Metsä

Birch Ply

for concrete formwork

Noe-Schaltechnik, Süßen

Metsä Wood plywood for Concrete Formwork

Metsä Wood plywood is manufactured with decades of experience in technologically advanced production processes. Plywood products and solutions are widely recognized for their quality thanks to the premium Nordic raw material.

METSÄ WOOD ADVANTAGES

- Sustainable forestry
- Renewable raw material
- Cooperation values
- Production technology
- High-quality plywood products
- R&D with new ideas
- On-time deliveries
- Continuous development

The Metsä Wood concrete formwork product range includes a wide variety of panels for different concreting applications. In addition to wide variety of thicknesses, there are several panel and overlay types. Sizes include standard, L, XL and KingSize panels. The panels can be ordered with cut-to-size service and customer specific machining.

Premium panels for concrete formwork

Metsä Wood plywood panels are used extensively in the concrete formwork industry by some of the largest concrete formwork contractors. Our product portfolio is suited for various types of concrete casting applications. Applications include for example shuttering systems, loose panel formwork, slab or wall casting and flat or curved surfaces. Metsä Wood formwork panels can be used both in building site casting and in prefabricated concrete element manufacturing. Our concrete formwork panels have been designed to help our customers to achieve the highest concrete cast finish quality. Metsä Wood is able to offer larger than standard panel sizes to enable large concrete surface finishes with less visible joints.

Content

Key benefits

Metsä Wood plywood tailored for a perfect concrete finish

PEFC/02-31-381

- WITHSTANDS HIGH CONCRETE PRESSURE & MULTIPLE RE-USES
- LARGE PRODUCT PORTFOLIO
- SUPERIOR QUALITY CONCRETE FINISH
- EASY TO USE
- NEW SOLUTIONS FOR FUTURE CHALLENGES
- CONSTANT GOOD QUALITY
- SUSTAINABLE AND RENEWABLE WOOD RESOURCES

Metsä Wood plywood
for Concrete formwork

System shuttering and concrete element industry

Metsä Wood Form and Form L

Metsä Wood Form is edge sealed phenol film overlaid birch plywood. Form plywood is the formwork panel of choice for smooth surfaced concrete elements.

Metsä Wood Form XL

Metsä Wood Form XL is a larger size birch plywood panel with smooth phenolic overlay. The durable overlays and large panel size ensures high quality concrete finish with fewer joints. XL panels enable larger one piece components.

Metsä Wood FormPLUS®

Metsä Wood FormPLUS plywood is the phenolic film overlaid panel for all formwork uses with high concrete surface quality requirements. FormPLUS plywood surface has a special treatment to resist the surface rippling, which ensures the smooth high quality concrete surface from the first use.

Metsä Wood plywood
for Concrete formwork

Slab Formwork

Panels for building sites

Metsä Wood Form and Form L

Metsä Wood Form is edge sealed phenol film overlaid birch plywood. Form plywood is the formwork panel of choice for smooth surfaced concrete elements.

Metsä Wood Spruce

Metsä Wood Spruce is an uncoated softwood plywood for simple concrete formwork where softwood plywood surface quality is acceptable.

Scaffolding systems

Metsä Wood Deck

Metsä Wood Deck is phenol film overlaid birch plywood with a rough wire mesh pattern. The rough-surfaced Deck is a durable, multipurpose flooring panel.

Metsä Wood Top

Metsä Wood Top is a phenolic film overlaid birch plywood panel with a raised pattern. High visual quality and wear-resistant surface makes Top multipurpose plywood flooring panel.

Kerto® LVL Masterplank

Kerto LVL MasterPlank is made of softwood veneers and it is designed specifically for use as a scaffold board. Master Plank is light-weight product which has proof-tested strength properties.

System shuttering and special formwork

Metsä Wood birch plywood formwork panels are designed for demanding system shuttering and special formwork applications.

Architects and professional builders demand higher quality concrete surfaces with excellent cost-efficiency. Metsä Wood formwork panels have durable overlays providing a high number of re-uses with smooth and high-quality concrete surfaces. Fast and easy surface cleaning and repairing allow short pouring cycles with consistent high quality. Superior weight-to-strength ratio allows the design of lighter systems achieving high allowed concrete pressures.

Excellent concreting results can be achieved with an excellent price performance ratio with Metsä Wood formwork panels.

Top of the line products

Metsä Wood Form plywood is the choice for smooth surfaced concrete elements. Form is a maintenance-free panel for different concrete formwork uses: system shuttering, girder formwork and regeneration panels. It can also be used as a multipurpose formwork panel for various other end-uses. The durable overlays ensure smooth concrete cast finishes and multiple uses. The number of re-uses ranges from between 30–200 depending on the overlay. Re-uses depend also on site practice, requirements of concrete finish, the quality of the release agent and the maintenance, handling and storage practices.

Metsä Wood FormPLUS production method is patented. Method provide reduction in rippling and enhanced durability.

FormPLUS delivers a significant improvement on the surface finish quality. FormPLUS makes smooth concrete finishes affordable in more applications - not just in prestige architectural projects.

Metsä Wood plywood products for system shuttering and special formwork

- Form and Form L
- FormPLUS
- Form XL

Concrete element industry

The concrete element industry has high quality standards and requirements for concrete as the demand for visually aesthetic and smooth surface is continuously growing. Metsä Wood plywood meets the high visual end technical properties required by the element industry.

Metsä Wood offers XL size panels that are especially tailored for concrete element industry. The large size panels reduce the number of visible joints. This gives a better visual appearance for large size concrete elements.

The Form XL panel has double-sided, durable, smooth and maintenance-free phenolic overlays.

Choosing XL Formwork panels will give you high-quality concrete surfaces with less visible joints.

Metsä Wood plywood products for concrete element industry

- Form XL
- Form Plus
- Form, Form L
- Integra®

Scaffolding

When it comes to construction site safety, workers deserve the best.

Metsä Wood plywood can be used in wide variety of scaffolding systems from construction sites to industrial working platforms, events and stages. The advantages of plywood are safety and its light weight. Our scaffolding panels are manufactured according to high-quality standards in order to achieve the highest safety regulations.

Metsä Wood Deck is birch plywood overlaid with phenolic film with a rough wire mesh pattern. The rough-surfaced Metsä Wood Deck is a durable, multipurpose scaffolding and flooring panel.

Metsä Wood Top is phenolic film overlaid birch plywood panel with a raised pattern. High visual quality and a wear-resistant surface combine to make Metsä Wood Top extremely durable, multi-purpose scaffolding and flooring panels. Top panels are especially suitable for more aesthetic platforms such as for fairs and stages.

Kerto® LVL Masterplank is a product designed specifically for scaffolding. Masteplank is dimensionally stable, durable, light-weight and cost-effective product. The unique manufacturing process disperses the inherent defects found in solid-sawn timber.

Service, machining and logistics

The key target of Metsä Wood is to be a reliable and long-standing business partner to our customers. Thorough knowledge of customers' manufacturing processes allows Metsä Wood to provide personalized, profitable and effective solutions for customers.

Metsä Wood provides a ready supply of machined components. Provided machining and use of Metsä Wood's reliable logistic network will ensure time- and cost-effective solutions.

Metsä Wood Machining offers

- Tailored solutions for demanding industrial applications
- Processed ready-made components for assembling
- Technical support

Key advantages

- Guaranteed quality for high safety standards
- Slip resistant surface
- Favorable strength-to-weight ratio
- Minimal deflection due to exceptional stiffness
- High durability with multiple re-uses
- Easy to machine and fix using standard machining and fastening methods
- Light-weight and easy to handle on site
- Tailor-made cut-to-size and machining services

Metsä Wood products for scaffolding

- Deck
- Top
- Kerto LVL MasterPlank

Technical data

Metsä Wood plywood products for Concrete Formwork

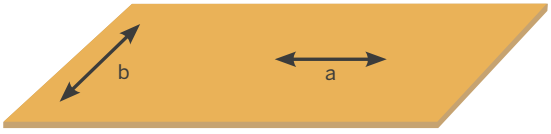
PRODUCT	PANEL TYPE	SURFACE	APPLICATIONS	NUMBER OF RE-USES CA.[1]
Metsä Wood Form, Form L	Birch plywood	Phenolic film	Walls and slabs	30 - 100
Metsä Wood FormPLUS	Birch plywood	Phenolic film, less rippling surface	Walls and slabs	30 - 100
Metsä Wood Form XL	Birch plywood	Phenolic film	Walls and slabs, Element industry	30 - 100
Metsä Wood Spruce III+/III	Spruce plywood	Uncoated	Mainly slabs	2 - 5
Metsä Wood Deck & Top	Birch plywood	Phenolic film	Scaffolding	N.A.

1 The number of re-uses is highly dependent on site practice, requirements of the concrete finish, the quality of the release agent and the maintenance, handling and storage practices

Strength and elastic properties of Metsä Wood plywood products

	NOMINAL THICK-NESS	THICKNESS TOLERANCE		MODULUS OF ELASTICITY BENDING		CHARACTERISTIC STRENGTH BENDING		MODULUS OF RIGIDITY PLANAR SHEAR		CHARACTERISTIC STRENGTH PLANAR SHEAR		APPROX. WEIGHT	FACE VENEER DIRECTION
PRODUCT	[mm]	min. [mm]	max. [mm]	E_m a [N/mm²]	E_m b [N/mm²]	f_m a [N/mm²]	f_m b [N/mm²]	g_r a [N/mm²]	g_r b [N/mm²]	f_r a [N/mm²]	f_r b [N/mm²]	[kg/m²]	
Metsä Wood Form and FormPLUS	9	8.8	9.5	6,105	11,395	32.1	45.6	155	206	2.35	2.68	6.1	b
	12	11.5	12.5	6,781	10,719	33.2	42.9	170	207	2.22	2.78	8.2	b
	15	14.3	15.3	7,184	10,316	33.8	41.3	178	207	2.39	2.62	10.2	b
	18	17.1	18.1	7,452	10,048	34.1	40.2	183	206	2.34	2.67	12.2	b
	21	20.0	20.9	7,642	9,858	34.3	39.4	186	206	2.41	2.59	14.3	b
	24	22.9	23.7	7,783	9,717	34.4	38.9	189	206	2.39	2.62	16.3	b
	27	25.2	26.8	7,893	9,607	34.5	38.4	190	205	2.43	2.57	18.4	b
	30	28.1	29.9	7,981	9,519	34.6	38.1	192	205	2.41	2.59	20.4	b
Metsä Wood Form and FormPLUS S2 lay-up	15	14.3	15.3	10,413	7,087	48.9	28.3	240	161	2.31	2.92	10.2	b
	18	17.1	18.1	10,852	6,648	49.6	26.6	220	174	2.36	2.83	12.2	b
	21	20.0	20.9	11,047	6,453	49.5	25.8	212	183	2.46	2.60	14.3	b
Metsä Wood Form XL	18	16.5	18.1	10,048	7,452	23.9	34.1	206	183	2.67	2.34	12.2	a
	21	19.4	20.9	9,858	7,642	24.0	34.3	206	186	2.59	2.41	14.3	a
Metsä Wood Spruce III+/III	12	11.5	12.5	8,237	1,363	20.6	6.5	35.5	-	0.94	-	5.5	a
	15	14.3	15.3	9,237	2,763	23.1	11.1	50.5	29.1	1.63	0.87	6.9	a
	18	17.1	18.1	8,615	3,385	21.5	12.3	71.4	24.9	1.76	0.64	8.3	a
	21	20.0	20.9	8,277	3,723	20.7	12.7	51.8	37.4	1.41	1.18	9.7	a

EN 789 values. moisture content MC 12%.



a = Panel lenghtwise direction
b = Panel crosswise direction

All technical details and design data – concrete pressure tables and design nomograms – for Metsä Wood Concrete Formwork plywood products can be found in the "Metsä Wood Plywood for Concrete Formwork – Technical Data and Design" brochure.

Special construction

Metsä Wood plywood products in standard and L sizes can be ordered with special veneer construction to improve strength and stiffness properties in the main load bearing direction of the panel. Detailed strength and stiffness values as well as design data for the Metsä Wood plywood panels can be found in the "Metsä Wood Plywood for Concrete Formwork - Technical Data and Design" brochure.

Product properties

Overlay

A smooth and durable phenolic film is hot-pressed onto the panel surface. Film withstands abrasion, is moisture-resistant and can tolerate commonly used chemicals as well as diluted acids and alkalis. The surface is easy to clean with water or steam.

Films with a basis weights from 220 g/m² is normally used. Standard film colour is dark brown. The phenolic film is not UV resistant and the colour may change if exposed to sunlight over prolonged periods.

FormPLUS panel

Metsä Wood FormPLUS panel surface is able to significantly reduce surface rippling. The moisture-repellent surface is achieved by special treatment.

Overlay properties

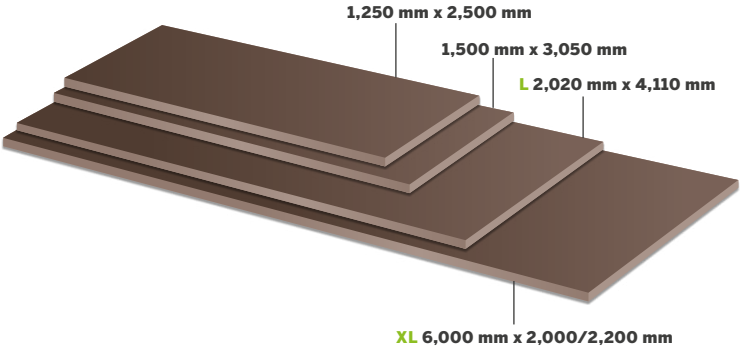
			FORM 220G
Abrasion resistance (Taber value)	EN 438-2	[rounds]	700
Surface Hardness (Brinell)	EN 1534	HB_k	2.44
Crack resistance	ENV 13696	$Cone_{min}$ [mm]	0.8 mm
Impact resistance	EN 13329	[IC class]	None
Scratch resistance	EN ISO 1518	A* [N]	25
		B** [N]	32
Water penetration (Cobb168h)	EN 20535	[g/m²]	67
Resistance to water vapour	EN 438-2	[class]	3
Temperature resistance	EN 12722	100°C [class]	5
		150°C [class]	4

A* Minimun load for visible scratch
B** Minimum load for coating penetration

L and XL plywood

Metsä Wood L plywood is larger than traditional standard size panel. XL panels are scarf-jointed from standard size panels. XL plywood has a one-piece overlay meaning non-visible scarf-joint. The maximum size of Form L panels is 4,110 x 2,020 mm and Form XL panels is 6,000 x 2,200 mm.

The stiffness values of scarf-jointed panels are similar to standard Metsä Wood Birch plywood. The strength values of Form XL panels in the longitudinal direction of the panel are ca. 70% of standard Birch plywood values. In the cross direction of the panel the strength values are similar to standard Birch plywood.



Edge sealing

Panel edges are sealed against moisture absorption with acrylic edge sealing paint. The standard colour of the edge sealing is dark brown. Even though edge sealing slows down the absorption of moisture into the wood, it does not eliminate it completely.

Repairing

Phenol film overlaid plywood panel surfaces can be repaired for example with water proof paints and fillers. Reparing must be done immediately if surface has been damaged.

Size tolerances

Measured in accordance with standard EN 324, the plywood size and squareness tolerances meet EN 315 requirements.

PANEL TOLERANCES

LENGTH/WIDTH	TOLERANCE
< 1000	± 1 mm
1000-2000 mm	± 2 mm
> 2000	± 3 mm
Squareness	± 0.1 % or ± 1 mm/m
Edge straightness	± 0.1 % or ± 1 mm/m

Packing

Metsä Wood Plywood panels are packed in moisture-resistant plastic wrapping.

PACKING QUANTITIES FOR BIRCH PLYWOOD STANDARD AND L SIZES

	NUMBER OF PANELS PER PALLET BY THICKNESS				
PANEL SIZE (mm)	12	15	18	21	24
1,500 / 1,525 x 2,400 – 3,660 1,200/1,220/1,250 x 2,850 – 3,660	50	40	35	30	25
1,500/1,525 x 1,500 – 2,135 1,200/1,220/1,250 x 1,200 – 2,800	75	60	50	45	40
1,870/2,020 x 1,870 – 4,110	35	30	25	20	15
1,870 / 2,020 x 1,870 /2,020	70	60	50	40	30

PACKING QUANTITIES FOR PLYWOOD XL SIZES

	NUMBER OF PANELS PER PALLET BY THICKNESS		
PANEL SIZE (mm)	18	21	24
5,400 x 2,000	25	20	15
6,000 x 2,000/2,200	20	15	15

PACKING QUANTITIES FOR SPRUCE III+/III PLYWOOD

	NUMBER OF PANELS PER PALLET BY THICKNESS			
PANEL SIZE (mm)	12	15	18	21
2,400/2,440/2,500 x 1,200/1,220/1,250	85	65	55	45
2,400/2,440/2,500 x 600	160	130	110	90

Good site practices

Before use

It is recommended to keep plywood panels in their packaging during storage. This will protect the panels and help maintain the moisture content. Unopened packages can be temporarily stored outside due to theplastic wrapping. **(A)**

Once the wrapping has been removed protect the panels from contact with water and direct sunlight by storing in a building or by covering with a suitable waterproof cover. Also avoid very dry and hot storage areas. **(B)**

Individual panels can be removed from the plastic wrapping. However, remember to close the package after opening. **(C)**

Loose panels should not be transported around the site using mechanical handling equipment, as overlaid panels are slippery. **(D)**

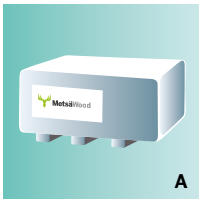
Individual panels should always be moved by lifting and carrying them manually or by vacuum lifting. They must not be pulled along the ground or the floor. **(E)**

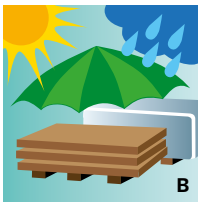
Plywood panels should always be stored horizontally. **(F)**

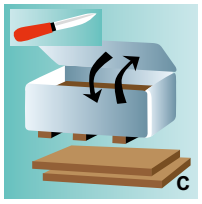
Formwork preparation

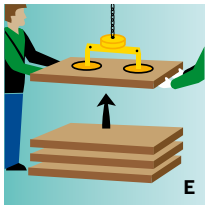
Coated Metsä Wood plywood is delivered with all edges protected with edge paint to slow down moisture penetration. **(G)**

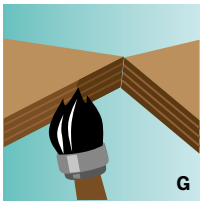
Metsä Wood formwork panels can be cut, shaped and drilled using standard wood-working tools. Seal the resulting raw edges and holes with a suitable water resistant paint. **(H)**

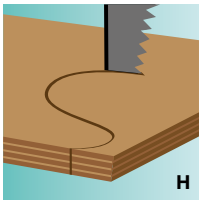












To achieve the best results we recommend that the plywood should be fastened to the formwork support members from the back of the panel. **(I and J)**

Fasteners specification and centres dependant on design.

A release agent must be used to ensure cleaner and easier striking, and also more re-uses. The quality of the release agent may affect the quality or appearance of the concrete finish. Please follow the instructions of the release agent supplier. **(K)**

After use

Plywood panels should be cleaned carefully with water or steam after use. Avoid damaging the panel surface when cleaning the concrete residues. Plastic or nylon tools and brushes are recommended. Cleaned boards should be allowed to dry before re-packing and storing. **(L)**

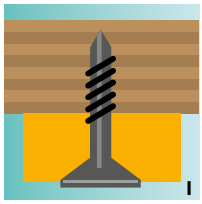
Repair any face defects with a suitable water-resistant filler or paint. **(M)**

Apply a fresh coat of release agent prior to each subsequent use. **(K)**

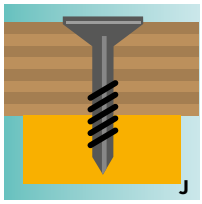
Protect the panels from contact with water and direct sunlight. **(B)**

At the end of their service life, Metsä Wood plywood panels can be chipped and utilised in bio energy production. It should be noted that the instructions for disposal may vary in different countries depending on current legislation. **(N)**

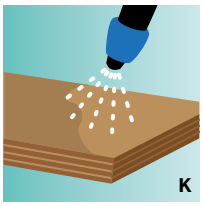
All Metsä Wood plywood packing material is recyclable. **(O)**

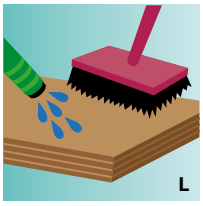


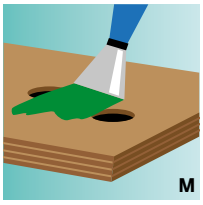
Back face fastening recommended



Front face fastening







Sustainability

Metsä Wood is engaged in responsible operations and considers the economic, social and environmental impacts of our actions. Metsä Wood's environmental policy is based on the principles of environmental impact minimisation, continuous improvement, efficient use of raw materials and open communication. Certified environmental and quality systems support operational monitoring and systematic improvement in Metsä Wood's production units.

Sustainable use of wood

Metsä Wood's main raw material, wood, comes from sustainably managed Nordic forests. Most of the wood we use comes from forests owned by Metsä Group's 90,000 owner-members. Wood raw material is utilised to the fullest during the manufacture of different products. By-products – wood chips, sawdust and bark – are used as raw material for production plants or bioenergy production.

Wood is a renewable, recyclable and reusable building material. Above all, wood stores carbon. The key to sustainable wood products is to use only wood from sustainable sources. All the used wood is traceable and comes from certified or controlled forests. Forests are always renewed after felling. Metsä Group is committed to the principles of regenerative forestry where our goal is to improve the state of forest nature. The implementation of regenerative forestry principles also helps forests remain carbon sinks. More about regenerative forestry on Metsä Group's web-pages.

Carbon stored in phenol film overlaid birch plywood is 1000 kg CO_2 eq/m³. As long as the birch plywood product is used, carbon stays stored. Reuse and recycling ensure prolonged carbon storage.

Management systems

Metsä Wood aims at continuous improvement of its operations. This is supported by management systems. Metsä Wood mills have certified management system including ISO 9001 quality management, ISO 14001 environmental management, ISO 45001 health and safety management and ISO 50001 Energy efficiency.

Quality control

In addition to Metsä Wood's own quality control, Eurofins Expert Services Oy oversees production operations and the internal quality control at Metsä Wood plywood mills. External plywood quality control is conducted according to standard EN 13986 and its CE marking rules in cooperation with Eurofins.

Recycling and disposal

Disposal of Metsä Wood plywood products can be carried out by several methods. It should be noted that the instructions for disposal may vary in different countries depending on current legislation. Recycling of plywood by utilising it in other applications is always preferred. Metsä Wood plywood products can be safely burnt when the combustion temperature is at least 850°C and correct combustion conditions are maintained. Metsä Wood plywood products contain nothing classified as hazardous waste.

Further information

- Metsä Wood product data sheets
- Metsä Wood Plywood for Concrete Formwork - Technical Data and Design brochure
- Metsä Wood Origin of Wood Declaration

Metsä

Growth, with a future

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