥60	
	> 50~350μm		≥80	
Shrinkage(MD and TD)	25~190μm	%	≤3.0	
	> 190μm		≤2.0	
Dielectric strength		V/μm	—	
Volume resistivity		Ω.m	≥1.0x10 ¹⁴	
Relative dielectric constant(50Hz)			2.9~3.4	
Dielectric dissipation factor(50Hz)			≤5.0x10 ⁻³	
Density		kg/m³	6020	6021
			1390±10	1400±10
Melting point		°C	≥256	
Surface resistivity		Ω	≥1.0x10 ¹³	
Electrolytic corrosion	Ocolar Estimate	Grade	A1	
	Tensile Strength of Metallic wire	%	≤2.0	
Dimensional stability under high temperature		°C	≥200	
The tolerance deviation of diameter and width of roll mm				
Width	Diameter	Tolerance deviation		
		Film width	extend from the reel edge	
8~150	180~250	±0.5	<0.5	
> 150	>250	±1.0	<1.0	



Description:

6020,6021 polyester film is biaxially oriented polyethelene terphthalate(PET) film. 6020 is a transparent film.6021 is a milky white film.It is Class E(120°C) insulation.

Application:

it is suitable for electrical insulation,such as slot insulation,interphase insulation and liner insulation in electric motor,wrapping insulation coils and cables and cables,as well as producing insulating flexible composite material

6051—Polyimide Film

In accordance with IEC60674-3-4



Description:

6051-Polyimide film is synthesized by polymerizing PMDA and ODA in strong polar solvents through the process of forming film and imine treatment at high temperature. It is Class H(180℃) insulating material. This product has excellent physical, chemical, and electrical properties, atomic radiation resistant, solvent resistant, low & high temperature resistant. It performs successfully in the wide range of temperature as low as -45 ℉ (-269℃) and as high as +500 ℉ (+260℃). Because of its unique excellent properties, it is the ideal choice among many applications.

Applications:

This product can be used in flexible printed circuits and as insulating materials of flat electric cables, electromagnetic wires and motors.

Property		Unit	Value					
			25μm	40μm	50μm	75μm	100μm	
Density		g/m³	1.400±0.020					
Tensile strength	MD	Mpa	≥135					
	TD	Mpa	≥115					
Elongation (MD,TD)		%	≥35					
Hot shrinkage 150℃		%	≤1.0					
Hot shrinkage 400℃		%	≤3.0					
Electricity strength	Average	MV/m	≥150		≥130		≥110	
	Single	MV/m	≥100		≥80		≥70	
Surface resistivity(200℃)		Ω	≥1.0x10 ¹³					
Volume resistivity(200℃)		Ω·m	≥1.0x10 ¹⁰					
Relative dielectric constant(48~62hz)		-	3.5±0.4					
dielectric dissipation factor(48~62hz)		-	≤4.0x10 ⁻³					
temperature index		-	≥180					



6520/6521 Paper Combined Polyester Film Flexible Laminates

Description:

Paper combined polyester film is produced by using B-class adhesive to adhere presspaper or fish paper with polyester film. It is available in presspaper with polyester film and fish paper with polyester film.

Advantages:

This product has excellent mechanical strength, electric strength, heat resistance and good impregnation property

Applications:

It is used as slot, phase, turn to turn and liner insulation in Class E-B motor and electrical appliances

6520/6521 Flexible Laminates Technical Data

Thickness		mm	0.12	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.60
Tolerance		%	15	15	15	10	10	10	10	10	10	10
Nominal grammage		g/m ²	150±18	180±21	240±28	300±36	370±44	430±55	490±58	550±66	610±73	730±87
Pet film thickness		μm	36	36	36	36	36	36	36	36	36	36
Tensile strength	MD≧	N/10 mm	100	135	180	200	220	270	300	360	450	540
	TD≧	N/10 mm	75	100	120	130	140	180	200	240	300	360
BDV		KV≧	6	6	6	6	6	6	6	6	6	6
Adhesive property 155℃±2℃ 10min			No delamination,blister,or adhesive flow					Temperature Index (T.I)			130℃	

Test and stock

- 1 Standard: GB/T5591.3.1-2008 and IEC60626-3 and IEC60243-1.
- 2 Storage: ≤40℃, dry, clean in warehouse. Avoid fire, heat and sunlight.
- 3 Storage life: 12 months. Still effective if qualified in retest after 12 months.

MM/MMM Composite Polyester Film

In accordance with GB/T5591.3-2008
and IEC60626-3

MM/MMM Technical Data

	Combination	10-10	14-14-14	14-14-14-14
Nominal thickness	mm	0.50	1.1	1.4
Tolerance	±%	10	10	10
Nominal grammage	g/m ²	700±70	1480±103	1900±133
Pet film thickness	μm	250	350	350
Melting point	°C	256	256	256
BDV (Not bended)	KV≧	25	30	35
Adhesive property 180℃±2℃, 10min No delamination, blister, or adhesive flow			Temperature Index (T.I) 155℃	

Test and stock

- 1 Standard: GB/T5591.3.1-2008 and IEC60626-3.
- 2 Storage: Room temperature, dry, clean in warehouse, Avoid fire, heat and sunlight.
- 3 Storage life: 12 months. Still effective if qualified in retest after 12 months.

Description:

MM/MMM is a two-layer or three-layer composite polyester film (Mylar), produced by using adhesive to adhere 2 or 3 layer polyester film (Mylar) together.

Advantages:

It has perfect mechanical property, electric property and dimensional stability.

Applications:

It is used as insulating tube of high-voltage and low-voltage coils on cast-resin transformers as well as used as insulating tube of high-voltage and low-voltage coils on cast-resin transformers as well as used for slot, liner, phase, and turn insulation of motors and other electrical appliances.



6632 B-DM/6633 F-DM Non-saturated Flexible Laminates

Polyester film with Non-woven fabric

In accordance with GB/T5591.3-2008 and IEC626-3

DM70 Non-saturated Flexible Laminates Technical Data

	Combination	2-1	2-2	2-4	2-5	2-6	2-7.5	2-10	2-12	2-14
Nominal thickness	mm	0.08	0.10	0.16	0.19	0.20	0.24	0.30	0.35	0.41
Tolerance	±%	15	15	15	15	15	15	20	20	20
Nominal grammage	g/m ²	80±9	110±13	180±20	210±25	250±30	300±36	390±46	465±55	520±62
Pet film thickness	μm	25	50	100	125	150	190	250	300	350
Tensile strength (Not bended)	MD ≥	N/10 mm	50	80	140	160	180	210	300	360
	TD ≥	N/10 mm	40	70	130	150	170	190	270	330
BDV (Not Bended)	KV ≥	4	6	8	10	12	15	18	20	22
Adhesive property 155℃±2℃ (B-DM), 10min 180℃±2℃ (F-DM), 10min							No delamination,blister,or adhesive flow			
							Temperature index (T.I) :130℃ (B-DM) 155℃ (F-DM)			

Test and stock

1 Standard: GB/T5591.3 -2008 and IEC626-3.

2 Storage: ≤40℃,dry, clean in warehouse.Avoid fire,heat and sunlight.

3 Storage life: 12 months.Still effective if qualified in retest after 12 months.

Description:

DM Non-saturation is also called DM70; it is a two-layer flexible composite material, produced by using B-class or F-class adhesive to adhere the high-melt-point polyester film(Mylar)with non-woven polyester fabric(Dacron).

Advantages:

It has excellent electrical, mechanical, and impregnating properties.

Applications:

DM Non-saturated material is suitable for slot,liner,phase, and turn-to-turn insulation in electrical motors.It can be used as interlayer insulation in transformers and other electrical appliances.





Advantages:

It has excellent electrical, mechanical, impregnating and heat-resisting properties.

6630 B-DMD/6641 F-DMD Flexible Laminates

Polyester film with Non-woven fabric

In accordance with GB/T5591.3-2008 and IEC626-3

Description:

DMD is a three-layer flexible composite material, produced by using B class or F-class adhesive to adhere the two faces of high-melt-point polyester film (Mylar) with hot rolling non-woven polyester fabric (Dacron)

Applications:

DMD is suitable for slot, liner, phase, and turn-to-turn insulation in electrical motors. It can be used as interlayer insulation in transformers and other electrical appliances.

DMD Flexible Laminate Technical Data

	Combination	2-1-2	2-2-2	2-3-2	2-4-2	2-5-2	2-7.5-2	2-10-2	2-14-2	3-3-3	3-4-3	3-5-3	3-7.5-3	3-10-3	3-14-3
Nominal thickness	mm	0.13	0.15	0.18	0.20	0.23	0.30	0.35	0.45	0.23	0.25	0.28	0.34	0.40	0.50
Tolerance	%	15	15	15	15	15	15	15	10	20	20	20	20	20	20
Nominal grammage	g/m ²	115±13	145±17	190±22	220±26	260±31	350±42	425±51	560±67	230±27	265±31	300±36	390±46	480±57	620±74
Pet film thickness	μm	25	50	75	100	125	190	250	350	75	100	125	190	250	350
Tensile strength (Not bended)	MD ≥ N/10 mm	70	110	140	160	200	300	350	400	140	180	220	270	300	340
	TD ≥ N/10 mm	70	90	105	120	150	200	300	350	105	120	150	200	300	300
BDV (Not bended)	KV ≥	5	7	8	10	11	16	19	23	8	10	11	16	19	23
Adhesive property	155℃±2℃ (B-DM), 10min 180℃±2℃ (F-DM), 10min No delamination, blister, or adhesive flow										Temperature index (T.I) : 130℃ (B-DMD) 155℃ (F-DMD)				

- H-DMD(T.I.180℃) Available on request

Test and stock

- 1 Standard: GB/T5591.3.1-2008 and IEC626-2.
- 2 Storage: ≤40℃, dry, clean in warehouse. Avoid fire, heat and sunlight.
- 3 Storage life: 12 months. Still effective if qualified in retest after 12 months.

DMD100 Saturated Flexible Laminates

Polyester film with Non-woven fabric In accordance with GB/T5591.3-2008 and IEC626-3

Description:

The saturated DMD 100 made of Non-saturated class F DMD which the surface dipping in the high-class heat-resistant resin.

Advantages:

It has excellent, mechanical, soft and tear resistant properties, easy to fit in with the Automatic assembly line process.

Applications:

DMD 100 is the perfect insulation material of F-class motors, it's suitable for slot, liner, phase, and turn-to-turn insulation in low voltage electrical motors. It also can be used as interlayer insulation in transformers and other electrical appliances.

Property		Unit	Value							
Thickness		mm	0.15	0.20	0.26	0.31	0.35	0.40	0.45	0.50
Tolerance		mm	±0.02	±0.03	±0.03	±0.035	±0.035	0.04	0.045	0.05
Nominal grammage		g/m ²	140±20	220±33	300±52	310±46	425±63	500±75	560±84	610±92
Resin content		g/m ²	≤12							
Tensile Strength	MD	N/10 mm	≥80	≥140	≥190	≥270	≥320	340	370	390
	TD	N/10 mm	≥80	≥120	≥170	≥200	≥300	320	350	370
BDV	Room temperature	kv	≥6	≥9	≥12	≥15	≥18	20	22	24
Adhesive property in room temperature			No delamination							
Adhesive property in high temperature 180±2℃			No delamination, blister, or adhesive flow					Temperature index (t.l) 155℃		

Test and stock

- 1 Standard: GB/T5591.3-2008 and IEC626-3.
- 2 Storage: ≤40℃, dry, clean in warehouse. Avoid fire, heat and sunlight.
- 3 Storage life: 6 months. Still effective if qualified in retest after 6 months.

In accordance with GB/T5591.3-2008
and IEC60626-3

Epoxy-resin prepreg DMD Flexible Laminates

Description:

Epoxy-resin prepreg DMD is a three-layer flexible material, produced by impregnating F-class DMD combined material into heat-resistant epoxy resin, and then cured to B-stage, DMD-P is for short.

Advantages:

It has comparatively good heat-resistance, sound dielectrically property and mechanical property, It is compatible with most gels, resins and varnishes. When cured to C-stage in moderate temperature, it will firmly adhere on the surfaces of copper or aluminium metals, without producing any small molecular volatiles.

Applications:

The DMD-P is suitable for layer insulation of copper foil or aluminium foil on low-tension coils of dry-type transformers as well as suitable for slot and turn-to-turn insulation of B-class and F-class motors and electrical appliances.

DMD-P Technical Data

Property	Unit	Value					
Thickness	mm	0.15	0.18	0.20	0.25	0.30	0.40
Tolerance	mm	±0.02	±0.02	±0.03	±0.03	±0.03	±0.04
Tensile strength MD, not bended	N/10 mm	≥70	≥70	≥80	≥80	≥100	≥100
Soluble resin content	g/m ²	≥45					
Volatile content	%	≤1.5					
BDV	KV	≥7.0	≥7.0	≥8.0	≥8.0	≥10	≥10
Tensile shear strength	Mpa	≥3.0					
Temperature index	—	≥155°C					

Curing time: 130°C 5h; 140°C 4h; 150°C 3h

Test and stock

- 1 Standard: GB/T5591.3-2008 and IEC626-3.
- 2 Storage: ≤30°C, dry, clean in warehouse. Avoid fire, heat and sunlight.
- 3 Storage life: 6 months. Still effective if qualified in retest after 6 months.



DuPont™ Nomex® 410

Description:

Nomex 410 is a family of insulation papers that offer high inherent dielectric strength, mechanical toughness, flexibility and resilience. Nomex 410, the original form of Nomex paper, is widely used in a majority of electrical equipment applications. Available in 11 thicknesses ranging from 0.05 mm to 0.76 mm (2 mil to 30 mil), Nomex 410 is used in almost every known electrical sheet insulation application.

T410 Technical Data

Nominal thickness		mil	2	3	4	5	7	10	12	15	20	24	29	30
		mm	0.05	0.08	0.10	0.13	0.18	0.25	0.30	0.38	0.51	0.61	0.73	0.76
Typical thickness ¹		mil	2.2	3.1	4.2	5.2	7.2	10.2	12.2	15.3	20.4	24.2	28.7	30.6
		mm	0.06	0.08	0.11	0.13	0.18	0.26	0.31	0.39	0.52	0.61	0.73	0.78
Basis weight		g/m ²	41	64	88	115	174	249	310	395	549	692	846	839
Density		g/cc	0.72	0.81	0.83	0.88	0.95	0.96	1.00	1.02	1.06	1.13	1.16	1.08
Tensile strength	MD	N/cm	43	68	93	141	227	296	380	462	610	728	832	816
	XD	N/cm	19	34	49	71	116	161	208	252	374	500	623	592
Elongation	MD	%	9	12	12	16	20	22	23	20	21	18	16	18
	XD	%	7	9	9	13	15	18	18	16	17	14	13	14
Elmendorf tear	MD	N	0.7	1.2	1.9	2.3	3.7	5.6	7.1	9.0	14.3	N/A	N/A	N/A
	XD	N	1.5	2.4	4.4	4.8	7.2	10.6	13.7	16.7	24.8	N/A	N/A	N/A
Initial tear strength ²	MD	N	11	16	24	31	48	69	88	110	158	191	233	233
	XD	N	6	9	14	17	27	42	55	71	114	153	193	193
Shrinkage at 300 °C	MD	%	1.8	1.1	0.8	0.7	0.6	0.3	0.3	0.2	0.0	0.0	0.0	0.0
	XD	%	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0
Dielectric strength AC rapid rise		V/mil	460	565	527	715	865	845	870	850	810	810	760	680
		kV/mm	18	22	21	28	34	33	34	33	32	32	30	27

¹ Method D:17 N/cm²

² Data presented for Initial Tear Strength is listed in the direction of the sample per ASTM D-1004.

The tear is 90 degrees to sample direction — hence for papers with a higher reported MD ITR, the paper will be tougher to tear in the cross direction.

MD = machine direction of paper

XD = cross direction of paper

NM Flexible Laminates



Polyester Film with DuPont Nomex®

In accordance with GB/T5591.3-2008 and IEC626-3

NM 50μm Nomex (T464)Flexible Laminates Technical Data

	Combination	2-1	2-2	2-3	2-4	2-5	2-7.5	2-10	2-14
Thickness	mm	0.08	0.11	0.13	0.16	0.18	0.25	0.31	0.41
Tolerance	%	15	15	15	15	15	15	10	10
Nominal grammage	g/m ²	95±12	125±12	160±12	190±12	230±12	320±12	390±12	550±12
Pet film thickness	μm	25	50	75	100	125	190	250	350
Tensile Strength	MD ≥	N/10 mm	100	130	140	160	180	230	300
	TD ≥	N/10 mm	70	80	90	100	120	200	280
BDV	KV ≥	5	7	9	10	12	15	18	21

NM 80μm Nomex (T416)Flexible Laminates Technical Data

	Combination	3-1	3-2	3-3	3-4	3-5	3-7.5	3-10	3-14
Thickness	mm	0.11	0.14	0.16	0.19	0.22	0.28	0.34	0.44
Tolerance	%	15	15	15	15	15	15	10	10
Nominal grammage	g/m ²	120±12	155±12	190±12	220±12	255±12	340±12	420±12	565±12
Pet film thickness	μm	25	50	75	100	125	190	250	350
Tensile Strength	MD ≥	N/10 mm	100	130	140	160	180	230	300
	TD ≥	N/10 mm	70	80	90	100	120	200	280
BDV	KV ≥	6	8	10	11	13	16	18	21

Adhesive property in high temperature 180±2℃ No delamination,blister,or adhesive flow Temperature Index (T.I) 155℃

Description:

The NM Flexible Laminate is a two-layer flexible composite material, produced by using F-class adhesive to adhere the polyester film(Mylar)with hot rolling Dupont Nomex®(N).

Advantages:

It has excellent electrical, mechanical,and superior heat-resistant properties.

Applications:

The NM Composite material is suitable for slot liner,slot closure, phase and turn-to-turn insulation in F-class electrical motors.It can be used as interlayer insulation in transformers and other electrical appliances.





6640 NMN Flexible Laminates

Polyester Film with DuPont Nomex[®]

In accordance with GB/T5591.3-2008 and IEC626-3

Description:

The NMN Flexible Laminate is a three-layer flexible composite material, produced by using F-class adhesive to adhere the polyester film (Mylar) with hot rolling Dupont Nomex[®](N) on both sides.

Advantages:

It has excellent heat-resistant, dielectrical property, and superior mechanical properties.

Applications:

The NMN is suitable for slot, liner, phase and turn-to-turn insulation in F-class electrical motors. It can be used as interlayer insulation in transformers and other electrical appliances.

6640 NMN 40μm Nomex(464) Flexible Laminates Technical Data

	Combination	1.5/2/1.5	1.5/3/1.5	1.5/4/1.5	1.5/5/1.5	1.5/6/1.5	1.5/7.5/1.5	1.5/10/1.5
Nominal thickness	mm	0.13	0.16	0.18	0.21	0.23	0.28	0.34
Pet film thickness	μm	50	75	100	125	150	188	250
Nominal grammage	g/m ²	160±18	200±24	220±27	260±32	290±37	350±43	435±54
Tensile strength (Not bended)	MD≧	N/10 mm	100	130	160	180	200	250
	TD≧	N/10 mm	80	120	150	170	190	240
BDV (Not bended)	KV≧	8	10	12	13	14	18	19
Adhesive property in high temperature 180±2℃ No delamination,blister,or adhesive flow							Temperature Index (T.I)	155℃

6640 NMN 50 μm Nomex(464)Flexible Laminates Technical Data

		Combination	2-1-2	2-1.5-2	2-2-2	2-3-2	2-4-2	2-5-2	2-7.5-2	2-10-2	2-14-2
Nominal thickness		mm	0.13	0.15	0.17	0.19	0.22	0.24	0.31	0.37	0.47
Tolerance		%	15	15	15	15	15	15	15	10	10
Nominal grammage		g/m²	140±16	150±18	170±20	200±24	230±27	270±32	360±43	450±54	590±70
Pet film thickness		µm	25	36	50	75	100	125	190	250	350
Tensile strength (Not bended)	MD≧	N/10 mm	100	150	160	170	190	220	270	330	400
	TD≧	N/10 mm	80	90	90	105	120	150	300	300	350
BDV (Not Bended)		KV≧	6	7	8	11	12	14	19	23	28
Adhesive property in high temperature 180±2℃			No delamination,blister,or adhesive flow					Temperature Index (T.I)			155℃

- Option: Adhesive property in 205℃ by 8 hours and T.I 180℃ available on request.

6640 NMN 80 μm Nomex(464)Flexible Laminates Technical Data

		Combination	3-1-3	3-1.5-3	3-2-3	3-3-3	3-4-3	3-5-3	3-7.5-3	3-10-3	3-12-3	3-14-3	
Nominal thickness		mm	0.19	0.20	0.23	0.25	0.28	0.30	0.36	0.43	0.48	0.53	
Tolerance		%	15	15	15	15	15	15	15	10	10	10	
Nominal grammage		g/m²	185±22	200±24	220±26	255±30	290±34	325±39	420±50	500±60	570±68	640±76	
Pet film thickness		µm	25	36	50	75	100	125	190	250	300	350	
Tensile strength (Not bended)	MD≧	N/10 mm	160	160	170	190	220	270	320	380	430	450	
	TD≧	N/10 mm	100	120	140	180	190	200	250	300	300	300	
BDV (Not bended)		KV≧	7	8	9	12	13	15	20	23	25	30	
Adhesive property in High Temperature 180±2℃									No delamination,blister,or adhesive flow		Temperature Index (T.I)		155℃

- NMN 130μm calendered Nomex(T416) and NMN 130μm Non-calendered Nomex(T410) available on request.

Test and stock

- 1 Standard: GB/T5591.3-2008 and IEC626-3.
- 2 Storage: ≤40℃,dry, clean in warehouse. Avoid fire,heat and sunlight.
- 3 Storage life: 12 months. Still effective if qualified in retest after 12 months.



Polyimide film with
Dupont Nomex®
In accordance with
GB/T5591.3-2008 and
IEC626-3

NH Flexible Laminates

Description:

The 6651 NH flexible laminate is a two-layer flexible composite material, produced by using H-class or C-class adhesive to adhere the polyimide film (Kapton) with hot rolling Dupont Nomex (N).

Advantages:

It has excellent electrical, mechanical, and superior heat-resistant properties.

Applications:

The 6651 NK/NH flexible laminate is suitable for slot liner, slot closure, phase and turn-to-turn insulation in H-class and C-class electrical motors. It can be used as interlayer insulation in high voltage transformers and other electrical appliances.

6651 NH Flexible Laminates Technical Data

	Combination	2-1	2-2	2-4	2-5	2-6	2-7.5	2-10	2-12	2-14
Nominal thickness	mm	0.08	0.11	0.16	0.19	0.2	0.24	0.30	0.35	0.41
Tolerance	%	15	15	15	15	15	15	20	20	20
Nominal grammage	g/m ²	92±11	125±15	194±23	210±25	265±31	314±37	403±48	479±57	535±64
Pet film thickness	μm	25	50	100	125	150	190	250	300	350
Tensile strength (Not Bended)	MD ≧	N/10 mm	60	90	160	180	200	230	320	390
	TD ≧	N/10 mm	40	70	140	170	190	200	290	340
BDV (Not Bended)	KV ≧	6	7	9	11	13	16	19	21	24
Adhesive property 200℃±2℃, 10min		No delamination, blister, or adhesive flow					Temperature Index (T.I) 180℃			

Test and stock

- 1 Standard: GB/T5591.3-2008 and IEC626-3.
- 2 Storage: ≤40℃, dry, clean in warehouse. Avoid fire, heat and sunlight.
- 3 Storage life: 12 months. Still effective if qualified in retest after 12 months.

6650 NKN/NHN Flexible Laminates

Polyimide Film with DuPont Nomex®
In accordance with GB/T5591.3-2008 and IEC626-3

Description:

The NKN/NHN Flexible Laminate is a three-layer flexible composite material, produced by using C -class adhesive to adhere the polyimide film (Kapton) with hot rolling Dupont Nomex® (N) on both sides.

Advantages:

The NKN/NHN is one of the most exclusive electric insulation materials at present. It has excellent heat-resistant, dielectrical property, and superior mechanical properties.

Applications:

The NKN/NHN is suitable for slot, liner, phase, and turn-to-turn insulation in H-class and C-class electrical motors. It can be used as interlayer insulation in high voltage transformers and other electrical appliances.

6650 NKN/NHN Flexible Laminate Technical Data

		Combination	2-1-2	2-2-2	3-1-3	3-2-3	5-1-5	5-2-5	5-3-5
Nominal thickness		mm	0.13	0.17	0.20	0.22	0.30	0.32	0.35
Tolerance		±%	15	15	15	15	15	15	15
Nominal grammage		g/m²	135±16	170±20	190±22	220±26	300±36	330±39	375±45
Pet film thickness		µm	25	50	25	50	25	50	75
Tensile strength (Not bended)	MD≧	N/10 mm	140	160	160	200	270	300	330
	TD≧	N/10 mm	80	90	100	180	150	260	280
BDV (Not bended)		KV≧	6	9	7	9	7	9	12
Adhesive property 200℃±2℃ , 10min			No delamination, blister, or adhesive flow				Temperature index (T.I)		180℃



Test and stock

- 1 Standard: GB/T5591.3-2008 and IEC626-3.
- 2 Storage: ≤40℃, dry, clean in warehouse. Avoid fire, heat and sunlight.
- 3 Storage life: 12 months. Still effective if qualified in retest after 12 months.



ARAMID PAPER

Description:

Aramid Fiber is of the full-meta structure with the formal chemical name of polyisophthaloil metaphenylene diamine, which shall fall within the scope of the aromatic polyamide. Heat-resistant Aramid Fiber's chemical structure is extremely stable. Its high resistance toward the weak acid, weak alkali and the majority of organics such as the chemicals including ketone and alcohol make it widely use in in broad application. Aramid paper passes UL94 Flame retardant certification. It is available from 1.5~30μm to meet the requirements of different applications.

Advantages:

It has superior electrical insulation properties and mechanical properties, puncture resistance, tear resistance, wear resistance, lacquer resistance, moisture resistance, thermal conductivity, and excellent thermal stability.

Item	unit	Test method	Typical value						
			2mil	3mil	5mil	7mil	10mil	12mil	15mil
Typical thickness	mm	ASTM D374	0.06	0.08	0.13	0.18	0.25	0.30	0.38
Nominal grammage	g/m ²	ASTM D646	43	64	116	175	250	306	400
Density	g/cc	GB/T4513-2002	0.72	0.84	0.85	0.95	1	1.02	1.03
Tensile Strength	MD ≧	N/cm	ASTM D828	39	55	100	170	210	390
	CD ≧			13	23	40	60	90	120
Elongation	MD ≧	%	ASTM D828	5	7	10	7	7	7.5
	CD ≧			4	5	7	5	4	5.5
Initial tearing Strength	MD ≧	N	ASTM D1004	9	14	25	30	50	66
	TD ≧			4	6	12	13	25	37
Dielectric strength	kv/mm	ASTM D149	15	15	15	15	20	23	24

AM Flexible Laminates

Polyester film with Aramid paper

In accordance with GB/T5591.3-2008 and IEC626-3

Description:

The AM Flexible Laminate is a two-layer flexible composite material, produced by using F-class adhesive to adhere the polyester film (Mylar) with hot rolling Aramid paper(A).

Advantages:

It has excellent electrical, mechanical, and superior heat-resistant properties. The performance is totally according with the standard of NM (IEC60626-3), and it has the very similar property to NM. It's a perfect substitute of NM.

Applications:

The AM composite material is suitable for slot, liner, phase, and turn-to-turn insulation in F-class electrical motors. It can be used as interlayer insulation in transformers and other electrical appliances.

AM Aramid paper Flexible Laminate Technical Data

	Combination	2-1	2-2	2-3	2-4	2-5	2-7.5	2-10	2-14
Nominal thickness	mm	0.08	0.11	0.13	0.16	0.18	0.25	0.31	0.41
Tolerance	±%	15	15	15	15	15	15	10	10
Nominal grammage	g/m ²	95±12	125±12	160±12	190±12	230±12	320±12	390±12	550±12
Pet film thickness	μm	25	50	75	100	125	190	250	350
Tensile strength (Not bended)	MD ≧	N/10 mm	100	130	160	180	230	300	340
	TD ≧	N/10 mm	70	80	90	100	120	200	320
BDV (Not bended)	KV ≧	5	7	9	10	12	15	18	21
Adhesive property in high temperature 180±2℃ No delamination, blister, or adhesive flow							Temperature index (T.I) 155℃		



Test and stock

- 1 Standard: GB/T5591.3-2008 and IEC626-3.
- 2 Storage: ≤40℃, dry, clean in warehouse. Avoid fire, heat and sunlight.
- 3 Storage life: 12 months. Still effective if qualified in retest after 12 months.

AMA Flexible Laminates

Polyester film with Aramid paper

In accordance with GB/T5591.3-2008
and IEC626-3

Description:

The AMA Flexible Laminate is a three-layer flexible composite material, produced by using F-class adhesive to adhere the polyester film (Mylar) with hot rolling Aramid paper (A) on both sides.

Advantages:

It has excellent electrical, mechanical, and superior heat-resistant properties. The performance is totally according with the standard of NMN (IEC60626), and it has the very similar property with NMN, it's a perfect substitute of NMN.

Applications:

The AMA is suitable for slot, liner, phase, and turn-to-turn insulation in F-class electrical motors. It can be used as interlayer insulation in transformers and other electrical appliances.

AMA Flexible Laminate Technical Data

	Combination	2-1-2	2-1.5-2	2-2-2	2-3-2	2-4-2	2-5-2	2-7.5-2	2-10-2	2-14-2
Nominal Thickness	mm	0.13	0.15	0.17	0.19	0.22	0.24	0.31	0.37	0.47
Tolerance	±%	15	15	15	15	15	15	15	10	10
Nominal Grammage	g/m ²	140±16	150±18	170±20	200±24	230±27	270±32	360±43	450±54	590±70
PET Film Thickness	μm	25	36	50	75	100	125	190	250	350
Tensile Strength (Not Bended)	MD ≥	N/10 mm	100	150	160	170	190	220	270	330
	TD ≥	N/10 mm	80	90	90	105	120	150	300	350
BDV (Not Bended)	KV ≥	6	7	8	11	12	14	19	23	28
Adhesive property in High Temperature 180±2℃ No delamination, blister, or adhesive flow							Temperature Index (T.I)		155℃	

Test and stock

- 1 Standard: GB/T5591.3-2008 and IEC626-3.
- 2 Storage: ≤40℃, dry, clean in warehouse. Avoid fire, heat and sunlight.
- 3 Storage life: 12 months. Still effective if qualified in retest after 12 months.

AK/AH Flexible Laminates

Polyimide Film with Aramid paper Fabric
In accordance with GB/T5591.3-2008 and IEC626-3

AK/AH Flexible Laminate Technical Data

	Combination	2-1	2-2	2-4	2-5	2-6	2-7.5	2-10	2-12	2-14
Nominal Thickness	mm	0.08	0.11	0.16	0.19	0.20	0.24	0.30	0.35	0.41
Tolerance	±%	15	15	15	15	15	15	20	20	20
Nominal Grammage	g/m ²	92±11	125±15	194±23	210±25	265±31	314±37	403±48	479±57	535±64
PET Film Thickness	μm	25	50	100	125	150	190	250	300	350
Tensile Strength (Not Bended)	MD≧	N/10 mm	60	90	160	180	200	230	320	390
	TD≧	N/10 mm	40	70	140	170	190	200	290	340
BDV (Not Bended)	KV≧	6	7	9	11	13	16	19	21	24
Adhesive property 200℃±2℃, 10min No delamination,blister,or adhesive flow							Temperature Index (T.I) 180℃			

Test and stock

- 1 Standard: GB/T5591.3-2008 and IEC626-3.
- 2 Storage: ≤40℃,dry,clean in warehouse.Avoid fire,heat and sunlight.
- 3 Storage life: 12 months.Still effective if qualified in retest after 12 months.

Description:

The AK/AH Flexible Laminate is a two-layer flexible composite material,produced by using H-class or C-class adhesive to adhere the polyimide film (kapton) with hot rolling Aramid paper(A).

Advantages:

It has excellent electrical,mechanical,and superior heat-resistant properties. The performance is totally according with the standard of NH (IEC60626-3),and it has the very similar property to NK/NH.It's a perfect substitute of NK/NH.

Applications:

The AK/AH composite material is suitable for slot,liner,phase,and turn-to-turn insulation in H-class or C-class electrical motors.It can be used as interlayer insulation in high voltage transformers and other electrical appliances.



AKA/AHA Flexible Laminates

Polyimide film with Aramid paper
In accordance with GB/T5591.3-2008
and IEC626-3



Description:

The AKA/AHA Flexible Laminate is a three-layer flexible composite material, produced by using H-class or C-class adhesive to adhere the polyimide film (Kapton) with hot rolling Aramid paper (A) on both sides.

Advantages:

The AKA/AHA is one of the most exclusive electric insulation materials at present. It has excellent heat-resistant, dielectrical property, and superior mechanical properties. The performance is totally according with the standard of NHN (IEC60626-3), and it has the very similar property with NHN, it's a perfect substitute of NHN.

Applications:

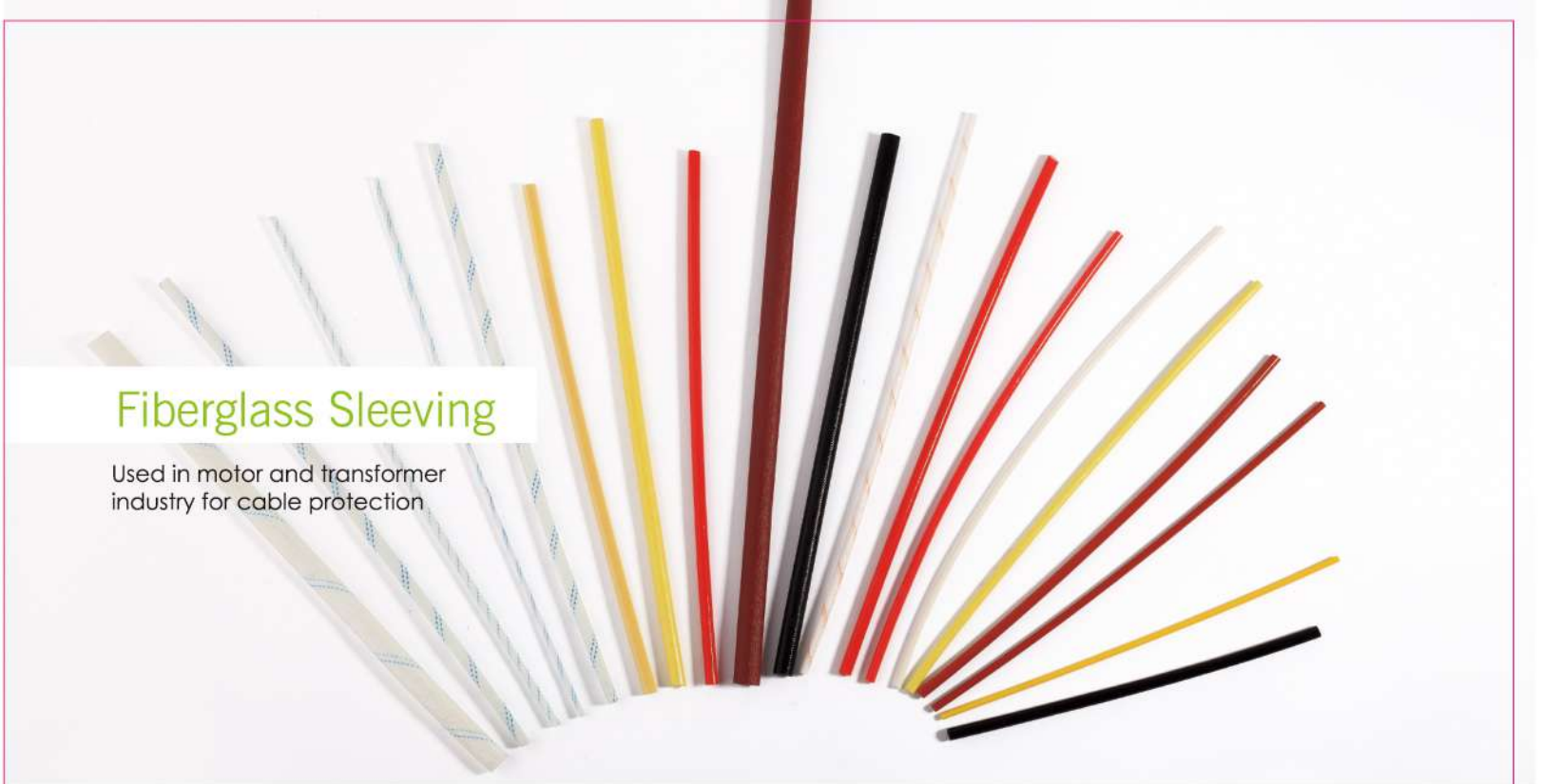
The AKA/AHA composite material is suitable for slot, liner, phase, and turn-to-turn insulation in H-class or C-class electrical motors. It can be used as interlayer insulation in high voltage transformers and other electrical appliances.

AKA/AHA Flexible Laminate Technical Data

		Combination	2-1-2	2-2-2	3-1-3	3-2-3	5-1-5	5-2-5	5-3-5
Nominal thickness		mm	0.13	0.17	0.20	0.22	0.30	0.32	0.35
Tolerance		±%	15	15	15	15	15	15	15
Nominal grammage		g/m ²	135±16	170±20	190±22	220±26	300±36	330±39	375±45
Pet film thickness		μm	25	50	25	50	25	50	75
Tensile strength (Not bended)	MD ≥	N/10 mm	140	160	160	200	270	300	330
	TD ≥	N/10 mm	80	90	100	180	150	260	280
BDV (Not bended)		KV ≥	7	9	7	9	7	9	12
Adhesive property 200℃±2℃, 10min		—	No delamination, blister, or adhesive flow			Temperature index (T.I)		180℃	

Test and stock

- 1 Standard: GB/T5591.3-2008 and IEC626-3.
- 2 Storage: ≤40℃, dry, clean in warehouse. Avoid fire, heat and sunlight.
- 3 Storage life: 12 months. Still effective if qualified in retest after 12 months.



Fiberglass Sleeving

Used in motor and transformer industry for cable protection

2760 H Class Fiberglass Sleeving Coated with Silicone Rubber

Glass textile sleeving coated with silicone rubber is manufactured with non-alkali fiberglass braided sleeving and coated it with silicone resin and then vulcanized it to form insulating sleeving. It possesses good qualities of dielectric, heat-resistance, excellent elasticity and cold-resistance. It can be used for wiring insulation and mechanical protection for electric machinery and electrical appliances.

2753 H Class Self-extinguishable Glass Textile Sleeving with Silicone Resin Based Coating

Self-extinguishable glass textile sleeving with silicone resin based coating is manufactured with non-alkali fiberglass braided sleeving and coated it with a special kind of silicone resin and then heated it to form self-extinguishable glass textile sleeving. It possesses good qualities of dielectric, self-extinguishment, excellent softness and elasticity. It is widely used as wiring insulation for H grade electrical machinery, domestic appliances, TV sets, and electric apparatus, and also as a protection of collected strands of wire.

2740 F Class Glass Textile Sleeving With Acrylic Resin Based Coating

Glass textile sleeving with acrylic resin based coating is manufactured with non-alkali fiberglass braided sleeving and coated it with acrylic resin and then heated it to form F grade insulating sleeving. It has a breakdown voltage of over 4kv under normal condition.

2741 F Class Glass Textile Sleeving With Polyurethane Based Coating

Glass textile sleeving with polyurethane based coating is manufactured with non-alkali fiberglass braided sleeving and coated it with acrylic latex and polyurethane and then heated it to form F grade insulating sleeving. It possesses reliable heat resistance, good qualities of dielectric, excellent softness and elasticity. It can be used for wiring insulation and mechanic protection for F grade electrical machinery electric appliances.

2715 B Class Glass Textile Sleeving with Polyvinyl Chloride Resin Based Coating (PVC)

Glass textile sleeving with PVC Based Coating is manufactured with non-alkali fiberglass braided sleeving and coated it with a layer of polyvinyl chloride resin and then heated it to form insulating sleeving.

- Please inquire for details and TDS.



Insulation Banding Tapes

Hecheng offers different insulation banding tapes , such as cotton tape, heat shrinkable tape, non-alkali fiberglass tape. This material is mainly used for the binding (packing) of coils, such as the outside of the coil, the head, the transposition, and other parts of the electromechanical products such as transformers, and motors during the manufacturing process, as well as in the body.

1. **Electrical Cotton tape** is made of combed cotton yarn and woven through a high-speed machine. It is soft textured but with good toughness. It is mainly used for insulation binding of transformers, motors and other electrical appliances. Width available from 15mm-30mm. Both herringbone type and tabby type are in offer.

2. **Heat shrinkable tape** is a kind of insulation binding material made of special high shrinkage polyester fiber woven. It has a certain degree of chemical resistance and insulation property, very high shrinkage and hot tensile strength. This material is easy to use and can be used instead of cotton tape. The advantage is that the coils are more tied and fastened; no dipping is required; there is no slack, shedding phenomenon, and no contamination of the transformer oil.

3. **Non-Alkali Fiberglass tape** is made of glass fiber and has the advantages of good insulation performance, high temperature resistance, etc. It is an insulating and binding material essential for motors or electrical appliances. It makes the motor obtain superior insulation performance, prolong its service life, and reduce its volume and weight. It can also be used for central air-conditioning heating pipe and other flame-retardant high temperature equipment. Wide fiberglass tapes are generally used for large electrical equipment such as cables or large transformers.

- Please inquire for details and TDS.

GPO3 Unsaturated Polyester Fiberglass Mat Laminated Sheet

Accordance with IEC60893-3-5

Description:

GPO3 fiberglass reinforced polyester sheet, known as UPGM203 is manufactured using polyester resin and fiberglass mat by hot pressed processing.

With good electrical properties under high humidity and good mechanical properties under moderate temperatures, it has been used in electrical area and machining fields widely. It performs well in electrical applications that require high arc and track resistance, as well as flame resistance, physical strength and high heat resistance.

Property	Unit	Methode	Standard value
Flexural strength perpendicular to laminations A: Under normal conditions E-1/130: Under 130±5°C	MPa	ISO 178	≥130 ≥65
Impact strength parallel to lamination(charpy)	kJ/m ²	ISO 179	≥40
Dielectric strength perpendicular to laminations (in oil 90±2°C),2.0mm in thickness	KV/mm	IEC 60243	≥10.5
Breakdown voltage parallel to laminations(in oil 90±2°C)	KV	IEC 60243	≥35
Water absorption,3mm in thickness	mg	ISO 62	≤55
Insulation resistance impregnated in water,D-24/23	Ω	IEC 60167	≥5.0X10 ⁸
Tracking index resistance	V	IEC 60112	≥500
Tracking and erosion resistance	IB2.5	IEC 60112	IB 2.5
Temperature index	°C	IEC 60216	130
Flammability	Class	IEC 60695	FV0





Glass Pultrusion Stays

Description:

Glass pultrusion stays, including dog bones, vertical bars, cylindrical batten, coat tail batten, stay plate etc., are a type of profile produced by a pultrusion process using an alkali-free glass fiber-impregnated thermosetting resin. It has high mechanical strength, excellent electrical properties, and flame retardancy, orrosion resistance, arc resistance and other advantages. It is mainly used for the ventilation cooling between dry transformers and the use of reactors and wave traps.

Property		Unit	Index
Density		g/cm ³	1.8-2.0
Absorption rate		%	≤0.5
Barcol hardness			≥50
Barcol hardness Vertical direction	23℃±2℃	MPa	≥150
	130℃±2℃	MPa	≥70
Compression Strength	Fiber direction	MPa	≥250
	Vertical direction	MPa	≥150
Insulation resistance		Ω	≥1.0 X 10 ¹²
Breakdown voltage in fiber direction (in oil)		KV	-----
Arc resistance		S	≥182
Combustibility		Class	V-0
Thermal conductivity		W/(m.K)	-----



Insulator:

Insulators are molded by thermoforming using DMC material through a hydraulic press. It has great advantages like high strength mechanical properties, good electrical properties, high voltage resistance, flame retardant and corrosion resistance.

Epoxy Fiberglass Mesh Fabric

Characteristics:

This sort of mesh fabric intensively steeped,by this process,there is no bladder inside the fabric,and the fabric is case-hardened, has good capability of insulation,further more,its level of resisting temperature is "H". It is not only has high mechanical intensity under the normal temperature,but also has such mechanical intensity under the environment of high temperature.

Application:

It is used in the dry transformer,reactor and such product to protect the insulation layer of the loop,It highly improves the whole mechanical intensity of the loop,so it is an excellent reinforcing material for the dry transformer and such product.

Specifications:

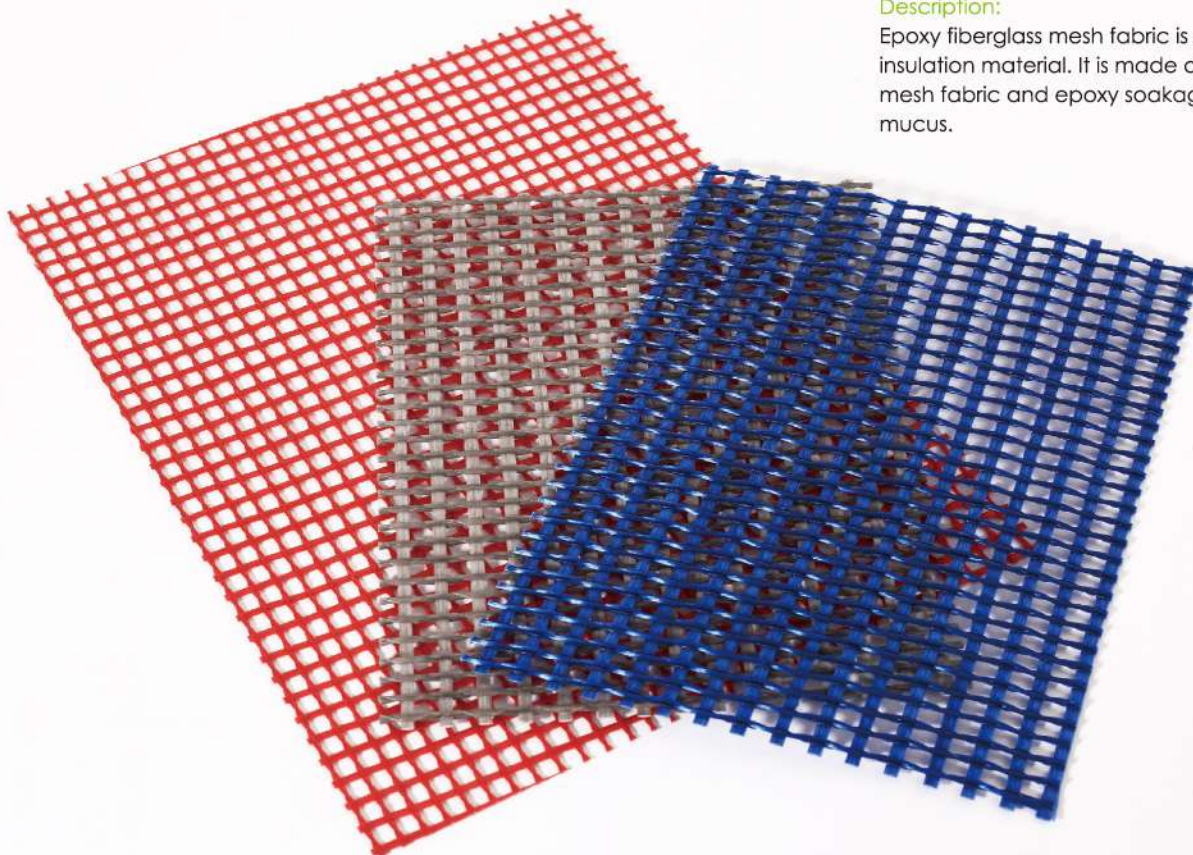
Thickness (mm)±10%	Mesh size (warpxweft)	Nominal grammage	Length (m/roll)
0.4	4x4	160±10	100
0.5	4x4	210±15	100
0.6	4x4	225±15	100
0.8	4x4	335±20	100
1.0	5x4	392±20	50
1.2	5x4	510±30	50
1.6	6x5	690±50	40
1.6	10x7	610±50	40
2.0	6x5	760±50	40
2.0	10x7	765±50	40
2.4	6x5	1105±80	35
2.4	10x7	830±80	35

Technical Data:

- 1) Surface breakdown voltage: $\geq 18KV$
- 2) Surface insulation resistance: $\geq 1 \times 10^{13} \Omega$
- 3) Temperature resistant grade: F,H
- 4) Bending strength: $\geq 80Mpa$
- 5) Concussion strength: $\geq 20kj/m$
- 6) Insulation resistance $\geq 1 \times 10^{11} \Omega$
- 8) Dielectric strength: $\geq 9KV/mm$

Description:

Epoxy fiberglass mesh fabric is a kind of insulation material. It is made of basal mesh fabric and epoxy soakage mucus.



FarBond HT 5980A/B

Production Name:

FarBond HT 5980A:B:HT040:HT062:Filler = 100: 95: 15: 1: 350-410

Product Category:

Liquid hot-curing impregnating resin system suitable for Class H dry-type distribution transformers with good mechanical and electrical end-properties.

Product Application:

Dry-type distribution transformers, glass fiber reinforced.

Product Properties:

1. Good mechanical and electrical end properties;
2. Very high thermal endurance properties;
3. Class H according to IEC 60085.

Key datas:

Items	HT 5980A	HT 5980B	HT040	HT062
Visosity at 25°C [mPas]	6000-9000	150-250	50-110	Ca.10
Colour dardner	<2	<7	N/A	N/A
Epoxy content[equiv/kg]	4.95-5.10	N/A	N/A	N/A
Density[g/cm3]	1.10-1.20	1.15-1.25	0.95-1.05	0.88-0.92
Flash point[°C]	>165	>150	>100	59
Vapour pressure(20°C) mbar	<0.03	<0.3	Ca. 0.03	Ca.300

Remark:

FarBond HT 5980B is sensitive to humidity and tends to crystallize at low storage temperature. It can be re-liquefied by stirring and heating it to 40-80°C.

Processing:

Gradual curing; pressure gelation process (PG);

- 1) Long pot life is desirable in the processing of any casting resin system. Mix all of the components together very thoroughly at room temperature or slightly above and under vacuum. Intensive wetting of the filler is extremely important. Proper mixing will result in: better flow properties and reduced tendency for shrinkage; lower internal stresses and therefore improved mechanical properties of cast components; improved partial discharge behavior in high voltage applications.
- 2) For the mixing of medium- to high viscosity casting resin systems and for mixing at lower temperatures, we recommend special thin film degassing mixers that may produce additional self-heating of 10-15 °C as a result of friction. For low viscosity casting resin systems, conventional anchor mixers are usually sufficient.

Processing	Condition	Mold Temperature	Demolding times	Condition of cure
Conventional vacuum casting		80-100°C	4-8 h	4hx80°C + 10hx130°C

Processing Viscosity:

Experiment system: FarBond HT5980A:B:HT040:HT062:Filler =100:95:15:1:410 pbw (Mix ratio)

Mix viscosity (mPas)		Shelf life (hours)		Gel time (mins)		
40℃	60℃	40℃	60℃	80℃	120℃	140℃
38,500	10,500	8	3.5	118	12	5

Mechanical and Physical Properties (guideline values)

System test: FarBond HT5980A:B:HT040:HT062:Filler =100:95:15:1:410 pbw

Cured for 80℃x12hr+130℃x10hr

Tensile strength	Mpa	78-85	Water absorption 50x50x4mm	23℃x10day	0.06-0.08%
Flexural strength	Mpa	130-140		100℃x60min	0.10-0.15%
E modulus	Mpa	115, 00-125, 00	Thermal conductivity	W/mK	0.8-0.9
Glass transition temp. (DSC)	℃	70-80			
Surface strain	%	1.30-1.50	Density	g/cm ³	1.8-1.9
Critical stress intensity factor	Mpa/m ²	2.9-3.2	Breakdown strength	kv/mm	22-30
Elongation at break	%	1.0-1.2	Tracking resistance	CTI	>600M-0.0
Fracture energy	J/m ²	700-780	Electrolytic corrosion	Grade	A-1
Coefficient of linear thermal expansion	PPm.K	34-40	HV arc resistance	S	182-185

Special properties and Values

System test: FarBond HT5980A:B:HT040:HT062:Filler

=100:95:15:1:410 pbw

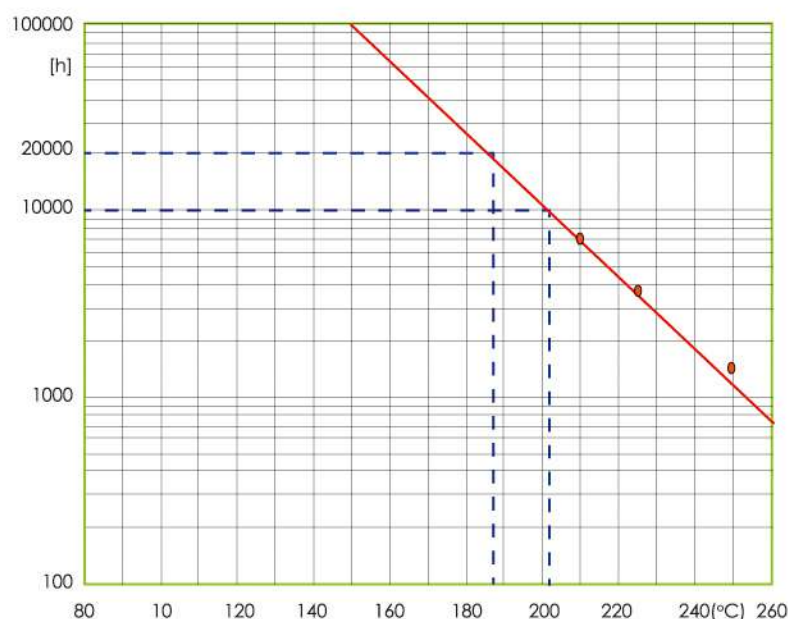
cured for 80℃x12hr+130℃x10hr

Investigation property: Flexural strength

Selected end point: 50% of initial value

Result: 20000h 188℃

10000h 203℃



Storage: Store the components at 18-25℃, in tightly sealed and dry in the original containers.