

BAMBOO MAT - WOOD VENEER COMPOSITES

Availability of industrial wood from natural forests have been on decline for many years now, creating a raw material crisis for the wood based panel industry in the country. The national forest policy 1988 lays emphasis on development of wood substitute. Timber available from fast growing plantation species generally have lower strength properties, dimensional stability and service life.

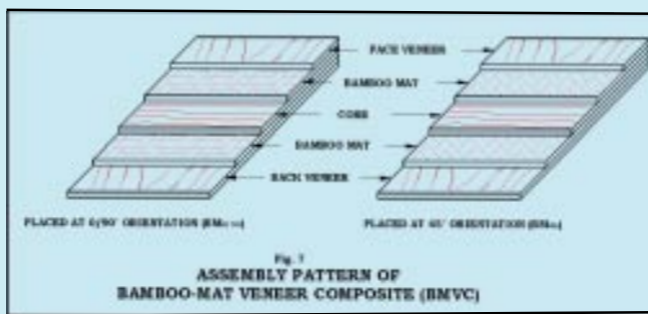
IPIRTI, a premier research institute of the MOEF, GOI, in the field of composites based on wood and other lignocellulosic material have developed environmentally sustainable technologies for making plywood like sheet materials from Bamboo. Extensive research using Bamboo Mat in combination with plantation wood for sheet material has resulted in development of Bamboo mat Veneer composite. BMVC is a preferable panel material due to its superior physical mechanical properties compared to Bamboo Mat Board (BMB) and general purpose plywood and on par with structural plywood.

Bureau of Indian Standard has already brought out a standard on "Bamboo mat veneer composite for general purpose IS:14588/1999".

MANUFACTURING PROCESS

Resin coated bamboo mats, woven in herringbone pattern using slivers of about 0.6mm thickness, and rotary cut veneers from plantation wood are used for manufacture Bamboo Mat Veneer Composites. Specific construction of bamboo mat and veneer layers are used and thickness of manufactured board can be in the range of 4 mm to 25 mm. Various process parameters have also been standerized.

Bamboo mat Veneer composite boards can be made in existing plywood or Bamboo mat board manufacturing factories without major additional capital investment.



PROJECT DETAILS (SSI UNIT)

- | | | | |
|------------------------------|----------------------------------|---------------------------------------|--------------------------------|
| 1. Installed capacity | : 4000 sq. m per day (4mm basis) | 6. Man power | |
| 2. Land & Building | | i) Managerial | : 4 |
| i) Land | : 10,000 sq.m | ii) Foreman | : 3 |
| ii) Building | : 1250 sq.m | iii) Labour | : 40 |
| 3. Capital Investment | | 7. Raw material cost for the products | : Rs.290.00 per m ² |
| i) Machineries | : 75 lakh. | (Bamboo mat, veneer & Resin) | of 15mm board. |
| ii) Equipments | : 25 lakh. | | : Rs.205.00 per m ² |
| iii) Raw Materials | : 45 lakh. | | of 12 mm board. |
| 4. Raw Material Requirement | | | |
| (300 working days in a year) | | | |
| i) Bamboo mat | : 5244800 sq.m | | |
| ii) Veneer (2'5mm) | : 3576000 sq.m | | |
| iii) Face (0.6 mm) | : 2384000 sq.m | | |
| 5. Energy requirement | | | |
| i) Electricity | : 800 KW/Shift. | | |
| ii) Water | : As per requirement. | | |
| iii) Steam | : - Do - | | |

MACHINERIES :

- 1) Hot Press,
- 2) Glue Spreader.
- 3) Glue Applicator.
- 4) Dryer or Drying Chamber.
- 5) Boiler.
- 6) DD saw.
- 7) Sander.
- 8) Generator.
- 9) Resin plant.

EQUIPMENTS :

- 1) Scissor lifter.
- 2) Conveyer.
- 3) Trolley.
- 4) Measuring equipments.
- 5) Air compressor.
- 6) Blower for cooling aluminium cauls.
- 7) Aluminium cauls.
- 8) Storage tank for chemicals.

**PHYSICAL & MECHANICAL PROPERTIES OF BMVC
(By replacing 63% of wood with Bamboo Mats.)**

Sl. No.	Property	BMVC	Sl. No.	Property	BMVC
1	Density kg/m ³	882	5	Modulus of Elasticity N/mm ² ♦ Along ♦ Across	7820 3210
2	Glue Shear Strength ♦ Dry State ♦ Wet State (8 Hr. Boiling) Strength N/mm ²	1650 N 1250 N	6	Modulus of Rigidity N/mm ²	3316
3	a) Tensile ♦ Along ♦ Across b) Compressive ♦ Along ♦ Across	36.4 35.8 43.9 40.2	7	Internal bond Strength ♦ Dry ♦ Wet	2.3 mp a 1.65 mp a
4	Modulus of Rupture N / mm ² ♦ Along ♦ Across	68.50 55.40	8	Surface Strength ♦ Dry ♦ Wet	13.8 mp a 9.8 mp a

Wood veneer: Grevillia robusta (silver oak), Bamboo: Melocanna bambusoides

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