

Laminated Densified Wooden Insulating Components for Power / Distribution Transformers and Switchgears

The Western India Plywoods Ltd., the largest integrated wood processing complex in the country, was incorporated in the year 1945, and had its humble beginnings as a small tea chest plywood making company. With the dynamism and vision of its proactive management, WIP grew over the six decades into a well integrated wood processing unit with finely tuned skills in new product development and manufacture.

In fact, right through its 6 decades of existence, WIP has been singularly responsible for the most significant product innovations in the Indian Plywood Panel Industry.

WIP has a highly diversified manufacturing facility at Cannanore, South India. A wet process hardboard plant of capacity 120 TPD, softboard manufacturing line for expansion joint fillers, a sophisticated commercial and decorative plywood manufacturing facility, plant for making Di-Athyl Phalate (DAP) moulding powder, pre-finished plant for coating on hardboard and other substrates with U.V. curing system, a joinery division making quality furniture, a blockboard and flush door division etc., are other product lines other than laminated densified wood.

All these facilities are supported by a most modern R&D Division, assisting the company's day to production and new products development. The Ministry of Science and Technology, Govt. of India has approved the R&D wing of WIP and has made many break through to its credit and in the proud owner of many patents.

Wiplam is manufactured using carefully selected veneers of specified species imparting high mechanical strength and insulating properties. Dried in specialized conveyor driers and after impregnating with Phenol Formaldehyde resin, the veneer pack is weighed individually and pressed in sophisticated high pressure presses under pressure and temperature. The pressed sheets after polymerisation is unloaded only after bringing the platten temperature to ambient condition. This ensures perfect boards without any dimensional variation ensuring machining accuracy of components.

Apart from WIPLAM we also manufacture densified wood for various other application like:

1. **WIPCHECK** - For bus body flooring, rail coach flooring & cladding, and construction industry.
2. **WIPCOM** - For components like studs, nuts, cleats and other segments.
3. **WIPCHEM** - For filter plates used in dyes & chemical industries and oil extraction mills.
4. **WIPROC** - For high precision jig forming tools in aeronautical industry and neutron shields in reactors.
5. **WIPBEAR** - For use as bearings and gears for silent application where mineral oils cannot be used as lubricants
6. **WIPWOOD** - For picking sticks and side levers in looms and lags for coir industry.



THE WESTERN INDIA PLYWOODS LIMITED
40 Years Experience in Manufacture of Densified Plywood

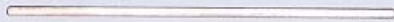
Items Produced



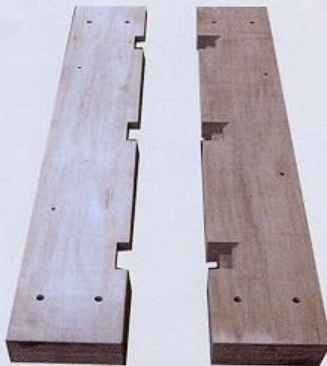
Cleats



Dowels



Wooden Supports



Beams for LV and HV Applications

WIPLAM - WIP's Transformer Wood. WIPLAM is Western India Plywood's revolutionary product for applications in the transformer industry.

WIPLAM is a homogeneous material manufactured from specified species of timber. It has exceptionally high mechanical properties coupled with oil absorption characteristics.

WIPLAM, after vacuum drying and impregnation with Pyrochlor or transformer oil, acquires the dielectric properties of transformer oil with enhanced mechanical properties.

Types & Grade

WIPLAM is designated with the symbol "WL" and is manufactured in two types:

Type 1: This represents laminates where all laminations have grains in the same direction.

Type 2: This represents adjacent laminations with grain direction at right angles to each other. Each type is manufactured in three different density ranges denoted with the nomenclature 'LD', 'MD' and 'HD'.

'LD' stands for a nominal specific gravity of 0.90. 'MD' stands for a nominal specific gravity of 1.10 and 'HD' for a nominal specific gravity of 1.30.

The following nomenclature system is usually used for identifying various grades of WIPLAM.

WIPLAM is usually denoted with the letters "WL", this comes first in the series.

Density follows after 'WL', i.e. WL (LD). Type comes third in the series, soon after the density. For example:

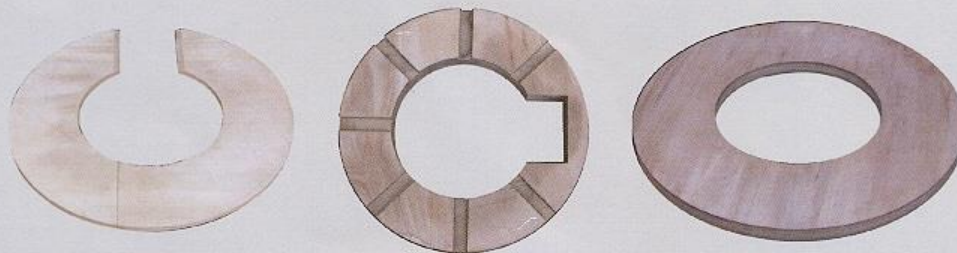
Grade WL (LD)1 represents a grade of WIPLAM, which has a specific gravity of 0.90 and the grain direction of all laminations parallel to each other.

Features

a) WIPLAM is generally manufactured in thicknesses of 3/8", (9.5mm) to 4" (102mm) in two grades.

WIPLAM is available in standard sizes depending upon thickness and grade. However, minimum width is preferable in case of Type 1 construction.

b) WIPLAM is also supplied in the form of components as per the customers drawing or sample.



WIPLAM - Winding Rings and Pressure Rings in Various Sizes



Overall View of Machine Shop



Wadkin-Pattern Miller



Pillar Drill



Wadkin High Speed Router

Testing Facilities



Mechanical Testing for M.O.R., Compression, Tensile, Shear and Impact



High Voltage Electrical Testing Machine upto 120KV

Applications:

WIPLAM is an industrial laminate, which finds extensive engineering applications in the manufacture of certain insulating components for the transformer industry.

Type 1 material is recommended for use where high tensile and bending properties are required besides insulation characteristics. It is used in the manufacture of cleats, buttons rods, packings etc., where components undergo stresses of high tensile and high bending loads.

Type 2 material is recommended where high compression and high shear strength values are required, besides insulation characteristics.

Our Customers

In India

AREVA Ltd.-Allahabad, BHEL-Bhopal & Jhansi, Transformer & Electricals Kerala Ltd.-Cochin, Transformers & Rectifiers Ltd-Ahmedabad, Andrew Yule-Chennai, Bharath Bijlee-Mumbai, EMCO-Mumbai, Indo Tech Transformers-Chennai, Voltamp Transformer-Baroda, Vijay Electricals-Hyderabad etc.etc.

Across the Globe:

Federal Transformers-Abu Dhabi Emirates Transformers & Switch Gear-Dubai, Ekaraat Transformers-Bangkok, Saudi Transformers-KSA, Wescosa-KSA, Al-Ahelia Transformer-Kuwait, Voltamp Transformers-Oman, Al-Jizzi Transformers-Oman etc.etc.

Properties	Unit	WL(LD)1	WL(LD)2	WL(MD)1	WL(MD)2	WL(HD)1	WL(HD)2
Specific gravity - Minimum	-	0.90	0.90	1.10	1.10	1.30	1.30
Percentage of moisture Volatile content - Average%	-	5	5	5	5	5	5
Percentage of oil absorption at a temperature of 90°C - Average %	-	8	8	6	6	4	4
Electrical strength after impreg- nation with transformer oil. a) Flatewise: 1/2" thick specimen at right angles to laminae and top surface - Average b) Edgewise: Across the grain for 1" specimen - Average	KV/MM KV/ thickness	4 25-60	4 25-60	4 25-60	4 25-60	4 25-60	4 25-60
Compression Strength a) Flatwise - At right angles to laminae and top surface- Minimum b) Parallel to grain - Endwise	Kg/Cm ² Kg/Cm ²	1000 700	1600 700	1200 800	1700 800	1400 1150	1800 1150
Bending strength : a) Along the grain - Minimum b) Across the grain - Minimum	Kg/Cm ² Kg/Cm ²	1000 -	900 600	1300 -	1200 700	1800 -	1600 800
Tensile strength - Minimum	Kg/Cm ²	1100	700	1200	800	1500	900
Shear strength : a) Perpendicular to grain and laminae (Endwise) - Minimum b) Parallel to laminae (Edgewise) Minimum	Kg/Cm ² Kg/Cm ²	300 250	350 300	350 300	400 350	400 350	450 400

WIPLAM Conforms to DIN 7707, IEC 61061-1 and IS 3513 Part-I



PATENTS TO OUR CREDIT

The R&D division of Western India Plywoods has pioneered several technological innovations in the wood working industry. We have so far bagged five patents for our inventions. ♦ Radiation induced polymerisation of DAP, MMA & PE. ♦ Radiation induced polymerisation of DAP and MMA. ♦ A process for manufacture of wood polymer composites by gamma irradiation. ♦ Manufacture of ABS plastics. ♦ Manufacture of SAN plastics.



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