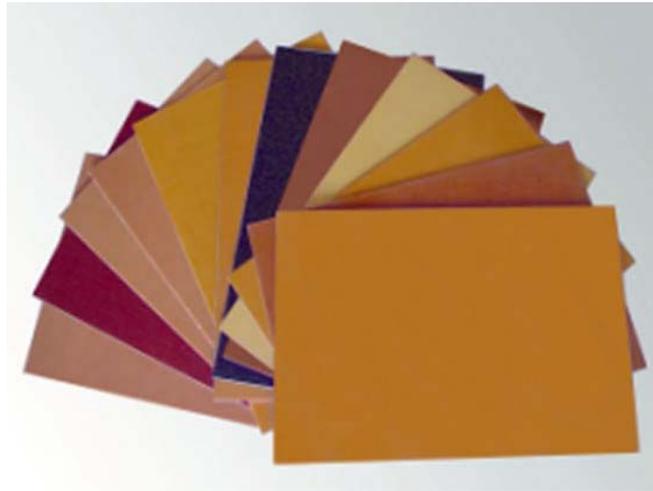


3025 Phenolic Cotton Cloth Rigid Laminated sheet

Standard No.: Q/DJ₁₀-121-2000



3025 phenolic cotton cloth rigid laminated sheet is made from cotton cloth impregnated with phenolic resin. It is made at high temperature and high pressure. It shows good mechanical property and high bonding strength. It is suitable for making insulating structural parts and components in electric motor, electric apparatus and mechanical equipment. It can also be used in transformer oil.

1 Technical requirements

1.1 Appearance

Its surface should be flat and smooth, free of contaminants and other obvious defects. Its edges should show net cuts and be free from delamination and laceration.

1.2 Dimensions

Its dimension can not be less than 950×1950, nominal thickness and tolerance are as shown in Form 1

Form 1		mm	
Nominal thickness	Tolerance	Nominal thickness	Tolerance
2.0	±0.23	10.0	±0.90
3.0	±0.33	11~15	±1.10
4.0	±0.38	16~20	±1.35
5.0	±0.48	21~30	±1.65
6.0	±0.53	31~40	±2.20
8.0	±0.68	42~50	±2.80

Note: The product of non-nominal thickness is settled upon negotiation between sellers and buyers, its deviation adopts the value of the next bigger nominal thickness.

1.3 Bending deflection: Shown in Form 2

Form 2		mm
Thickness	Bending deflection	
3.0~4.5	≤ 14	
5.0~10.0	≤ 10	
11~15	≤ 5	
16~30	≤ 3	

1.4 The laminated sheet should be free from cracks and scraps after being machined.

1.5 The mechanical, physical and dielectric properties of the laminated sheet are as shown in Form 3

Form 3

No.	Properties	Units	Values
1	Density	g/cm ³	1.30~1.42
2	Martens temperature MD	°C	≥ 125
3	Bending strength perpendicular to the laminations	MPa	≥ 105
4	Tensile strength MD	MPa	≥ 65
5	Charpy impact strength No gap MD	kJ/m ²	≥ 25
6	Bonding strength	N	≥ 5400
7	Dielectric strength perpendicular to the laminations in transformer oil at 90°C±2°C	If thickness is more than 3mm, process the sheet to 2.0mm±0.2mm from one side MV/m	≥ 2.0

Note: Other technical requirements are upon negotiation between sellers and buyers

2 Testing method

2.1 Appearance

Visual observation

2.2 Machining

As per *Machining Methods for Insulating Laminated Products*, Standard No.JB/Z141-1979.

2.3 Density

As per Method A of GB1033-1986. Weight of specimen: 2g-50g

2.4 Martens temperature

As per GB1035 in *Testing Method for Plastic Heat Resistance*. Test is unnecessary for the nominal thickness less than 10mm. Rare values can have a deviation of ±6% compared with the average value.

2.5 Charpy impact strength

As per clause 9.2 of GB5130-1985. If the nominal thickness is 3mm~10mm, it should be tested by using the nominal thickness; If the nominal thickness is less than 3mm, test is unnecessary; If the nominal thickness is more than 10mm, it should be machined to 10mm±0.2mm from one side, the number of the specimens for each group is no less than 5. Measure 3 points to get their arithmetic average as its testing result, the precision for testing the dimension should be 0.1mm. The span should be adjusted according to the thickness of the specimen; If the nominal thickness is no more than 5mm, the span should be 40mm±2mm; If the nominal thickness is more than 5mm, the span should be 70mm±2mm. The test should be parallel to the lamination, the specimen machined from one side should face to bob. Impact speed of bob is 3.5m/s±0.5m/s. the specimen machined does not break or does not break in the middle part of trisection, the testing result is invalid. Rare values of testing results can have the deviation of less than ±15% compared with the average value.

$$\text{Impact strength } (\sigma_n) = \frac{A_n}{b_n \cdot h_n}$$

σ_n — Impact strength kJ/m;

A_n — kJ

b_n — Width of specimen; m

h_n — Thickness of specimen; m

2.5 The other items are as per GB 5130-1985.

3 Inspection, marks, package, transportation and storage

3.1 Inspection items are as per Clause 1.1, 1.2, 1.3 and Item 7 of Form 3 in Clause 1.5. The items in Clause 1.1, 1.2, 1.3 should be checked one by one.

3.2 The laminated sheet shall be placed on underlay plates with height of more than 5cm from the floor in a clean and dry storage room where the temperature is below 40°C. It should be far from fire and heat sources and sunshine. The storage life of the laminated sheet is 18 months after leaving factory. If the laminated sheets have been stored more than 18 months, they may still be used after being tested to be qualified according to the technical requirements.

3.3 The other items are as per GB 1305-1985.

3.4

4 Remarks

4.1 The laminated sheets have different properties compared with metal. The method of JB/Z 141-1979 must be adopted when the product is machined.

4.2 Thermal conductivity of the laminated sheets is small, so high cutting speed and small depth of cut should be adopted when the product is machined.

4.3 It suffers from moisture easily after it is machined, so insulating varnish is used to coat it in order to protect it from moisture.

4.4 Smell and a lot of dust are produced when the laminated sheet is machined, so measures for removal labor protection should be taken.

Different performance of 3025 and 3025-1

NO.	Properties		Units	Index	
				3025	3025-1
1	Density		g/cm ³	1.30~1.42	1.35~1.55
2	Martens temperature	MD	°C	≥125	≥100
3	Bending strength perpendicular to the laminations MD		Mpa	≥105	≥80
4	Bonding strength		N	≥5400	≥5400
5	Dielectric strength perpendicular to the laminations in transformer oil at 90°C±2°C	2~3mm	MV/m	≥2.0	≥1.0
		If thickness is more than 3mm, process the sheet to 2.0mm±0.2mm from one side		≥2.0	≥1.0

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