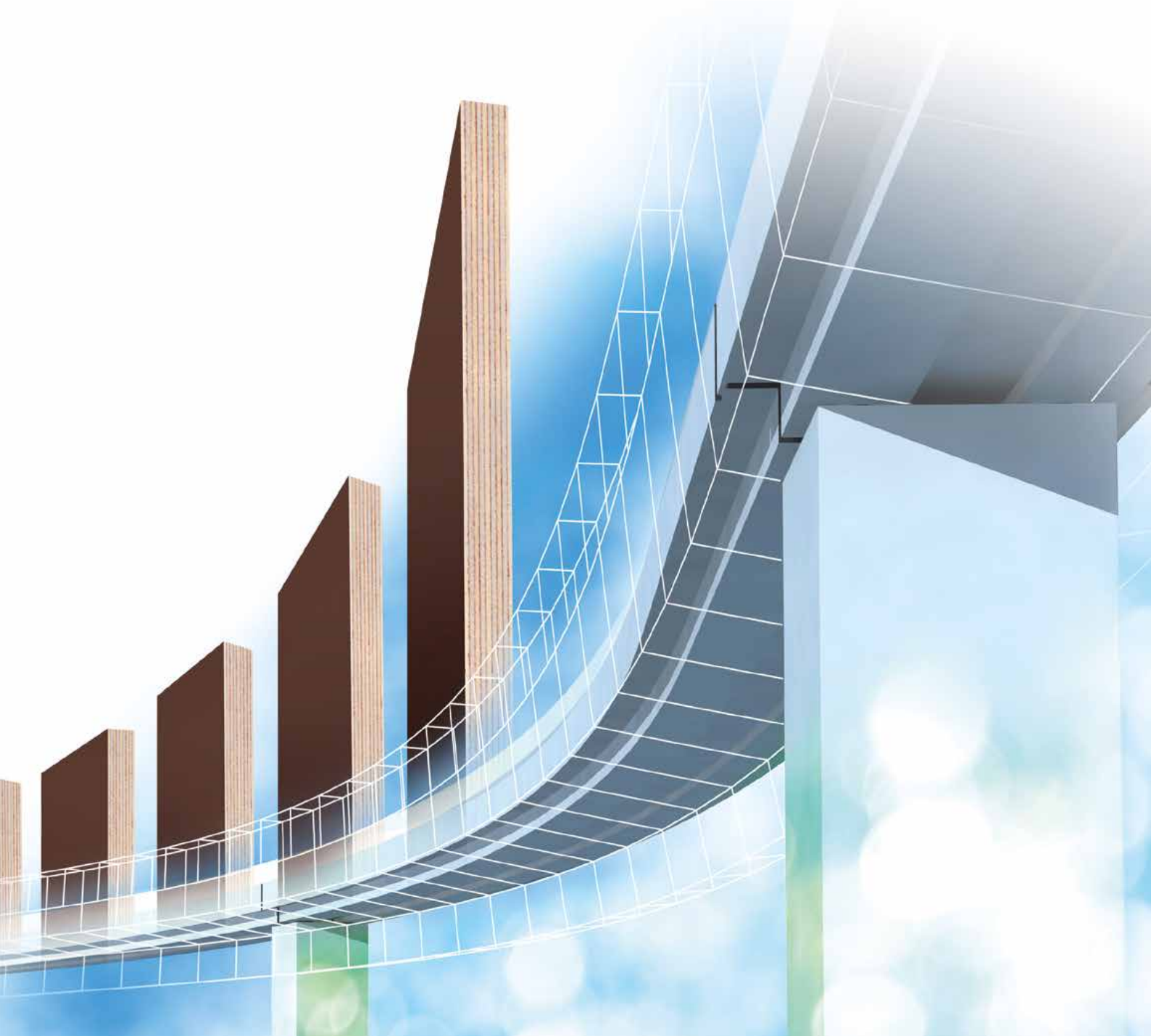




The Biofore Company **UPM**

PROVEN WISA® PLYWOOD  
FOR CONCRETE FORMING  
– on time and on the spot to  
grow your business





## WISA® MEETS YOUR REQUIREMENTS

UPM has been manufacturing plywood for over a century and as an active supplier to the formwork industry for several decades we have gained a deep knowledge of the industry and its specific needs. Our leading professionals are at your service throughout the UPM's global sales network.

Our worldwide logistic service makes it possible for you to get your order promptly and in the right place – just when and where you need the panels.

The WISA-Form plywood product range is designed to fulfil the demanding requirements of concrete construction. By developing our product range to meet the specific application demands, we have created a wide variety of WISA-Form panels which will help you to produce visually pleasing concrete faces.

The stable quality and technical properties of our WISA-Form plywood products have been proven by continuous use in practice and by constant testing according to international standards.

**You set the requirements,  
WISA-Form plywoods meet them:**




- Proven and tested consistent quality
- Excellent strength to weight ratio
- Good load bearing properties
- Accurate dimensional tolerances
- Maxi-sized panels
- A high number of reuses
- Easy cleaning
- Economical solutions
- Tailor-made components according to your specifications
- Technical support
- Certified sustainable products
- Global logistics service





# WISA®-FORM PRODUCT RANGE

Each WISA-Form plywood product within the range has been developed with different properties to give every possible advantage to achieve the best concrete finish.

	Product	Applications	Approximate re-usage <sup>3)</sup>	Panel sizes <sup>1)</sup>
	WISA®-Form Elephant	walls and slabs	over 100 times	Standard sizes <sup>2)</sup>
	WISA®-Form Pro	walls and slabs	30–100 times	Standard sizes <sup>2)</sup>
	WISA®-Form Maxi Birch	walls and slabs	30–80 times	2000-12300 x 2400-2700 mm
	WISA®-Form Birch	walls and slabs	20–80 times	Standard sizes <sup>2)</sup>
	WISA®-Form Beto	mainly slabs	10–15 times	1220 x 2440 mm 1250 x 2500 mm
	WISA®-Form Slab	mainly slabs	5–10 times	2440 x 1220 mm 2500 x 1250 mm
	WISA-Form MDO	mainly slabs	5–10 times	2440 x 1220 mm 2500 x 1250 mm
	WISA®-Form Spruce	mainly slabs	5–10 times	1220 x 2440 mm 1250 x 2500 mm 1500 x 3000 mm 2440 x 1220 mm 2500 x 1250 mm

<sup>1)</sup> The first indicated dimension gives the face grain direction. Size tolerance  $\pm 1$  mm per linear metre of edge for standard size.

<sup>2)</sup> Standard panel sizes: 1200/1220/1250/1500/1525 x 2400/2440/2500/2700/3000/3050/3600/3660 mm. Cut sizes on customer's request.

<sup>3)</sup> Standard versions: The number of times the plywood can be reused is only intended as an approximate guide. It does not imply any form of warranty. The actual number of reuses will depend on many factors other than the plywood.

**BONDING:** All WISA-Form plywood panels are bonded with phenolic resin adhesive fulfilling the requirements of European standard EN 314-2: CLASS 3, exterior.

**DIMENSIONAL CHANGES:** The changes in and across the face grain direction of Finnish exterior plywood averages 0.015 % per 1 % change in moisture level, throughout the working range of moisture content of 10–27 %.

**ENVIRONMENTAL CERTIFICATION:** All WISA-Form products are available as PEFC™ certified. All WISA-Form products are CE marked.

WISA-FORM PRODUCTS  
CONSTRUCTION  
PROPERTIES



## Mechanical properties of plywood

Product	Nominal thickness (mm)	Mean modulus of elasticity Bending (N/mm <sup>2</sup> )		Characteristic strength Bending (N/mm <sup>2</sup> )	
		Em <sub>  </sub>	Em <sub>⊥</sub>	fm <sub>  </sub>	fm <sub>⊥</sub>
WISA-Form Pro	18 (13-ply)	10048	7452	40.2	34.1
WISA-Form Birch	18 (13-ply)	10048	7452	40.2	34.1
WISA-Form Beto	18 (11-ply)	8767	5988	35.1	17.1
WISA-Form Slab	18 (7-ply)	8170	3830	20.4	13.0
WISA-Form MDO	18 (7-ply)	8170	3830	20.4	13.0
WISA-Form Spruce	18 (9-ply)	5395	6605	13.5	18.8
WISA-Form Pro	21 (15-ply)	9858	7642	39.4	34.3
WISA-Form Birch	21 (15-ply)	9858	7642	39.4	34.3
WISA-Form Beto	21 (11-ply)	7621	6774	30.5	18.9
WISA-Form Slab	21 (7-ply)	7547	4453	18.9	14.3
WISA-Form MDO	21 (7-ply)	7547	4453	18.9	14.3
WISA-Form Spruce	21 (11-ply)	5226	6774	13.1	18.9

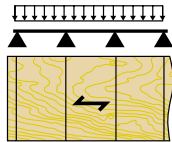
Moisture content 10 ±2 %

Excluding WISA-Form Elephant. Please ask for further information.

# LOAD TABLES FOR WISA®-FORM PRODUCTS

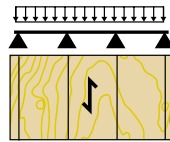
Face grain parallel to the span (||)

← grain direction of surface veneers



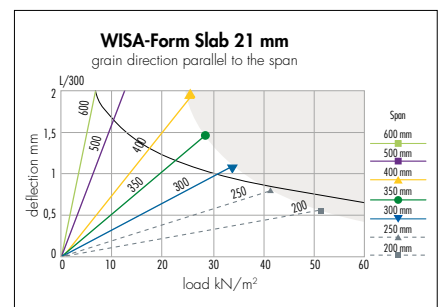
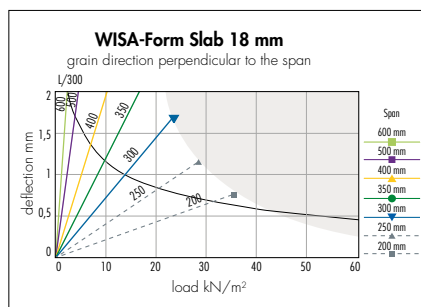
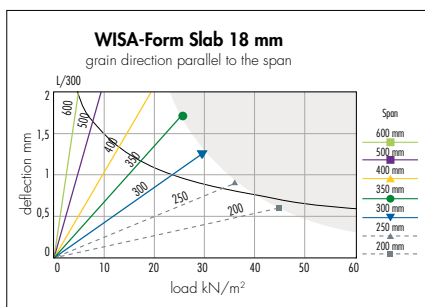
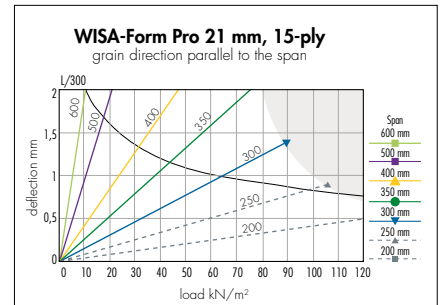
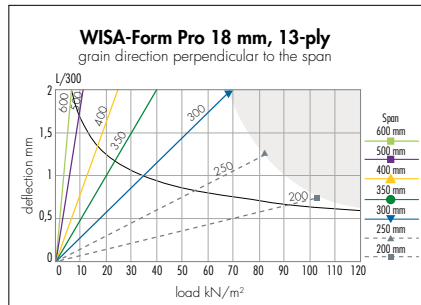
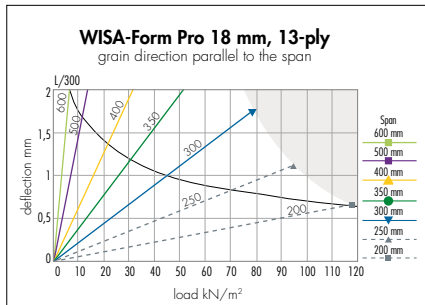
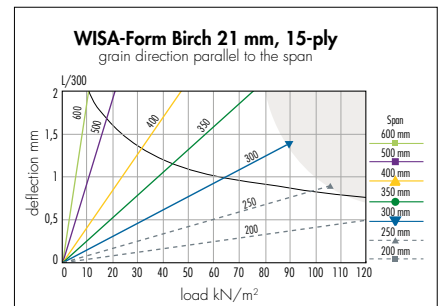
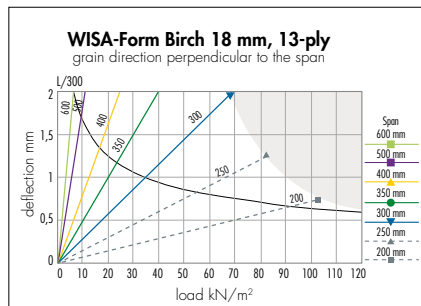
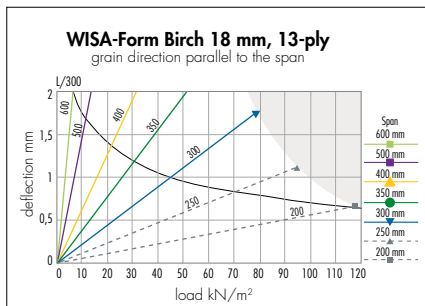
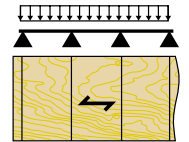
Face grain perpendicular to the span (⊥)

← grain direction of surface veneers



Face grain parallel to the span (||)

← grain direction of surface veneers



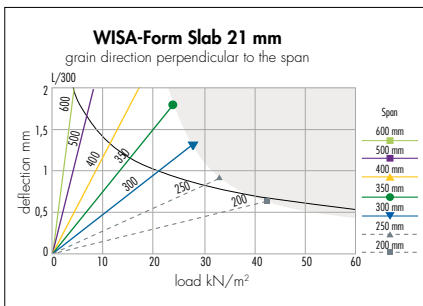
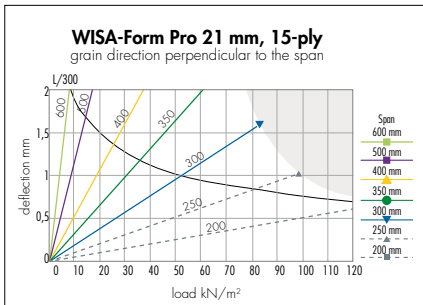
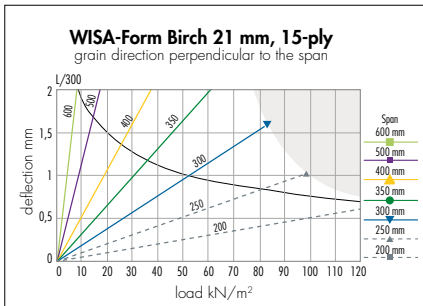
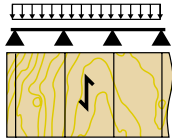
Load tables for other products and thicknesses available on request.

# LOAD TABLES FOR WISA-FORM PRODUCTS



Face grain  
perpendicular  
to the span ( | - )

← grain direction of  
surface veneers





## GOOD SITE PRACTICE

### Before use

- Protect the panels from contact with water and direct sunlight by storing in a building or by covering with a suitable waterproof cover.
- Store panels flat on level ground, well clear of mud or standing water, and away from any risk of contact with vehicles or machinery.
- Avoid storing in very hot and dry places which may lead to panel distortion.
- If the panels are to be stored on site for more than a few days, the outer packing and strapping should be removed.
- CAUTION: Once the strapping has been removed the boards should not be moved further on site using mechanical handling equipment, as overlaid panels are extremely slippery.

### Form preparation

- Coated WISA-Form plywood panels are delivered with all 4 edges protected with edge paint to help reduce moisture penetration. If panels are cut or drilled all cut edges and holes must be painted immediately with a suitable acrylic based paint.
- To give the best results we recommend that the plywood should be fastened from the formwork support members into the back of the panel.
- Formwork panels should be oiled before each and every use regardless of the storage conditions or interval between pours.
- The selection of the most suitable type of release agent for the type of overlay (e.g. phenol film or MDO) will ensure cleaner striking of the forms and more reuses. The quality of the release agent may also affect the quality or appearance of the concrete finish. Please follow the instructions of the release agent supplier regarding application rate.

### After Use

- Clean the plywood panel carefully, dry and re-oil immediately. Any forms not cleaned immediately after use are likely to be damaged when attempts are made to remove fully cured concrete from the forming face (panel surface).
- Take care not to damage the panel surface when cleaning the form of residues of concrete. We recommend plastic or nylon tools when cleaning, metal brushes or high-pressure washers should not be used.
- Store the forms with the face away from the sun as exposure can lead to rapid loss of moisture from the face veneer and damage to the overlay.
- Repair small scratches with a suitable mastic.
- Fill deeper scratches, nail or screw holes with mastic or epoxy filler. Wooden insert systems are available for larger repairs.
- After use please choose a suitable recycling option for your WISA-Form panels. They can for example be chipped and utilized in bio energy production.

For more detailed instructions see UPM Site Guidance Note available at [www.wisaplywood.com](http://www.wisaplywood.com).





CONSTANTLY  
RENEWING,  
ENVIRONMENTALLY  
SUSTAINABLE

### **Our R & D department has over 35 years of research and development knowledge on plywood**

We at UPM Plywood's Research and Development are here to provide you with the best possible solution for your need. Combining fresh ideas with our knowledge on plywood we focus on keeping our product range up to date and ready to meet new challenges.

To ensure the required performance – and to meet your specific needs – we constantly test and develop our plywood products for demanding casting projects in close co-operation with our customers. We concentrate our efforts on the areas you find important; strength, durability and surface properties, allied with the need for efficient and economical production in line with the environmental aspects of our industry.

R&D work is supported by active participation in national and international research programs and joint initiatives. The tests are carried out according to the latest international standards together with our partners' specific requirements.

### **WISA – the sustainable choice**

WISA products are made of natural, renewable and recyclable raw materials. Using an ecodesign approach we aim to make our products sustainable over their lifecycle.

By choosing WISA, our customers have the confidence that their plywood and veneer is legally sourced and come from sustainable managed forests. Our plywood conforms to all relevant standards and regulations, including the European Union Timber Regulation (EUTR). Sustainable forest management enhances biological diversity, natural ecosystems and the carbon cycle. Our commitment to sustainable forestry is verified by having WISA products available either PEFC™ or FSC® certified.

The majority of WISA plywood products' carbon footprint comes from the raw materials used and only a small part comes from the production itself. Did you know that producing WISA plywood consumes considerably less energy than competing materials and that most of the energy used in its manufacture is bio-energy generated from wood residues such as stumps and from production by-products like bark and chips. Carbon Footprint Statements for WISA products can be found under certificates on [www.wisaplywood.com/environment](http://www.wisaplywood.com/environment).

WISA Plywood mills are located in areas where there is no water scarcity. The water used in production is returned to the water cycle after proper treatment. WISA Plywood mills have long-term water targets and permits in place to improve water quality and minimise the quantity of water used.

To avoid landfill, reuse or recycle your WISA plywood products. They can for example be chipped and utilized in bio energy production.

WISA products are manufactured in Europe according to the strictest national and international environmental legislation. Please see UPM's Responsibility Principles at [www.upm.com/responsibility](http://www.upm.com/responsibility) for more information on our approach to sustainability.



# MORE WITH BIOFORE



UPM leads the integration of bio and forest industries into a sustainable future characterised by innovation, responsibility and resource efficiency. [www.upm.com](http://www.upm.com)



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