Wiplam

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 teak 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 Chennai, South India. A wet process hardwood plant of capacity 120 TPD, softwood manufacturing line for expansion joint fillers, a sophisticated commercial and decorative plywood manufacturing facility, plant for making Di-Aethyl 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 day 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 breakthroughs to its credit and in the proud owner of many patents.

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 dyers & chemical industries and oil extraction mills.
4. WIPRO - 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 hays for coal industry.

THE WESTERN INDIA PLYWOODS LIMITED
40 Years Experience in Manufacture of Densified Plywood
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 insulation 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 alternate 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 0.80, "MD" stands for a nominal specific gravity of 1.00 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, followed by the density. For example:

Grade WL (LDH) 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 customer's drawing or sample.
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 clamps, busbars, pads, 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.

Across the Globe:
- Federal Transformers-Abu Dhabi
- Emirates Transformers & Switch Gear-Dubai
- Ekanaat Transformers-Bangkok
- Saudi Transformers-KSA
- Wesouza-KSA
- Al-Aheila Transformers-Kuwait
- Voltamp Transformers-Oman
- Al-Jizzl Transformers-Oman etc.
<table>
<thead>
<tr>
<th>Properties</th>
<th>Unit</th>
<th>WL (LD) 1</th>
<th>WL (LD) 2</th>
<th>WL (MD) 1</th>
<th>WL (MD) 2</th>
<th>WL (HD) 1</th>
<th>WL (HD) 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific gravity - Minimum</td>
<td>-</td>
<td>0.50</td>
<td>0.90</td>
<td>1.10</td>
<td>1.10</td>
<td>1.30</td>
<td>1.30</td>
</tr>
<tr>
<td>Percentage of moisture</td>
<td>-</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Volatile content - Average %</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage of foil absorption at a temperature of 90°C - Average %</td>
<td>-</td>
<td>8</td>
<td>8</td>
<td>6</td>
<td>6</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Electrical strength after impregnation with transformer oil</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Platewise: 1/2&quot; thick specimem at right angles to laminate and top surface - Average</td>
<td>KV/MM</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>b) Edgewise: Across the grain for 1&quot; specimen - Average</td>
<td>KV/thickness</td>
<td>25.60</td>
<td>25.60</td>
<td>25.60</td>
<td>25.60</td>
<td>25.60</td>
<td>25.60</td>
</tr>
<tr>
<td>Compression Strength</td>
<td>Kg/Cm³</td>
<td>1.00</td>
<td>1.80</td>
<td>1.20</td>
<td>1.70</td>
<td>1.40</td>
<td>1.80</td>
</tr>
<tr>
<td>Parallel to grain - Endwise</td>
<td>Kg/Cm³</td>
<td>1.00</td>
<td>1.70</td>
<td>0.90</td>
<td>0.80</td>
<td>1.50</td>
<td>1.10</td>
</tr>
<tr>
<td>Bending strength:</td>
<td>Kg/Cm³</td>
<td>1.00</td>
<td>1.90</td>
<td>1.10</td>
<td>1.20</td>
<td>1.80</td>
<td>1.60</td>
</tr>
<tr>
<td>a) Along the grain - Minimum</td>
<td>Kg/Cm³</td>
<td>1.00</td>
<td>1.60</td>
<td>1.70</td>
<td>1.00</td>
<td>1.40</td>
<td>1.80</td>
</tr>
<tr>
<td>b) Across the grain - Minimum</td>
<td>Kg/Cm³</td>
<td>1.00</td>
<td>1.20</td>
<td>1.80</td>
<td>1.00</td>
<td>1.50</td>
<td>1.90</td>
</tr>
<tr>
<td>Tensile strength - Minimum</td>
<td>Kg/Cm³</td>
<td>1.00</td>
<td>1.20</td>
<td>1.20</td>
<td>0.80</td>
<td>1.50</td>
<td>0.90</td>
</tr>
<tr>
<td>Shear strength:</td>
<td>Kg/Cm³</td>
<td>300</td>
<td>350</td>
<td>350</td>
<td>400</td>
<td>400</td>
<td>450</td>
</tr>
<tr>
<td>a) Perpendicular to grain and laminate (Endwise) - Minimum</td>
<td>Kg/Cm³</td>
<td>250</td>
<td>301</td>
<td>300</td>
<td>350</td>
<td>350</td>
<td>400</td>
</tr>
<tr>
<td>b) Parallel to laminate (Edgewise) Minimum</td>
<td>Kg/Cm³</td>
<td>250</td>
<td>301</td>
<td>300</td>
<td>350</td>
<td>350</td>
<td>400</td>
</tr>
</tbody>
</table>

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

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: 1. Radiation induced polymerization of DAP, MMA & PE. 2. Radiation induced polymerization of DAP and MMA. 3. A process for manufacture of wood polymer composites by comonomer irradiation. 4. Manufacture of Allplastics. 5. Manufacture of SAN plastic.