

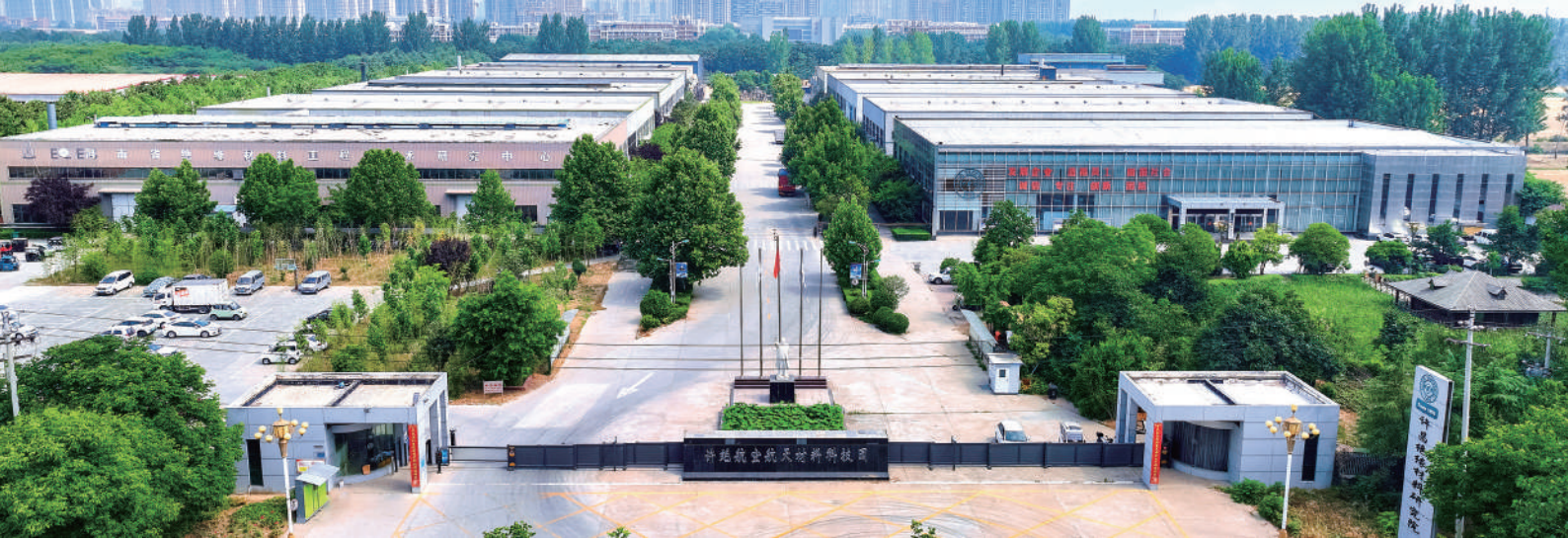


XUJUE ELECTRICAL
许绝电工股份有限公司



Presspaper & Pressboard 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 world-wide.

7
Manufacturing bases

1500+
Number of employees

1
National postdoctoral research station

2
Provincial technology centers



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.

Customized Excellence

We have customized production according to the customers' demands, 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 meet the requirements of ISO, DIN, IEC and GB. We have a benchmarking laboratory in this field(Our Chengdu laboratory in China was once a national testing center).

Production

We adhere to the concept of smart factory, emphasize the human-machine combination, and accelerate the transformation from the production mode to an intelligent mode. We abide by international and industrial standards. In Asia, the products of ZT are the pronoun of reliable quality and innovation.

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.

Quality Assurance

All the products are produced according to IEC standard and GB standard. We have our own testing lab to test the mechanical property, electrical property and thermal property of the products. We also have strict quality control on 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.



An aerial photograph of a dense, vibrant green forest. A winding river or stream flows through the trees, creating a meandering path. The lighting is bright, highlighting the various shades of green in the foliage. The overall scene is peaceful and natural.

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



What We Do

We integrate production, research and development and deep processing. Our business supplies insulation paper materials, including pressboard, presspaper, capacitor paper, diamond dotted paper, thermally upgraded paper, oil duct strips and HV moulded components, etc. In addition, we also manufacture customized special types and qualities.



Portfolio of Products

Product	Standard	Description	
Insulation Paper	Q/JLLS 20471-2020 GB 7969-2003 IEC 554-3-1:1979	Unbleached sulphate softwood pulp	
Thermally Upgraded Paper	Equivalent to TUN901156 standard provided by Siemens, Germany.	100% high purity sulfated wood pulp	
110-330kV High Voltage Insulation Paper	GB 7969-2003 IEC 554-3-1:1979	100% high purity sulfated wood pulp	
Capacitor Paper	GB/T.12913-2008	100% high purity sulphate wood pulp	
Crepe Paper	GB/T 20628.2-2006 IEC 60554-3-3-1980	100% sulphate wood pulp	
Diamond Dotted Paper	IEC 60641-3-2:2007 JB/T10442.3-2017	Insulation paper+Modified epoxy resin	
Paper Pressboard	GB/T19264.3-2003 IEC60641-3-1:2008	100% high purity sulphate wood pulp	
Oil Duct Strip	GB/T19264.3-2003 IEC60641-3-1:2008 GB/T10442.3-2017	Diamond dotted paper + Insulation paper + Paper pressboard	
HV Moulded Components	Assembly Lead Exits	Q/GBGX004-2013 IEC60641-3-1:2008	High quality wet paper blank+ Pure pulp
	L-Shaped Clamping Insulating		
	No-Glued Screw Rods And Nuts		
	Wet Method Angle Rings		
	Wet Method Shaped Parts		
Insulation Structural Parts			





Content

1. Insulation Paper	02
2. Thermally Upgraded Paper	04
3. 110-330kV High Voltage Insulation Paper	06
4. Capacitor Paper	08
5. Crepe Paper	10
6. Diamond Dotted Paper	12
7. Paper Pressboard	14
8. Oil Duct Strip	17
9. HV Moulded Components	18

If you expect more than just a product but a competent partner who is always at your side, ZTELEC GROUP is the right choice for you.



Insulation Paper

A type of paper made from softwood pulp by the sulphate method. It is widely used for high-voltage electrical appliances such as high-voltage cables, signal cables, electromagnetic wires, transformers, inductors and reactors.

Standard

- Q/JLLS 20471-2020
- GB 7969-2003
- IEC 554-3-1:1979

Regular Thickness

50μm/80μm/130μm/150μm/
180μm/ 200μm/300μm

Regular Width

- 1000mm /1200mm
- Offer cutting service
- Customization





Certificate Available

UL RoHS REACH MSDS CEMT
Factory Inspection Report

Characteristics

- Good electrical and mechanical strength
- Low permittivity and high oil absorption

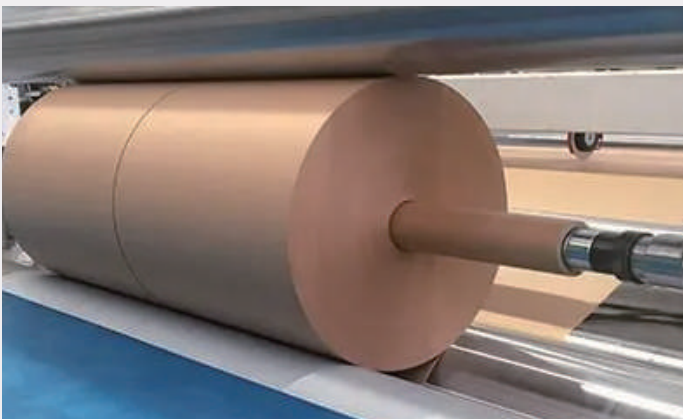
Industries

-  Oil Transformer
-  Current Transformer
-  Cable
-  Electrical Industry

Technical Data Sheet

Product name	Unit	Insulation Paper						
SECTION I - MAIN CHARACTERISTICS								
Thickness	μm	50	80	130	180	200	250	
Tolerance	%	±10	±10	±10	±10	±10	±10	
Tightness	g/cm ³	≥0.9	≥0.9	≥0.9	≥0.9	≥0.9	≥0.9	
Air permeability	ml/min	≤35	≤35	≤35	≤35	≤35	≤35	
Ash content	%	≤0.7	≤0.7	≤0.7	≤0.7	≤0.7	≤0.7	
Moisture content	%	6.0-9.0	6.0-9.0	6.0-9.0	6.0-9.0	6.0-9.0	6.0-9.0	
Smoothness	s	≥30	≥30	≥30	≥30	≥30	≥30	
SECTION II - MECHANICAL CHARACTERISTICS								
Tensile strength	MD	MPa	≥70	≥70	≥75	≥75	≥75	≥75
	CMD		≥35	≥35	≥35	≥35	≥35	≥35
Elongation	MD	%	≥2.0	≥2.0	≥2.0	≥2.0	≥2.0	≥2.0
	CMD		≥4.0	≥4.0	≥4.0	≥4.0	≥4.0	≥4.0
Shrinkage	MD	%	≤1	≤1	≤1	≤1	≤1	≤1
	CMD		≤1.5	≤1.5	≤1.5	≤1.5	≤1.5	≤1.5
Tear strength	mN		≥300	≥500	≥1020	≥1390	≥1700	≥2300
SECTION III - ELECTRICAL DATA								
Electric strength in air	kV/mm		≥9	≥9	≥9	≥9	≥9	≥9
Electric strength in oil	kV/mm		≥50	≥50	≥50	≥50	≥50	≥50
Conductivity of the aqueous extract	mS/m		≤8	≤8	≤8	≤8	≤8	≤8

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.





Thermally Upgraded Paper

Thermally upgraded paper is made of 100% high-purity sulfate insulation wood pulp. It is a special paper for insulation and heat aging resistance and suitable for manufacturing transformers, electromagnetic wire or other electrical insulation equipment. It has excellent heat aging resistance and excellent electrical, chemical and physical properties.

Standard

Equivalent to TUN901156 standard provided by Siemens, Germany.

Raw Material

100% high purity sulfated wood pulp

Regular Thickness

65 μ m/75 μ m/80 μ m/85 μ m/105 μ m

Regular Width

625mm

Roll Diameter


500-550mm

Certificate Available

UL RoHS REACH MSDS CEMT

Factory Inspection Report

Characteristics

-  It is suitable for manufacturing transformers, electromagnetic wire or other electrical insulation equipment. Its heat aging property is much better than normal insulation paper.

Industries

-  Oil Transformer
-  Current Transformer
-  Electrical Industry

Technical Data Sheet

Product name	Unit	W Type				Z Type				
SECTION I - MAIN CHARACTERISTICS										
Thickness	μm	65	75	80	85	65	75	80	85	105
Tolerance	%	±10				±10				
Density	g/cm ³	0.70-0.85				0.95-1.10				
Air permeability	μm /(Pa·s)	0.1-0.2								
Conductivity of the aqueous extract	mS/m	≤10								
pH of aqueous extract		6.0-8.0								
Ash content	%	≤0.7								
N content	%	≥1.5								
Moisture content	%	≤9								
Colour	-	Natural				Green				
SECTION II - MECHANICAL CHARACTERISTICS										
Tensile strength	MD	N·m/g	≥90							
	CMD		≥34							
Elongation	MD	%	≥2							
	CMD		≥4							
Transverse tearing resistance	mN·m ² /g	≥7								
Tensile strength (MD) aging retention rate	%	≥75								
SECTION III - ELECTRICAL DATA										
Electric strength	kV/mm	≥9								

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.





110-330kV High Voltage Insulation Paper

110-330kV high voltage insulation paper is made of 100% high-purity sulfate insulation wood pulp. It is a kind of paper for high voltage insulation and suitable for manufacturing 110-330kV transformers, electromagnetic wire or other electrical insulation equipment. It has excellent electrical, chemical and physical properties.

Standard

- GB 7969-2003
- IEC 554-3-1:1979

Raw Material

100% high purity sulfated wood pulp

Regular Thickness

45μm/75μm/125μm/175μm

Regular Width

625mm

Roll Diameter

680-730mm

Certificate Available

UL RoHS REACH MSDS CEMT
 Factory Inspection Report

Characteristics

- It is a high voltage insulating paper with excellent electrical, chemical and physical properties.

Industries

-  110-330kV Transformers
-  Electromagnetic Wire
-  Electrical Insulation Equipment

Technical Data Sheet

Product name	Unit	GDL-50	GDL-63	GDL-75	GDL-125	GDL-175	
SECTION I - MAIN CHARACTERISTICS							
Thickness	μm	50	63	75	125	175	
Tolerance	μm	±3.0	±4.0	±5.0	±7.0	±10.0	
Density	g/cm ³	0.85±0.05					
Air permeability	μm /(Pa·s)	0.255	0.34	0.34	0.425	0.425	
Conductivity of the aqueous extract	mS/m	≤ 4					
pH of aqueous extract		6.0-7.5					
Ash content	%	≤ 0.28					
Sodium content in ash	mg/kg	≤ 34					
Moisture content	%	6.0-9.0					
SECTION II - MECHANICAL CHARACTERISTICS							
Tensile strength	MD	N·m/g	3.9	4.9	6.4	10	12.8
	CMD		1.9	2.4	2.8	4.8	6.4
Elongation	MD	%	1.8	1.8	2	2	2
	CMD		4	4.5	5	5	5
Transverse tearing resistance	mN	≥220	≥280	≥500	≥1200	≥1800	
SECTION III - ELECTRICAL DATA							
Electric strength	kV/mm	≥9.5	≥9	≥8.5	≥8	≥7.4	
Dielectric loss (tanδ100°C)	%	≤0.22					

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.





Capacitor Paper

The product is a type of insulating paper used exclusively for making capacitors. It is made from unbleached sulphate softwood pulp without any auxiliary materials and pulped with high viscosity, then made on a specialized long net thin page paper machine and super calendered. The water used for production must be treated by iron exchange method to make the content of copper, iron and chlorine ions extremely low. It is rolled paper, which is uniform, tight, well-proportioned and without holes. The paper is as thin as a cicada wing but with high mechanical strength, excellent air permeability, electrolyte absorption performance, good chemical purity. Its PH is close to neutral with excellent physical and electrical properties. It has specific requirements for breakdown voltage and conductive particles.

Standard

GB/T 12913-2008

Raw Material

100% high purity sulphate wood pulp

Regular Thickness

10/12/15/17 μ m

Certificate Available

UL ROHS REACH MSDS CEMT

Factory Inspection Report

Characteristics

- Great electrical insulation properties
- Good thermal chemical and physical properties
- Good air permeability

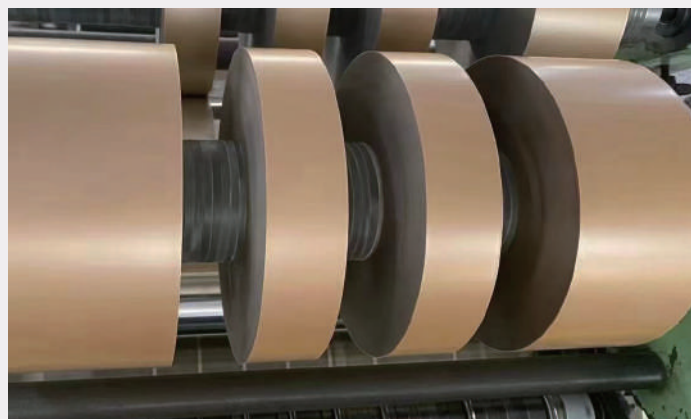
Industries

-  Capacitor
-  Optical Microscope

Technical Data Sheet

Product name		Unit	Capacitor Paper			
SECTION I - MAIN CHARACTERISTICS						
Thickness		μm	10/12		15/17	
Tolerance		%	±5		±5	
Density		g/cm ³	1.22±0.05			
Moisture content		%	5.0-9.0			
Ash content		%	≤0.35			
Acidity of water extract		%	≤0.007			
Chloride content		mg/kg	Testing according to GB/T 2678.5 5.0 / Testing according to GB/T 2678.2 30			
SECTION II - MECHANICAL CHARACTERISTICS						
Tensile strength		MD	N.m/g	≥78		
SECTION III - ELECTRICAL DATA						
Thickness		μm	10	12	15	17
Electric strength	Minimum value	V/layer	330	365	410	425
	Average value		460	510	535	545
Conducting particles		pcs/ m ²	≤70	≤40	≤25	≤10
Conductivity of water extract		mS/m	≤3			
Dielectric loss factor (tanδ)	(tg δ)(60°C)	%	≤0.19			
	(tg δ)(100°C)	%	≤0.25			

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.





Crepe Paper

The product is made of 100% sulphate wood pulp wet-copying, with undried flat network base paper through the wrinkling process and it has the advantages of good softness, not easy to break by bending, good elongation, good oil absorption and so on.

Standard

- GB/T 20628.2-2006
- IEC 60554-3-3-1980

Raw Material

100% sulphate wood pulp

Regular Width

- 960mm/860mm/500mm
- Customizable width:20mm/25mm/40mm

Regular Thickness

- 0.35 ± 0.05 mm
- 0.45 ± 0.05 mm
- 0.75 ± 0.05 mm

Certificate Available

UL ROHS REACH MSDS CEMT
 Factory Inspection Report

Characteristics

- Good softness
- Good elongation
- Great oil absorption

Industries

-  Oil Transformer
-  Reactor
-  Current/Voltage Transformer

Technical Data Sheet

Product name		Unit	Crepe paper	
SECTION I - MAIN CHARACTERISTICS				
Thickness before wrinkling		mm	0.050	0.075
Thickness after wrinkling		mm	0.35±0.05	0.45±0.05
Grammage		g/cm ²	60±10%	110±10%
Water content		%	≤8.0	≤9.0
pH of aqueous extract		N/A	6.0-8.0	6.0-8.0
Ash content		%	≤0.7	≤0.7
Colour		-	Natural	
SECTION II - MECHANICAL CHARACTERISTICS				
Tensile strength after wrinkling	MD	kN/m	≥1.95	≥2.60
	CMD		≥1.30	≥1.96
Elongation	CMD	%	≥50	≥50
SECTION III - ELECTRICAL DATA				
Power frequency breakdown voltage in air		kV/mm	≥0.95	≥1
Conductivity of the aqueous extract		mS/m	≤10	≤8

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.



Diamond Dotted Paper

DDP is made of insulation paper coated with special modified epoxy resin in a diamond shape. The adhesive strength of the epoxy resin is enough to prevent the displacement of each layer of the winding during short circuit, thereby ensuring the long-term mechanical and physical properties of insulation structure.

Standard

- IEC 60641-3-2:2007
- JB/T10442.3-2017

Ruglar Size

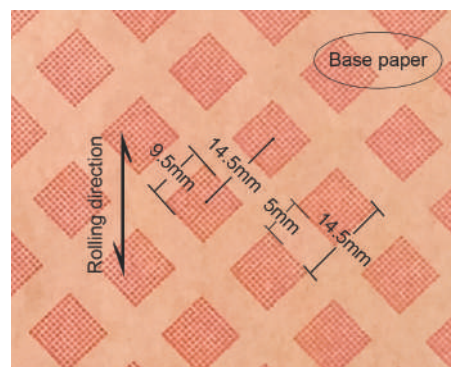
- 0.05*1000mm
- 0.08*1000/1220/1330mm
- 0.13*1000/1220/1330mm
- 0.18*1000/1220/1330mm
- 0.25*1000/1220/1330mm

Special Specification

- 0.075*1000mm
- 0.125*1000mm

Certificate Available



- UL RoHS REACH MSDS CEMT
 Factory Inspection Report



Characteristics

- Good electrical and mechanical strength
- Low permittivity and high oil absorption

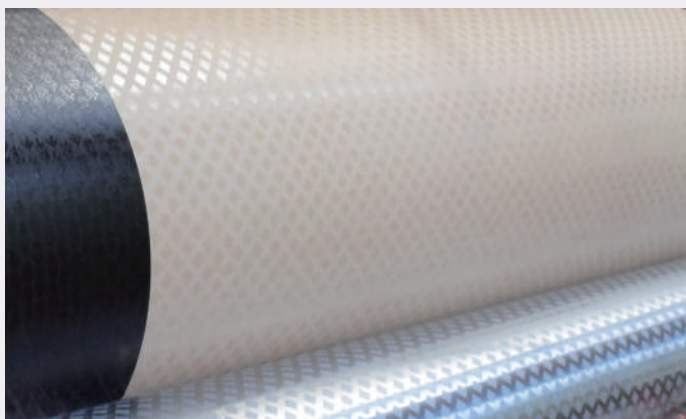
Industries

-  Oil Transformer
-  Cable

Technical Data Sheet

Product name		Unit	Diamond dotted paper			
SECTION I - MAIN CHARACTERISTICS						
Thickness		mm	0.08	0.13	0.18	0.25
Tolerance		%	±10	±10	±10	±10
Density		g/cm ³	0.90-1.02			
Oil absorption		%	≥20			
Moisture content		%	4-8			
Single-sided adhesive thickness		μm	6-12			
Ash content		%	≤0.8			
pH of aqueous extract		-	6.5-8.5			
SECTION II - MECHANICAL CHARACTERISTICS						
Tensile strength	MD	N/mm ²	≥70			
	CMD		≥35			
Bonding strength	Room temperature	kPa	≥650			
	100°C ±2°C		≥450			
Elongation	MD	%	≥2.0			
	CMD		≥4.0			
Tearing resistance	CMD	mN	≥510	≥1700	≥2800	≥4200
SECTION III - ELECTRICAL DATA						
Breakdown voltage	In air	kV	≥0.7	≥1.1	≥1.6	≥2.1
	In oil		≥4	≥7	≥9	≥11
Conductivity of the aqueous extract		mS/m	≤8.0			

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.





Paper Pressboard

Paper pressboard is made of 100% high purity sulphate wood pulp by hot pressing. Due to its good compatibility and good mechanical strength, it is widely used for transformer layer insulation and coil winding, and it is also a base material for HV molded components.

Standard

- GB/T19264.3-2003
- IEC60641-3-1:2008

Raw Material

100% high purity sulphate wood pulp

Size

- 1000*2000*0.5/0.8/1.0/1.5/2.0/3.0/4.0/5.0mm
- 1400*2100*1.0/1.5/2.0/3.0/4.0/5.0mm
- 2100*4200*1.0/1.5/2.0/3.0/4.0/5.0mm




Certificate Available

UL RoHS REACH MSDS CEMT
 Factory Inspection Report

Characteristics

- ✓ Excellent insulation performance, aging resistance and mechanical properties
- ✓ High electrical strength and low shrinkage
- ✓ High density and flatness
- ✓ Good compatibility with liquid dielectrics

Industries

-  Oil Transformer
-  Capacitor
-  Electrical Industry

Technical Data Sheet

Product name		Unit	Pressboard (10kV)					Pressboard (35kV)				
SECTION I - MAIN CHARACTERISTICS												
Thickness	mm	0.8	1.0	2.0	3.0	4.0	0.8	1.0	2.0	3.0	4.0	
Density	g/cm ³	0.90-1.15	0.95-1.15	1.0-1.2	1.0-1.2	1.0-1.2	0.95-1.15	0.95-1.15	1.0-1.2	1.0-1.2	1.0-1.2	
Water content	%	≤8.0	≤8.0	≤8.0	≤8.0	≤8.0	≤8.0	≤8.0	≤8.0	≤8.0	≤8.0	
pH of aqueous extract	N/A	6.0 -9.0					6.0 -9.0					
Oil absorption	%	≥15	≥15	≥15	≥15	≥15	≥15	≥15	≥15	≥15	≥15	
Ash content	%	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	
Colour	Natural											
SECTION II - MECHANICAL CHARACTERISTICS												
Tensile strength	MD	MPa	≥50	≥50	≥55	≥55	≥55	≥55	≥55	≥60	≥60	≥60
	CMD		≥30	≥30	≥35	≥35	≥35	≥35	≥35	≥40	≥40	≥40
Elongation	MD	%	≥3.0	≥3.0	≥3.0	≥3.0	≥3.0	≥3.0	≥3.0	≥3.0	≥3.0	≥3.0
	CMD		≥4.0	≥4.0	≥4.0	≥4.0	≥4.0	≥4.0	≥4.0	≥4.0	≥4.0	≥4.0
Shrinkability	MD	%	≤0.7	≤0.7	≤0.7	≤0.7	≤0.7	≤0.7	≤0.7	≤0.7	≤0.7	≤0.7
	CMD		≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0
	TD		≤7.0	≤5.0	≤5.0	≤5.0	≤5.0	≤5.0	≤5.0	≤5.0	≤5.0	≤5.0
SECTION III - ELECTRICAL DATA												
Electric strength	In air	kV/mm	≥9.0	≥10.0	≥11.0	≥11.0	≥11.0	≥10.0	≥10.0	≥11.0	≥11.0	≥11.0
Electric strength	In oil (90°C)	kV	≥30	≥35	≥40	≥40	≥40	≥35	≥35	≥40	≥40	≥40
Conductivity of the aqueous extract		mS/m	≤8.0	≤8.0	≤8.0	≤8.0	≤8.0	≤8.0	≤8.0	≤8.0	≤8.0	≤8.0

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.

THICKNESS TOLERANCE

Thickness (mm)	Tolerance (%)	Thickness (mm)	Tolerance (%)
≤ 1.6	±7.5	1.6-3.0	± 5.0
4.0-8.0	± 5.0	> 8.0	± 5.0



Technical Data Sheet

Product name	Unit	Pressboard (66kV)				Z4 Pressboard (110kV)			
SECTION I - MAIN CHARACTERISTICS									
Thickness	mm	≤1.6	1.6<T≤3.0	3.0<T≤6.0	>6.0	≤1.6	1.6<T≤3.0	3.0<T≤6.0	>6.0
Density	g/cm ³	0.95-1.15	1.05-1.20	1.10-1.25	1.10-1.25	1.00-1.20	1.10-1.25	1.15-1.30	1.15-1.30
Water content	%	≤6				≤6			
pH of aqueous extract	N/A	6.0 -9.0				6.0 -9.0			
Oil absorption	%	≥13	≥11	≥9	≥8	≥11	≥9	≥7	≥6
Ash content	%	≤0.6				≤0.5			
Colour	Natural								

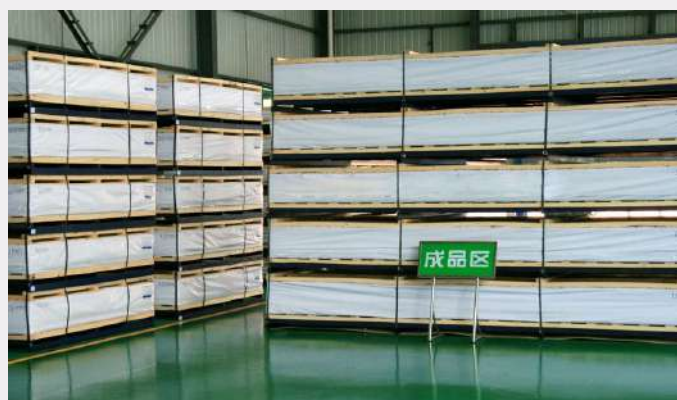
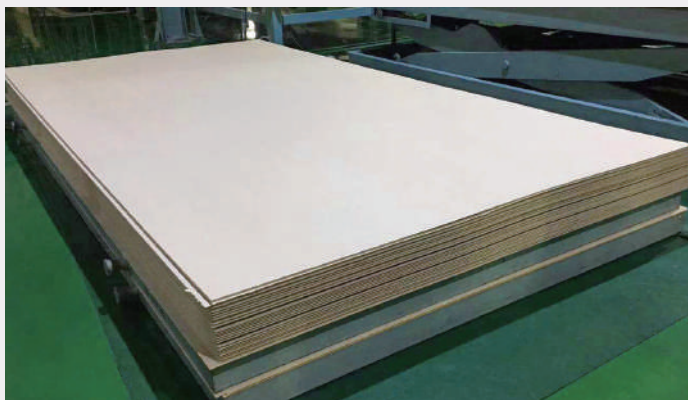
SECTION II - MECHANICAL CHARACTERISTICS										
Tensile strength	MD	MPa	≥80	≥85	≥90	≥90	≥100	≥105	≥110	≥110
	CMD		≥45	≥50	≥55	≥55	≥75	≥80	≥85	≥85
Elongation	MD	%	≥3.0	≥3.0	≥3.0	≥3.0	≥2.5	≥2.5	≥2.5	≥2.5
	CMD		≥4.0	≥4.0	≥4.0	≥4.0	≥3.5	≥3.5	≥3.5	≥3.5
Compressibility		%	≤11.0	≤7.5	≤5.0	≤4.5	≤10.0	≤7.5	≤5.0	≤4.0
Shrinkability	MD	%	≤0.7	≤0.7	≤0.7	≤0.7	≤0.5	≤0.5	≤0.5	≤0.5
	CMD		≤1.0	≤1.0	≤1.0	≤1.0	≤0.7	≤0.7	≤0.7	≤0.7
	TD		≤6.0	≤6.0	≤6.0	≤6.0	≤6.0	≤6.0	≤6.0	≤6.0

SECTION III - ELECTRICAL DATA										
Electric strength	In air	kV/mm	≥12.0	≥12.0	≥12.0	≥12.0	≥12.0	≥12.0	≥12.0	≥12.0
Electric strength	In oil (90°C)	kV	≥40	≥35	≥35	≥35	≥45	≥35	≥35	≥35
Conductivity of the aqueous extract		mS/m	≤5.0	≤6.0	≤8.0	≤10.0	≤5.0	≤6.0	≤8.0	≤10.0

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			
Thickness (mm)	Tolerance (%)	Thickness (mm)	Tolerance (%)
≤ 1.6	±7.5	1.6-3.0	± 5.0
4.0-8.0	± 5.0	> 8.0	± 5.0

Standard Packing





Oil Duct Strip

Oil Duct Strip is made of rectangular bracing strips and diamond dotted paper by using a special adhesive paste. It is applied to the distribution transformer coils to provide a circulation channel for cooling transformer oil. Its production process is used to replace the old corrugated cardboard process. It effectively solves the weaknesses of corrugated paper, such as irregular thickness, collapse and deformation under pressure, and easy displacement. It makes it firmly bonded with the coil and has good mechanical and electrical properties to promote and improve the reliable operation of the cooling function.

Standard

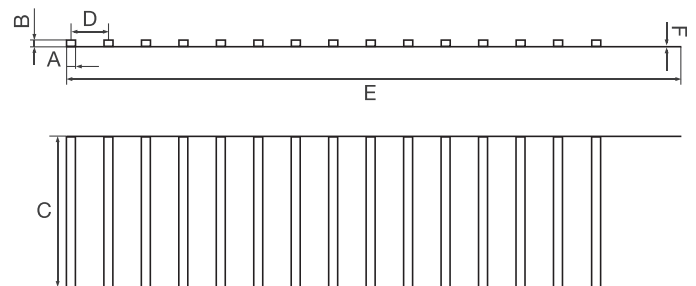
- Oil Duct Strip: GB/T19264.3-2003
IEC60641-3-1:2008
- DDP : GB/T10442.3-2017

Thickness of insulation paper/DDP

0.08 / 0.13 / 0.18 / 0.25 mm

Certificate Available

UL RoHS REACH MSDS CEMT
Factory Inspection Report



Pressboard strip				Insulation paper/DDP	
A	B	C	D	E	F
Width	Thickness	Length	Spacing	Length	Thickness

Note: Please provide the above size information for inquiry

Characteristics

- ✓ Good mechanical and electrical properties
- ✓ Low shrinkage and compressibility
- ✓ Good compatibility with liquid dielectrics

Industries



Oil Transformer

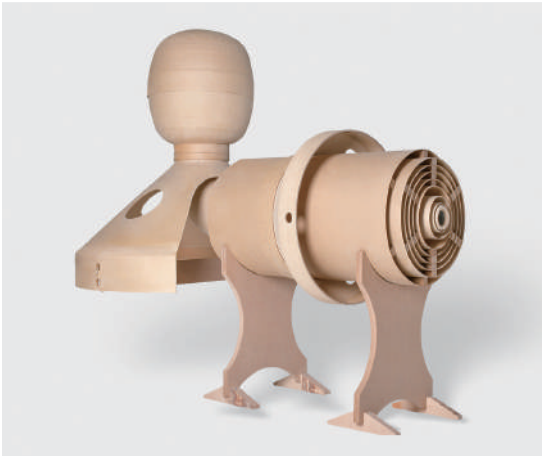


HV Moulded Components

HV Moulded Components are manufactured in a variety of processes from dry to wet sheet material and they can meet the highest requirements needed for use in electric apparatus.

Types		Characteristics	Applications
Assembly lead exits		Based on 100% imported electrical grade unbleached wood pulp, they have high purity, high tightness, high tensile strength, good electrical performance, uniform density, good absorption performance, relative dielectric constant and good compatibility with transformer oil.	HV moulded components can be widely used in large-scale power transmission and transformation equipment such as EHV/UHV power transformers, reactors. Oil-immersed power and distribution transformers.
L-shaped clamping insulating			
No-glued screw rods/nuts			
Wet method angle rings	Split anhedral rings		
	Resolving anhedral rings		
Wet method special-shaped parts	Lead angle ring piece		
	Insulation barrel		
	Elbows and bins		
	Other wet-shaped parts		
Insulation structural parts	Strips and spacers		
	Corrugated cardboard		
	Electrostatic base rings		
	Iron yoke insulating end rings		
	Shield rings		
Other structural parts			

Assembly Lead Exits



This product includes an equalizing tube that passes through the winding outlet, an equalizing ball set between the equalizing tube and the terminal of the wiring sleeve, and the equalizing tube and the terminal of the wiring sleeve are respectively placed inside the equalizing ball. By connecting the connector with the fastener set inside the equalizing ball, the equalizing tube and outer paper insulation tube outside the high-voltage lead makes the electric field around the lead more uniform, thereby improving the shape of the lead electrode, reducing electric field concentration, increasing the safety factor, and effectively solving the outlet structure problem of the high-voltage winding of the high-voltage high-capacity transformer.

Specifications

- AC: 400kV/500kV/750kV/1000kV/1100kV;
- DC: $\pm 220\text{kV}$, $\pm 400\text{kV}$, $\pm 500\text{kV}$, $\pm 600\text{kV}$;

No-Glued Screw Rods/Nuts



No-glued adhesive insulation paper screw rods are important components used for connecting and fixing key insulation structural components of ultra-high voltage transformers. This product is used in conjunction with no-glued adhesive insulation paper nuts to meet the requirements for fixing and insulation of connecting components of key parts of ultra-high voltage transformers under alternating electric fields.

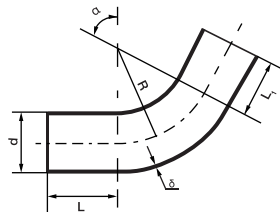
Standard

- Nominal diameters: $\Phi 12$, $\Phi 16$, $\Phi 20$, $\Phi 24$, etc;
- The corresponding standard thread: M12, M16, M20, M24, etc;

Elbows and Bins



Insulation for export systems, wet-laid by hand.

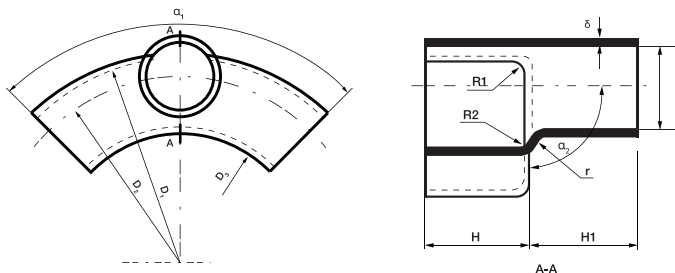


Dimension (mm)	Size	d	L	L1	R	δ	α
	Tolerance		+3	+5	+5	+4	+1.5
		0	-2	-2	0	0	0

Lead Angle Ring Piece



The lead angle rings are suitable for the upper and lower outlet parts of the coil, all of which are made by hand.



Dimensional Tolerance

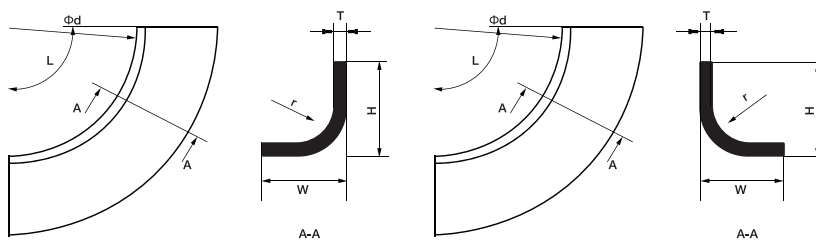
Unit: mm

Size	H	H1	B	D1	D2	D3	d	K	R	r	5	a 1	a 2
Tolerance	0 -3	0 -3	0 -3	0 -5	±2 -	±5 -	+2 -1	±3	+4 0	+10 0	+1.5 0	±20 -	±20 -

Wet Method Angle Rings



Directly molded using high-quality wet paper blanks, the products have uniform density, flat surface, suitable for placing the insulation at the upper and lower edges of the coil parallel to the equipotential surface, which can shorten the insulation distance of the coil.



Resolving anhedral rings

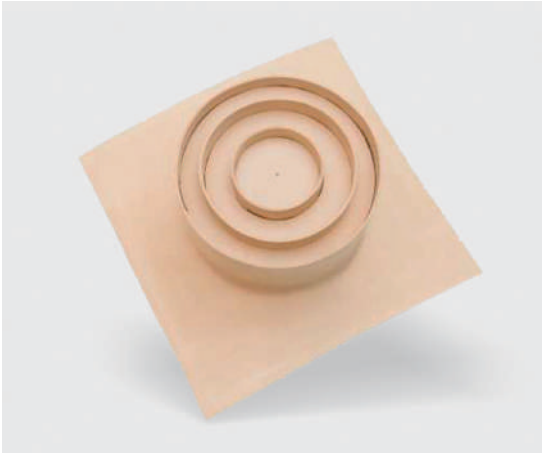
Split anhedral rings

Dimensional Tolerance

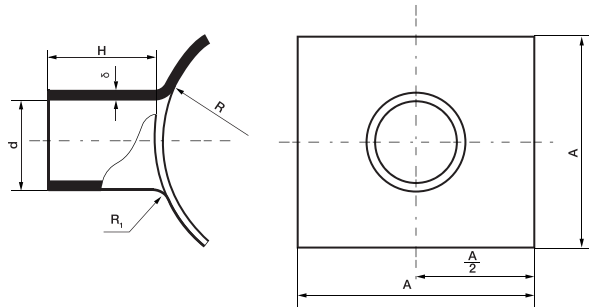
Unit: mm

Size	W	H	r		T		
			<40	>40	1.0	1.5	2.0
Tolerance	+2	+2	+3	+5	+0.2	+0.3	+0.4
	-2	-2	-3	-5	0	0	0

Insulation Barrel



Insulation for export systems, wet-laid by hand.

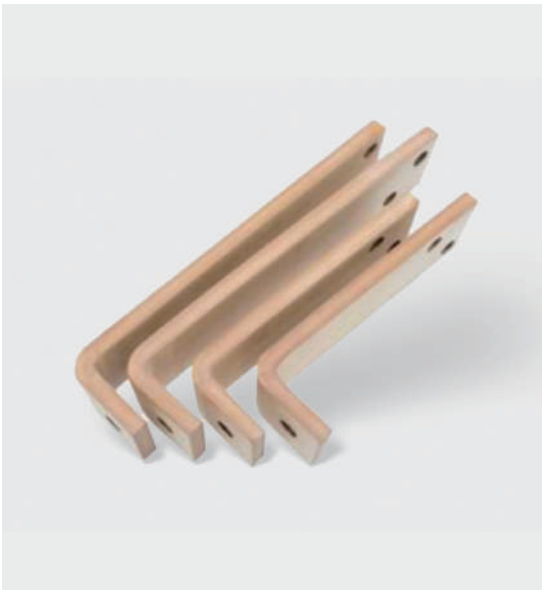


Dimensional Tolerance

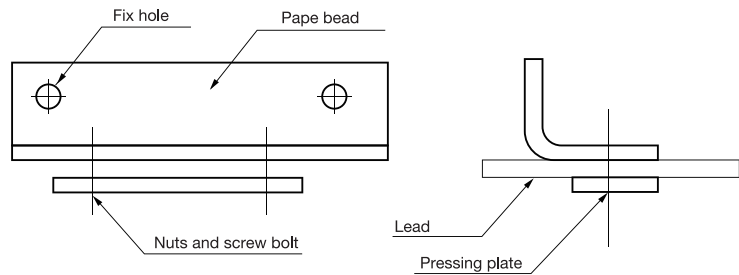
Unit: mm

Size	d	δ	H	R	R1	A
Tolerance	+3	+1.5	+10	±10	+10	±2
	0	0	0		0	

L-Shaped Clamping Insulatings

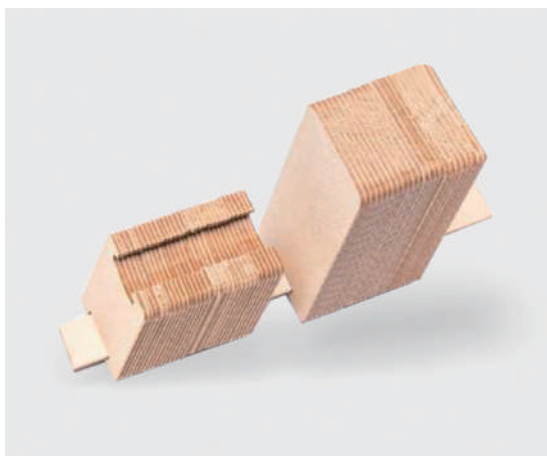


The "L" shaped clamping insulators, commonly known as paper corner plate are the ideal bracket and clamp insulation for oil immersed transformers. They have the characteristics of good insulation performance, high mechanical strength, and easy installation. In large transformers above 110kV, they exhibit advantages such as good straightness and less deformation, making them products that are difficult to be replaced by any other materials and also highly economical.



Note: Fixed holes and pressing plate parts can be punched or grooved, and users can customize according to their needs.

Strips and Spacers



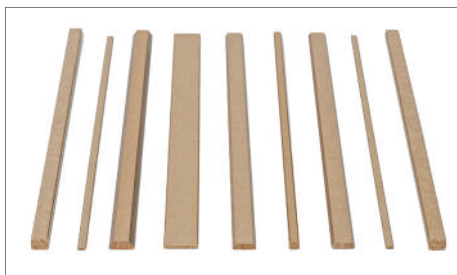
Strips and Spacers are used between the coils and between the winding layers to provide properly precise oil passages.

Technical Data Sheet

Item	Unit	Index
Moisture content	%	≤7.0
Density	g/cm ³	1.15-1.3
Shrinkage in thickness direction	%	≤6.0
Shrinkage in other directions	%	≤1.0
Compression ratio	%	≤4.0

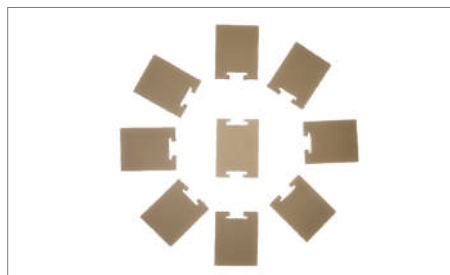
Strips

The strips mainly include: rectangular strips, T-shaped strips, dovetail strips, and special-shaped strips. The mechanical strength of dovetail strips is higher than that of type strips, and they are not easy to crack. There is a tendency to replace strips.

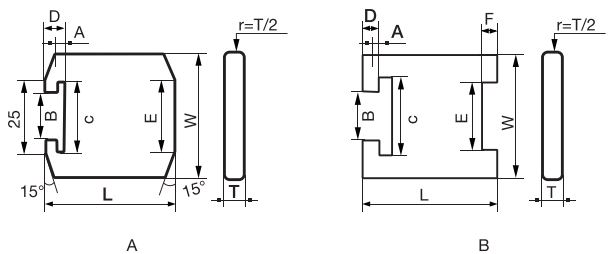


Spacers

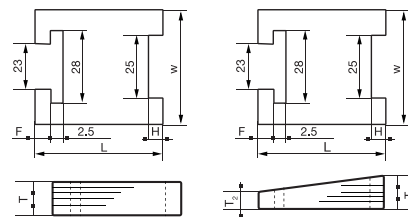
Spacers made of high density boards with high short-circuit strength are used in windings. They can be supplied in the final milled state. Milled spacers and strips with rounded edges prevent damages to the wire insulation.



Spacers



Spacers(Milling)



Dimensional Tolerance

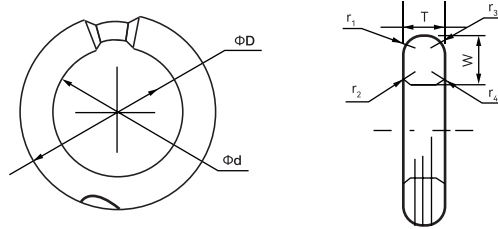
Unit: mm

Item	L	W	T	
			T1	T2
Size	≤220	≤80	≤30	≥2
Tolerance	±1	±1	±1.5	±1.5

Electrostatic Base Ring



It is used as core material for static wrapped metal strips, after high-precision shaped processing, and carefully chamfer corners.

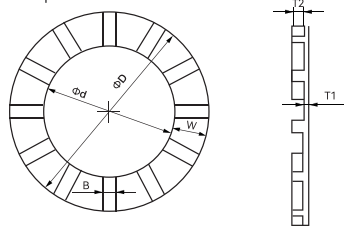


Dimension (mm)	Outer diameter (d)	Width (W)	Thickness (T)
	$D \leq 3150$	$W \geq 15$	$T \leq 120$

Iron Yoke Insulating End Rings



They are used to support the end rings and they can also be made into a horseshoe shape.

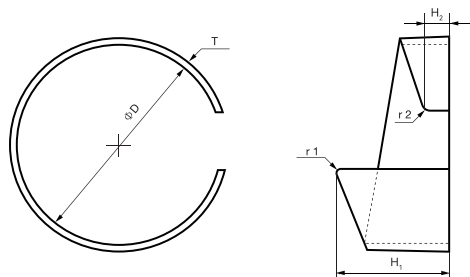


Dimension (mm)	Item	D	W	T1	T2
	Gaskets	≤ 3150	≥ 15	≤ 120	-
	Spacers	-	-	-	≤ 100

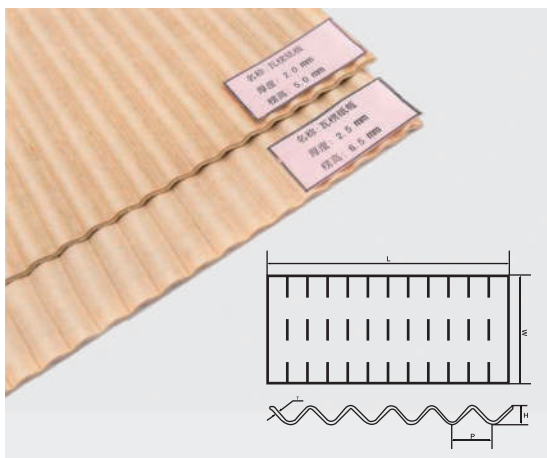
Shield Rings



Shield rings are mainly used as the casing of the end coil, and can be processed into trapezoidal and open styles.



Corrugated Cardboard



Corrugated cardboard is a commonly used oil gap insulation for small transformers.

Technical Data Sheet

Item	Unit	Standard Value	
		Average	Special
Moisture content	%	<7.0	/
Ash content	%	<0.8	/
Conductivity of aqueous extract	mS/m	<10.0	/
Yield strength	Kg/cm ²	>11.0	>9.0

Important Notes

1. This product is a wood fiber product, which is hydrophilic and easy to absorb moisture. It should be kept from moisture during use and should pay attention to moisture, not be exposed to the air for a long time. If it is exposed to the air for a long time, it may cause:

1) Arching of the paper surface, which is due to the deformation of the paper surface after absorbing moisture, and can be eliminated in the process of distributing the paper. Products made of this product, such as electromagnetic wire, should also be protected from moisture;

2) After the paper surface absorbs moisture, the thickness of the paper may change, which may affect the appearance and size of the products made of this product.

2. When the paper is used to wind electromagnetic wire, there is a problem of winding due to frequent sharp turns, and the paper is easy to break. In the process of papermaking, the moisture content of the paper is appropriately increased, which will improve the toughness of the paper, but it may cause dark spots (commonly known as steam spots) on the paper surface, while the intrinsic quality of the paper such as insulation performance will not be affected.

3. This product should be properly stored to prevent the influence of rain, snow, ground moisture, acid, alkali and chemical gas, and the use environment should be kept clean and hygienic.





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.

The products described in this publication are only sold to customers with the appropriate expertise and not to consumers. Please do not hesitate to contact us if you have any questions or if you experience any specific application problems. If the application for which our products are used is subject to an official approval requirement, the user/processor is responsible for obtaining these approvals. Our application recommendations do not exempt the user/processor from the obligation to examine and, if necessary, clarify the possibility of infringements of third-party rights.

A LEADING MANUFACTURER
SINCE 1958



Note: We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. XUJUE does not accept any responsibility whatsoever for potential errors or possible lack of information in this document. We reserve all rights in this document and in the subject matter and illustration contained therein. Any reproduction in whole or in parts is forbidden without XUJUE's prior written consent.

Copyright ©2024 XUJUE
All rights reserved



XUJUE ELECTRICAL
许绝电工股份有限公司

25th Floor, Ztaero Building, 14#, National Uni-Science Park, No. 279
West 3rd Ring Road, Zhengzhou, Henan, China.

Tel: +86 132 0388 9001 / +86 188 3741 8885

Fax No: +86 371 6712 0631

Email: info@ztaero.com

Web: www.ztaero.com

Alibaba: <https://ztelec.en.alibaba.com>

<https://xjei.en.alibaba.com>

Zhengzhou

Ztaero Building, No. 279 West 3rd Ring Road,
Zhengzhou, Henan, China.

Fax: +86 371 6712 0631

Xuchang

Zhongyuan Electric Valley, Xuchang, Henan,
China.

Fax: +86 374 5192688

Xuchang

No.3 LvHuai Rd, Eastern Industry Zone,
Xuchang, Henan.

Fax: +86 374 5192666

Chengdu

#7 Xingye Rd, JinYuan Industry Zone, Dayi,
Chengdu, Sichuan.

Guizhou

No.218, Development Avenue, Economic and
Technological Development Zone, Guiyang
City, Guizhou Province, China



www.ztaero.com



Facebook



YouTube



TikTok



LinkedIn



Instagram