



**CHAMBROAD
TIMBER**

**Industrial-Grade
Laminate Timber**

CHAMBROAD TIMBER



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C2B/C3B/C2R/P4R



18 consecutives years

Enrollment of China's Top- 500

Company Profile

Shandong Chambroad Timber Material Co.,Ltd. (referred to as "Chambroad Timber") belongs to Shandong Chambroad Holding Group Co.,Ltd, founded in 2014, is committed to the development of green recycling and low carbon economy, and produces high performance special wood-based material solutions for global high-end equipment manufacturing, through advanced biomodification technology and proprietary moulding technology.

Chambroad Timber operates a 235,000 m² production base with an annual capacity of 10,000 tons, offering an integrated R&D-to-after-sales service system focused on insulating laminated wood and cryogenic ship blocking timber for LNG, LPG, LEG carriers, ultra-low temperature transport, high-speed rail, and power infrastructure-overcoming critical technical and supply chain challenges to support national strategic projects and accelerate the global green transition.

HONOR

Company Honor

- 2017 Approved as "Binzhou Engineering Research Center for Novel Bio-based Recomposite Materials"
 - 2025 Designated as "One Enterprise, One Technology Center"
 - 2022 Co-established with Northeast Forestry University the "Engineering Research Center of Novel Wood-based Materials" (Ministry of Education)
 - 2023 Recognized as "R&D Base for Recomposite Materials – National Key Project of the 14th Five-Year Plan"
-
- Awarded the Second Prize for Science and Technology Progress of Shandong Province
 - First Prize for Innovative Patent, China Wood Protection Industry Association (2025)
 - Covered by PICC Product Liability Insurance
 - Certified by DNV and China Classification Society (CCS)



ESG

Green · Low-Carbon · Sustainable

Supporting Carbon Goals, Building Green Momentum

Every 1 m³ of industrial laminated wood produced sequesters 2,495.6 kg of CO₂.

Breaking Bottlenecks, Securing Supply Chains

We enable localized substitution of critical technologies, reducing external dependencies and strengthening the supply chain for high-end equipment manufacturing.

Driving Green Shipping Corridors

Our specialty materials serve LNG, LPG, LEG carriers, ultra-low temperature transport (liquid hydrogen, nitrogen, helium), high-speed rail, and power infrastructure—accelerating the global green transition with high-performance solutions.

CHOOSE

Why Choose Us



Team Advantages

Co-established the Ministry of Education Engineering Research Center with an academican-led team.

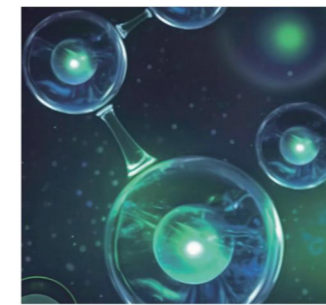
- 60%** Masters/PhDs of R&D team
- 15+** QC Provincial-Level Major Sci-Tech Innovation Initiative
- 200+** Skilled Worker Core Skilled Technicians of Production Team
- 10+** Experts Industry & External Experts Extreme-Environment Material Design & Wood Modification

Factory

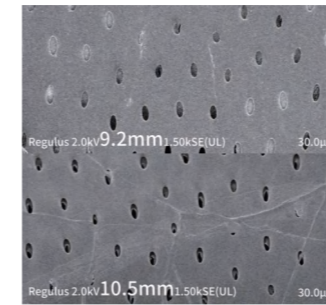
2 Facilities	235000 m ² Area	10000+ T Production Capacity	800+ Project Application
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11 years R&D 4 Core Technical

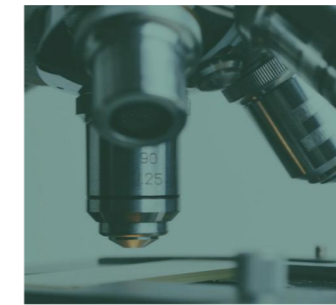
Biomass Modification Material Technology



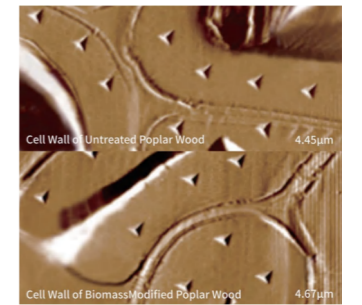
Cell Wall Pit Aperture Enlargement Technology



Modifier Activity Control Technology



Biomass Cell Wall Reinforcement Technology

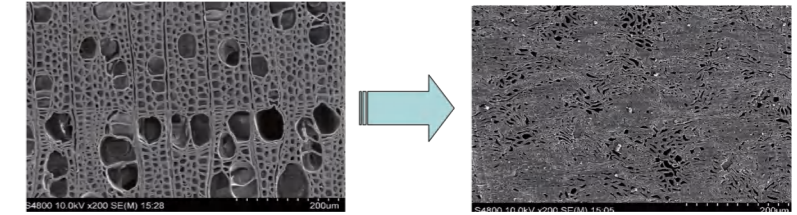




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Ship industry:
Cryogenic Tank Support
Lamininate Timber

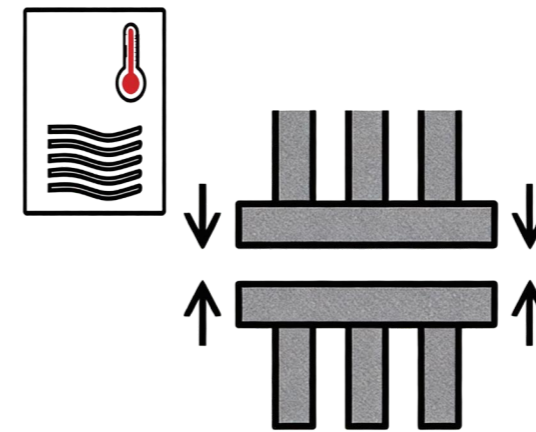
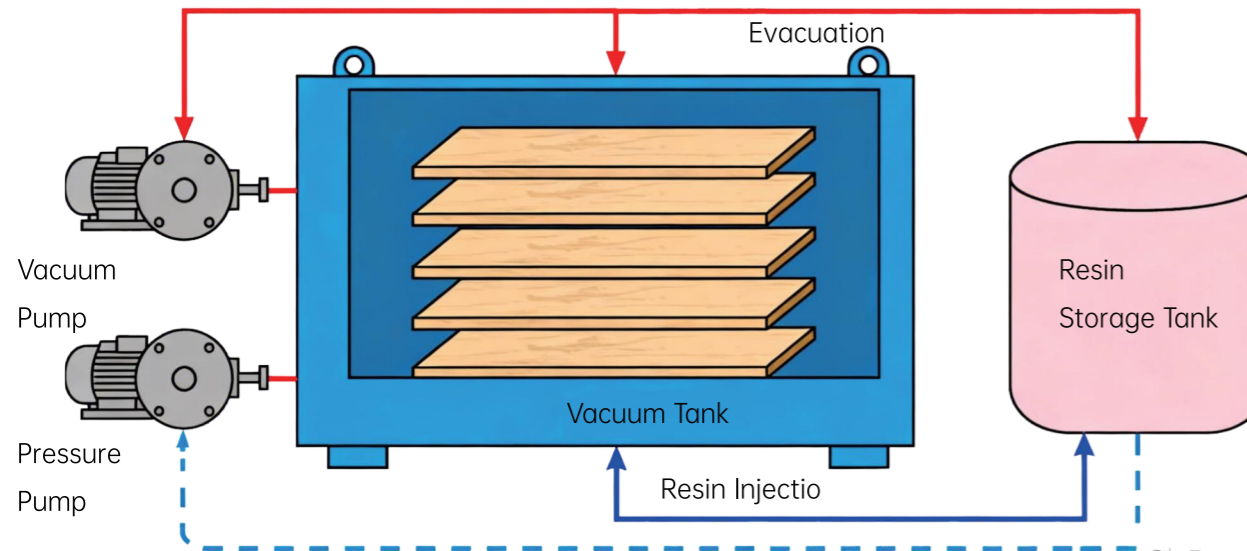
EDGE Core Technology



Pre and Post Compression Porosity



Vacuum Pressure Impregnation Equipment Diagram

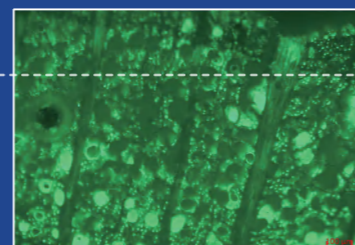


Veneer Modification

Natural wood veneers are modified and reconstituted using cryogenic-resistant synthetic resin to achieve high moisture resistance, thermal stability, and excellent insulation and mechanical strength.



Before modification



After modification

High-Temperature & High-Pressure Molding

After modification, the material undergoes a precise lay-up process and is placed into a press, where high temperature and pressure are applied to complete curing and shaping.

Machining

Using high-precision machine tools, material is processed into various specifications to meet different customer requirements.



Cryogenic Tank Support Laminated Timber

Essential for LNG tank support and insulation. Made with proprietary biomassmodified materials and patented cell-level technology, it delivers exceptional performance at cryogenic temperatures - maintaining structural stability, high compressive and flexural strength in extreme cold environments



Key Functions:

Structural Support – Bears tank weight at -163°C, ensuring secure tank-to-hull connection.

Damping – Engineered elasticity absorbs sloshing loads, reducing structural fatigue.

Insulation - Blocks cold transfer from tanks to hull, preventing embrittlement and overcooling.

Core Performance

Items	Unit	Chambroad	Product 1	Product 2
Density	G/cm ³	1.36	1.36	1.35-1.4
Water Absorption	%	0.27	0.3	0.5
Flexural Strength (23°C, Perpendicular)	Mpa	259	140	120
Flexural Strength (-196°C, Perpendicular)	Mpa	297	150	/
Modulus of Elasticity (23°C, Perpendicular)	Mpa	24033	15000	15000
Modulus of Elasticity (-196°C, Perpendicular)	Mpa	27577	16000	/
Compressive Strength (23°C, Parallel)	Mpa	181.2	160	> 170
Compressive Strength (-196°C, Parallel)	Mpa	249	/	/
Compressive Strength (23°C, Perpendicular)	Mpa	284.9	250	> 240
Compressive Strength (-196°C, Perpendicular)	Mpa	353	260	/
Shear Strength (23°C, Parallel)	Mpa	54.8	25	76
Shear Strength (23°C, Perpendicular)	Mpa	90.9	70	73
Shear Strength (23°C, Interlaminar)	Mpa	44.4	25	22
Coefficient of Linear Thermal Expansion (Parallel)	10 ⁻¹⁶ /K	21.5	160	/
Coefficient of Linear Thermal Expansion (Perpendicular)	10 ⁻¹⁶ /K	2.59	10	8
Thermal Conductivity @ +30°C	W/(m·K)	0.089	/	0.23

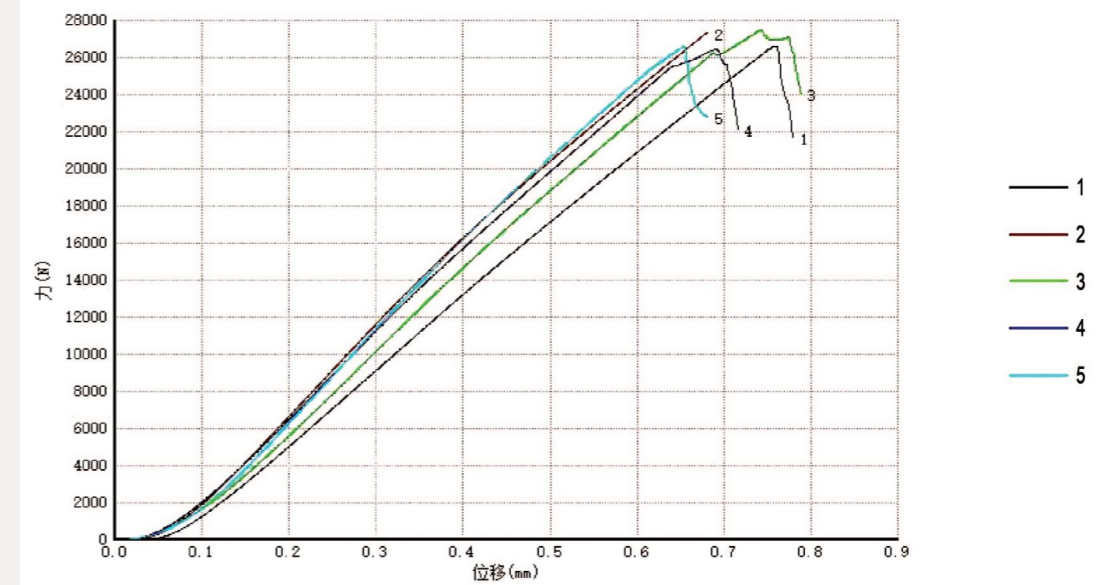


Superiority

Benchmarked against international competitors, 14 core performance tests were conducted on our cryogenic ship blocking timber. Results confirm that Chambroad Timber outperforms in key areas - thermal insulation, compressive, shear, bending, and impact resistance - fully meeting the most demanding service conditions.

Dynamic Pressurization Performance

Tested to DNV-CP-0099 standard, the material exhibits a mean thickness change of ≤0.03 mm after 5-7 pressurization cycles, demonstrating excellent dimensional stability.

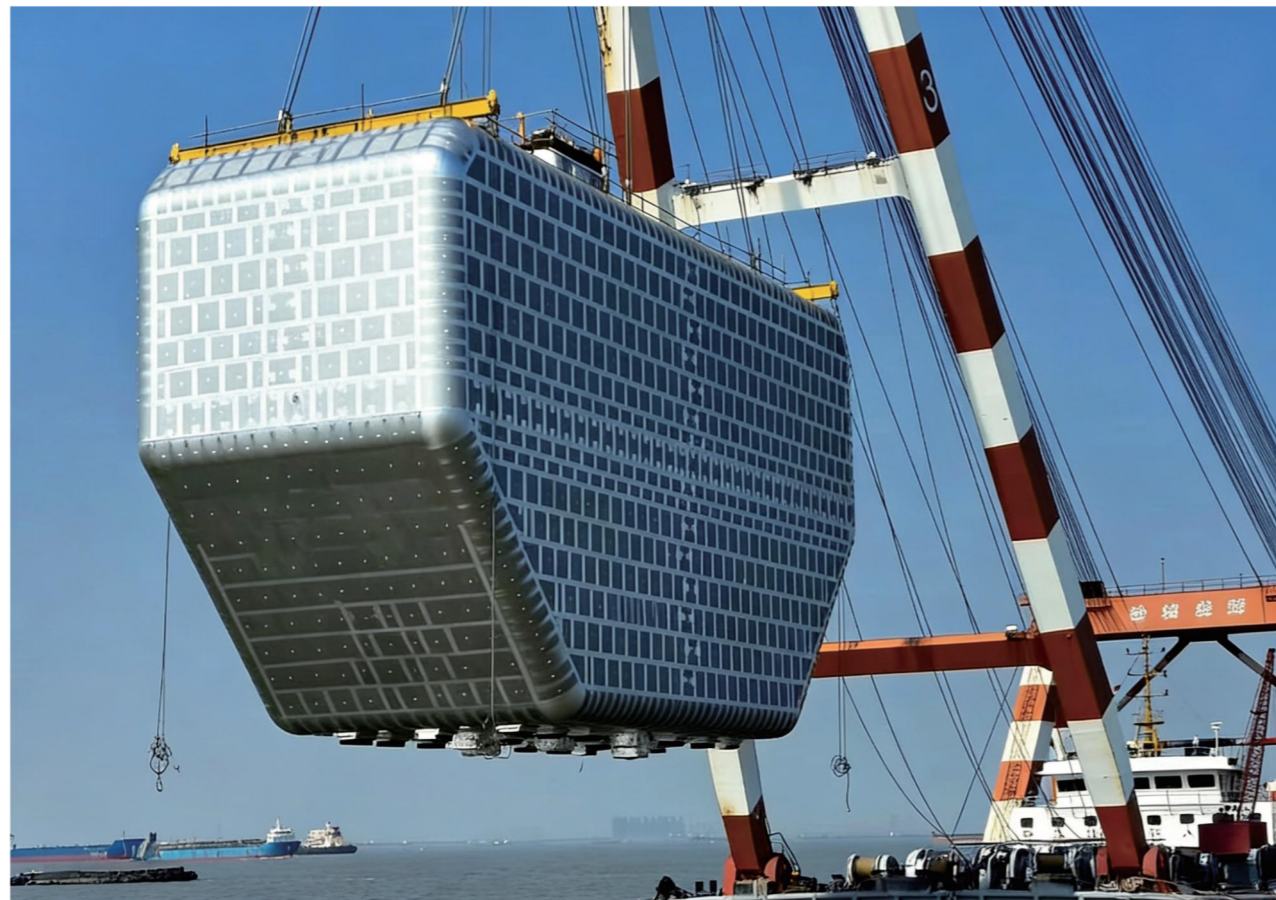


Compressive Load-Displacement Curve

Application

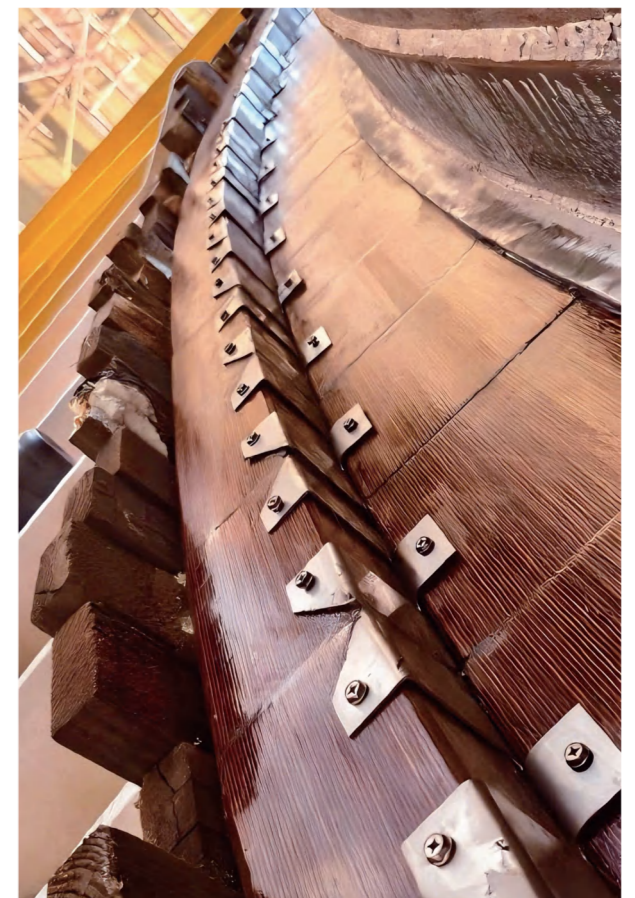
Type B cargo tanks Support Timber

Type B cargo tanks: MOSS and IHI SPB. Designed for multi-directional reinforcement, the blocking timber precisely meets mechanical stress requirements from various directions, and through precision machining, achieves a perfect fit with metal components - ensuring safe, stable, and long-lasting insulation and support for tank and piping systems.



Type C cargo tanks Support Timber

Suitable for fully refrigerated, fully pressurized, and semi-refrigerated/semi-pressurized LNG, LPG, and LEG carriers. The material combines high mechanical strength with light weight, and offers full waterproofing, low thermal conductivity, excellent chemical stability, and a low coefficient of linear thermal expansion.



03

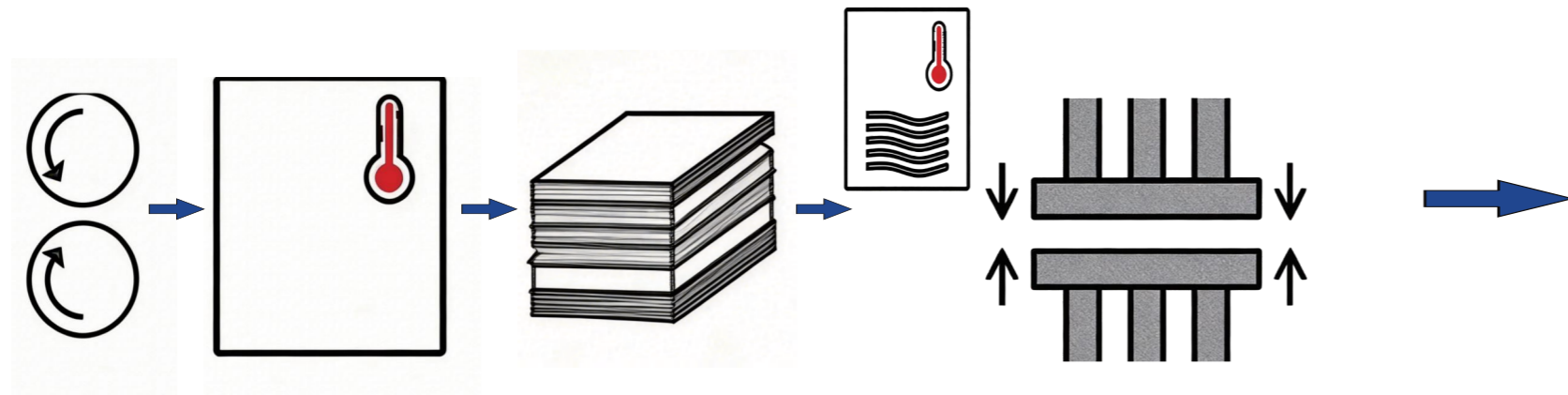
Electrical Industry:
Electrician Laminated
Timber



EDGE

Core Technology

Process 1



Coating & Drying

High-quality birch wood is selected and surface-prepared. Adhesive is evenly applied, and the coated veneers are dried to the required moisture content.

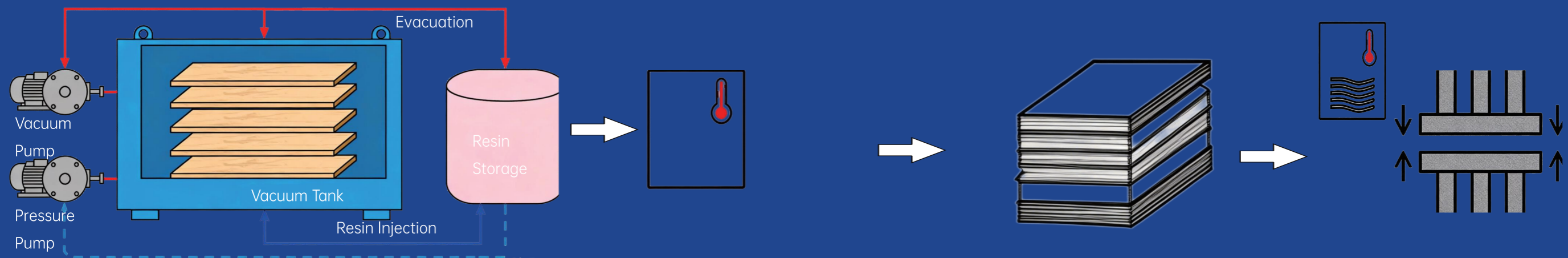
Lay-up & Molding

The dried veneers are stacked layer by layer according to specifications, then placed into a press where high temperature and pressure are applied to complete curing and shaping.

Machining

The material is processed using high-precision machine tools to produce various specifications based on customer requirements.

工艺技术2



Veneer Modification

Natural wood veneers are modified and reconstituted with cryogenic-resistant synthetic resin to achieve high moisture resistance, thermal stability, and excellent insulation and mechanical properties.

Drying

The adhesive-coated veneers are dried to the specified moisture content.

Lay-up & Molding

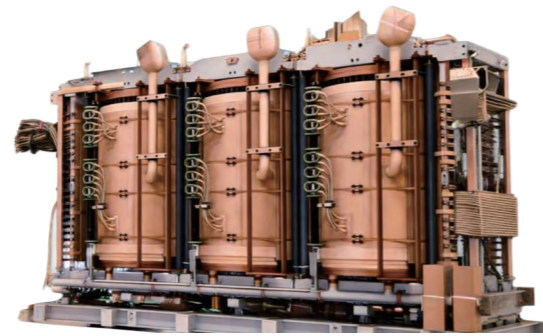
The dried veneers are stacked layer by layer according to specifications, then placed into a press where high temperature and pressure are applied to complete curing and shaping.



Electrical Laminated Timber

Description

Electrical laminated wood - made from birch or beech veneers with interlayer insulation - offers high dielectric strength, mechanical robustness, fast oil absorption, and easy impregnation. Widely used in oil-immersed transformers to replace steel, paperboard, and epoxy materials for press plates, lead supports, and spacer blocks.



Main products

GB	GB_T20634.3LYT1278	P3B	P4B	C2B	C3B	C4B
EN	IEC61061	P3R	P4R	C2R	C3R	C4R
ASTM	DIN7707	KP20213	KP20214	KP20222	KP20223	KP20224
Density g/cm ³	EC61061	1.1-1.2	1.2-1.3	0.9-1.1	1.1-1.2	1.2-1.3

Specification



Item	Unit	Length	Width	Thickness
Electrical Laminated Timber	mm	3000	1500	10-120
Electrical Laminated Timber	mm	2000	1000	10-120
Electrical Laminated Timber	mm	2500	1200	10-120

Note: Available in all standard sizes suitable for transformer applications.

Key Parts

Chambroad Electrical Laminated Timber is a core insulation and support material used in oil-immersed transformers (10kV-750kV) and instrument transformers. Main components include upper and lower press plates, clamping rings, core support structures, insulating spacers, and specialty parts such as studs and nuts.



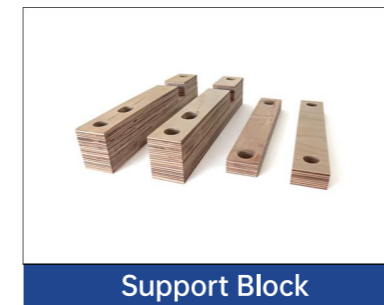
Press Plate



Press Ring



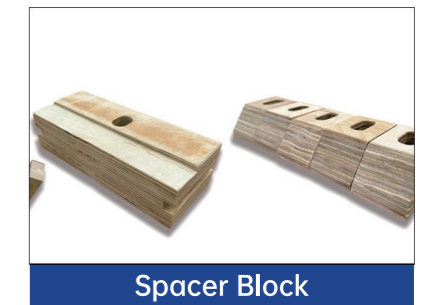
Step Block



Support Block



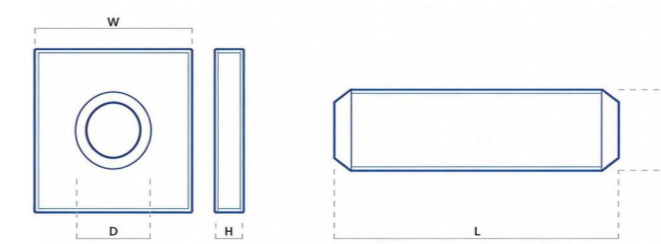
Nuts



Spacer Block

Nuts

Hole D	Size			H=1d	Tensile Strength h	H=2d	Tensile Strength h	H=2d	Tensile Strength
	Tolerance mm	W mm	H mm						
M8	0.265/+0	19	10	10	2KN	20	3KN	30	4KN
M10	0.3/+0	22	10	10	4KN	20	7	30	10
M12	0.335/+0	24	12	12	6KN	24	12	36	16
M16	0.335/+0	32	16	16	11KN	32	21	48	27
M20	0.45/+0	36	20	20	16KN	40	28	60	38



Nut
Note: H indicates nut height.

▶ C2B & C3B – Key Performance Comparison

No.	Item	Unit	Chambroad	GB	Other
1	Apparent Density	g/cm ³	1.12	1.1-1.2	1.18
2	Interlaminar Shear Strength	MPa	25.4	≥7	20.4
3	Flexural Strength (Perpendicular, A-Direction)	MPa	229	≥65	135
4	Flexural Strength (Perpendicular, B-Direction)	MPa	149	≥65	122
5	Flexural Modulus (Perpendicular, A-Direction)	GPa	17.4	≥8	14.4
6	Flexural Modulus (Perpendicular, B-Direction)	GPa	10.2	≥8	12.3
7	Compressibility (at 20 MPa)	C(%)	1.35	≤3	2.84
8	Recoverable Compressibility (at 20 MPa)	Crev	85.7	≥70	86.1
9	Impact Strength (Notched, A-Direction)	kJ/m ²	45.6	≥13	26.6
10	Impact Strength (Notched, B-Direction)	kJ/m ²	33.3	≥13	25.2
11	Perpendicular Compressive Strength	MPa	244	≥120	229

▶ C2R Key Performance Comparison

No.	Item	Unit	Chambroad	EN	Other
1	Apparent Density	g/cm ³	1.02	0.9-1.1	0.95
2	Moisture Content	%	1.9	≤6	5
3	Oil Absorption Rate	%	18.1	≥15	25
4	Contamination to No.25 Transformer Oil (50Hz, Δtanδ)	/	9.0×10 ⁻⁵	≤0.1	0.01
5	Flexural Strength (Perpendicular, A-Direction)	MPa	137	≥55	110
	Flexural Strength (Perpendicular, B-Direction)	MPa	93.9	≥55	/
6	Flexural Modulus (Perpendicular, A-Direction)	GPa	9.19	≥6	9
	Flexural Modulus (Perpendicular, B-Direction)	GPa	7.68	≥6	/
7	Perpendicular Compressive Strength	MPa	214	/	200
8	Perpendicular Electric Strength	kV/3mm	51.3	≥30	SQ: 45 HQ: 50 TQ: 55
9	Parallel Breakdown Voltage	kV	116	≥50	SQ: 70 HQ: 80 TQ: 90
10	Volume Resistivity (105±2°C/48h, Normal Air)	Ω·m	7.1×10 ¹³	/	1×10 ¹²

▶ P4R– Key Performance Comparison

No.	Item	Unit	Chambroad	EN	Other
1	Apparent Density	g/cm ³	1.21	1.2-1.3	1.25
2	Moisture Content	%	2.8	≤6	5
3	Oil Absorption Rate	%	6.85	≥5	7
4	Contamination to No.25 Transformer Oil (50Hz, Δtanδ)	/	1.0×10 ⁻⁴	≤0.1	0.01
5	Flexural Strength (Perpendicular, A-Direction)	MPa	193	≥180	180
6	Flexural Modulus (Perpendicular, A-Direction)	GPa	17.5	≥15	16
7	Perpendicular Compressive Strength	MPa	179	/	120
8	Perpendicular Electric Strength	kV/3mm	61.5	≥36	SQ: 45 HQ: 50 TQ: 55
9	Parallel Breakdown Voltage	kV	109	≥50	SQ: 70 HQ: 80 TQ: 90
10	Volume Resistivity (105±2°C/48h, Normal Air)	Ω·m	6.7×10 ¹³	/	1×10 ¹²



▶ Superiority

With over 20 performance tests conducted, results show:

B-Series exhibits clear advantages in compressibility, compressive strength, shear, bending, and impact resistance compared to leading domestic products—fully meeting application requirements.

R-Series also demonstrates significant advantages over leading international products across multiple parameters.

CHAMBROAD TIMBER