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Three-layer panels

made of solid wood

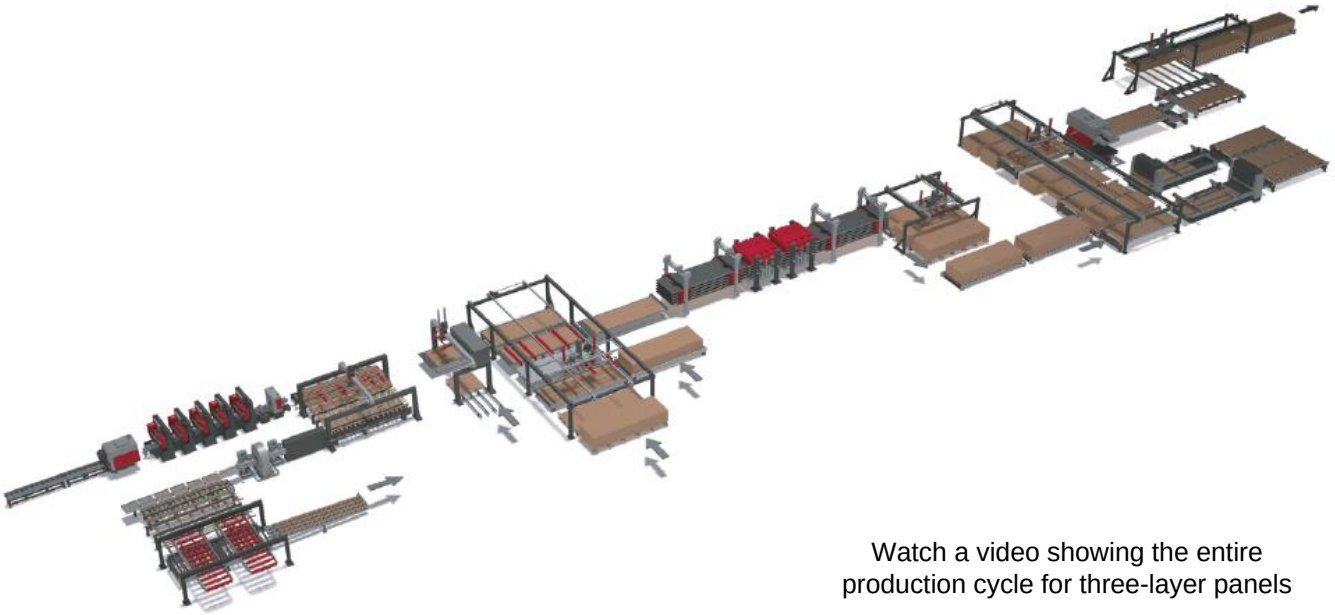
PRODUCTION OF THREE-LAYER PANELS

Products:
• three-layer solid wood panels

Raw materials for production:
• Sawn timber with a moisture content of +-10%
• AW 100 adhesive system

Production standard:
• EN 13353 Solid wood panels (SWP)

Production capacity:
• over 1,000,000 m² per year



Watch a video showing the entire production cycle for three-layer panels

PRODUCT

Three-layer solid wood panels (TLP)

are large-sized panels consisting of three layers: two parallel outer layers and a middle layer with fibres perpendicular to the outer layers.

Each layer consists of lamellas of coniferous wood species. The thickness of the layers can vary, determining the thickness of the panel.

When selecting raw materials for production, priority is given to the quality and environmental friendliness of timber and components.

A water-resistant adhesive system based on melamine and compliant with the AW100 standard is used in the production of panels. This system is based on the development of formaldehyde-free adhesive systems, where adhesive emissions do not exceed the harmful emissions from the wood itself and is an environmentally friendly material.

AREAS OF APPLICATION:

- wooden house construction
- interior finishing works
- facades, roof overhangs
- furniture production
- as partitions
- door and gate production
- formwork and I-beam production

KEY ADVANTAGES:

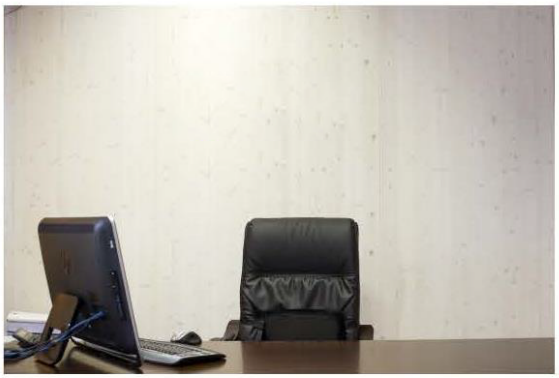
- high degree of environmental friendliness
- made from solid wood
- dimensionally stable, resistant to deformation
- large format (2 x 6 metres)
- various thicknesses and grades
- high bending strength
- lightweight
- multifunctional

FACADES

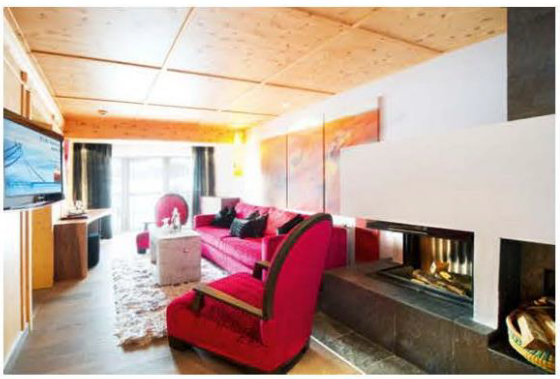
The large format allows for new solutions in facade design.

With additional processing, our slabs can be used in any atmospheric conditions.

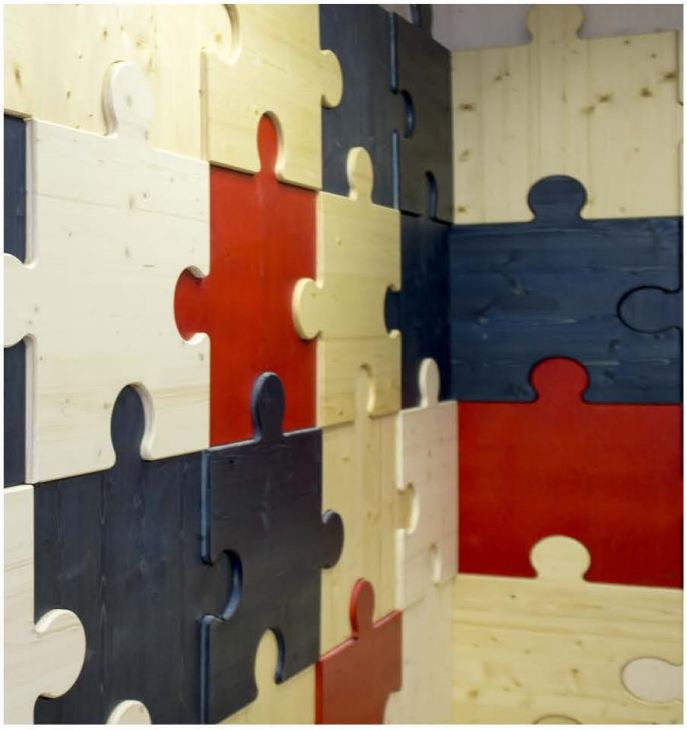
INTERIORS




INTERIOR SOLUTIONS



A distinctive feature of three-layer panels is the visible arrangement of annual rings and layers, which gives them a unique appearance.

- **AESTHETIC APPEARANCE**
thanks to lamella widths of up to 200 mm

- **EASY TO WORK WITH**
(standard and curved cutting, milling, painting, etc.)

- **DURABILITY**

- **ECO-FRIENDLY PRODUCT**

HOUSE CONSTRUCTION

TLP is characterised by a high degree of strength and stability under compression and tension, which allows the panel to be used in various areas of house construction.

- Ceiling cladding
- Wall panelling
- Floor covering
- Facade
- Roof overhangs
- False beams

TLP is suitable for any type of frame as both a structural and finishing material.

EXTERNAL ENVIRONMENTAL FACTORS

PRECIPITATION

When exposed to a humid environment, the moisture content of wood increases. Uneven moisture content in the wood in the transverse and surface directions can lead to cracks in the outer layer lamellas. If the moisture content of the wood exceeds 18% for a long time, this can lead to fungal damage, which will deteriorate the appearance of the product.

SOLAR RADIATION

The outer surface of the panels heats up under the influence of sunlight. This results in a reduction in their moisture content compared to the inner layers. This uneven distribution of moisture can lead to cracks. Light-coloured wood surfaces heat up much more slowly than dark ones, so it is advisable to choose light-coloured finishes.

ULTRAVIOLET RADIATION

UV rays cause the lignin contained in wood to decompose and reduce its concentration. As a result, the surface of the wood may become uneven or grey. Sometimes such changes on the facade may be intentional, but not all customers require this.
To prevent unwanted changes on the surface of the facade, finishing materials with a sufficient pigment content should be used.

STRUCTURAL PROTECTION OF WOOD

Structural measures to protect wood are preferable to any alternatives.
• The facade structure must be well ventilated.
• The width of the roof cornice (overhang) should be of optimal size.
• All joints must be protected.
• The height of the lower edge of the facade must be at least 300 mm from the floor level.
• The horizontal edges of the panels must have chamfered edges to prevent water accumulation. The ends of the panels must be treated with a protective agent.

RECOMMENDATIONS FOR FINISHING WORK

The appearance and service life of panel facades depend largely on the type of panels used and their installation, as well as on the facade design. Facade cladding panels consist of three cross-laminated layers of wooden lamellas glued together. For facade cladding, we recommend using panels with top layers of A or B quality. For better drainage of precipitation, it is recommended to install the panels with the grain running vertically.

To improve the appearance and increase the reliability of the cladding, we recommend rounding the edges. The minimum thickness of the panels used on the facade is 22 mm.

GENERAL RECOMMENDATIONS FOR THE USE OF THREE-LAYER PANELS

In order to preserve the appearance and protect the wood structure, as well as to maximise the service life, the front surfaces, especially those facing the street (facades, roof overhangs), must be fully protected. Full protection of the wood includes protection from environmental influences and weather conditions (rain, fog, dew, snow, condensation, ice and rain, temperature changes, the effects of oxygen, carbon dioxide, dust, soot, etc. in the atmosphere), various components of sunlight (ultraviolet radiation) and the biological effects of harmful organisms.

SURFACE TREATMENT

The outer surface of the panels must be treated with brushes or sandblasting equipment. This removes softer wood and reduces the likelihood of surface cracks. In addition, the contact area of the surface increases, which improves the adhesion of the finishing material to the wood.

Recommended rules for using our products.

• If 3- and 5-layer wood-based panels are used on facades, we recommend using a **thickness of 27 mm**. Using a lower-grade product with a smaller thickness may result in a deterioration in appearance and technical problems.

• Cracks on the wood surface are a natural occurrence when used outdoors and shall not be considered a defect. Thin panels with outer layer thicknesses of less than 8 mm are prone to cracks that reach the inner layer.

• Pallets with wooden panels should be placed horizontally and stored in a dry, enclosed space. The distance between packages should be uniform, but no more than 1 m. Failure to comply with these requirements may result in deterioration of the panels, for which the manufacturer is not responsible.

• Panels treated with finishing (paint and varnish) materials on only one side tend to warp, so it is recommended to treat both the front and back surfaces of the panels.
If the thickness of one of the outer layers is reduced, compensatory measures must be taken on the opposite side.

• When using panels outdoors and on facades, the edges of the panels must be protected from contact with moisture.
To protect them, treat the edges with a special moisture-proofing agent or a sloped drip edge, using sheet metal profiles to cover the upper horizontal edges of the panels.

• Black spots form at the points of contact between untreated panels and metals. Therefore, only high-quality stainless-steel fasteners should be used. In addition, it is not recommended to work with metal near multi-layer wood panels, as this may result in the formation of metal dust.

• When using panels outdoors, they must be treated appropriately and protected with a coating in accordance with our recommendations.

TECHNICAL DATA:

Strength characteristics:

	UOM	mm	mm
Panel thickness	mm	**18**	**27**
Thickness of outer layers	mm	5.8	8.75
Thickness of inner layer	mm	6.4	9.5
Bending strength along grain	N/mm²	63.80	65.3
Bending strength across grain	N/mm²	10.25	10.71
Modulus of elasticity in bending along grain	N/mm³	17391	15329
Modulus of elasticity in bending across grain	N/mm²	1262	1032
Density	kg/m³	480	
Moisture content	%	8.8	

SURFACE CLASSIFICATION TABLE:

Surface quality / Indications	A	C+	C
Mixing of species	acceptable in the middle layer	no requirements	no requirements
Knots	healthy and captive knots up to 50 mm, occasional black knots are possible	no requirements	no requirements
Fused knots	individual knots are acceptable	no requirements	no requirements
Repair of knots	loose knots are repaired with natural dowels up to 30 mm, minor defects are filled with putty	loose knots are repaired with dowels; defects are filled with putty	non-reparable
Resin pockets	occasional individual pockets up to 5 mm x 50 mm are acceptable	no requirements	no requirements
Repair of resin pockets	acceptable (boat-shaped)	non-reparable	non-reparable
Cracks	occasional minor superficial defects are acceptable	no requirements	no requirements
Heartwood	occasional cracks are acceptable	no requirements	no requirements
Bullwood	individual occurrences are acceptable	no requirements	no requirements
Colour variation	predominantly uniform colour	no requirements	no requirements
Sapwood	acceptable	no requirements	no requirements
Sanding quality	fully polished surface	no requirements	no requirements
Edge and end quality	individual defects on edges and ends are acceptable	no requirements	no requirements
Longitudinal lamella connection	acceptable in the middle layer	acceptable	acceptable
Dimension deviation of layers	individual deviations in layer thickness of up to 3 mm are acceptable	no requirements	no requirements

A

C+

C

Wood species	Coniferous
Panel format	1980/2050 (± 10 mm) x 5050/6000 (± 10 mm)
Panel thickness	18, 27, 40 mm standard thicknesses
Production standards	in accordance with European standard EN 13353
Manufacturing	cross-lamination lamella width (top/bottom layer) 90-200 mm water-resistant melamine resin-based adhesive in accordance with European standards butt-jointed sanded surfaces
Surface quality	Quality **A**: small healthy knots that do not fall out are acceptable, repairs are carried out with live knots, ‘boat-shaped’ resin pocket Quality **C+**: Any healthy, non-falling knots of any diameter are acceptable, repairs are carried out with textured cork, ‘boat-shaped’ resin pocket Quality **C**: Defects that do not affect the structural properties are acceptable, but the panel retains the strength of the nail connection
Grades	A, C+, C
Surface	Fully sanded (60 grit)
Glue joint colour	Light-coloured glue joints

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