



**LIP BOHINJ**

From **wood** to **wonders**.

# **OPAŽNE | SHUTTERING** **PLOŠČE | PANELS**

za gradbeništvo

for the construction industry




OPAŽNE PLOŠČE: SELECT | STANDARD | PREMIUM SB | OPAŽNI NOSILCI | OPAŽNI SISTEM

SHUTTERING PANELS: SELECT | STANDARD | PREMIUM SB | FORMWORK GIRDERS | FORMWORK SYSTEMS



[www.lipbohinj.si](http://www.lipbohinj.si)

 **že od leta 1948**  
since 1948





# Življenje Life

**ob jezeru, obdanem z zelenimi gozdovi, nas je naučilo ceniti in spoštovati naravo.**

Ker naše surovine prihajajo iz gozdov, imamo v podjetju še toliko bolj odgovoren odnos do narave.

V podjetju z gospodarno proizvodnjo ter uporabo naravi prijaznih materialov in snovi sledimo globalnim načelom in najvišjim standardom EU o varovanju okolja in zmanjševanju onesnaževanja.

**in the countryside next to a picture-perfect alpine lake surrounded by a green forest has taught us to respect the environment.**

Since forests provide us with our raw materials, our company feels highly committed to a sustainable and environmentally-friendly production.

By complying with global principles and the highest EU environmental standards, we contribute towards reducing the level of environmental pollution with our efficient manufacturing process and the use of environmentally-friendly materials.

**Največji umetnik je bila in še vedno je narava.**

The greatest artist is and remains mother nature.



# OPAŽNE plošče

# SHUTTERING panels

## Prednosti opažnih plošč lipbled

### The advantages of lipbled shuttering panels

- + **Kakovostna smrekovina iz naših gozdov, ki je glavna sestavina plošč.**  
High quality spruce wood from our forests is the main component of lipbled shuttering panels.
- + **Ker je površina prevlečena z melaminsko smolo, robovi pa z akrilnim slojem, se plošče ne sprijemajo z betonom.**  
A melamine resin covered surface and acrylic-coated edges prevent the panels and concrete from sticking together.
- + **Za dodatno zaščito proti vplivu vlage na delovanje plošče so robovi srednjega sloja zaprti z vzdolžnimi in čelnimi letvicami.**  
A middle layer framed with head and side battens offers an additional moisture protection against warping.
- + **Velika upogibna trdnost in dimenzijska stabilnost plošč.**  
High bending strength and dimensional stability.
- + **Zaradi trislojnega lepljenja je delovanje plošče minimalno.**  
Minimal panel warping due to the three-layer gluing procedure.
- + **Večkratna uporaba.**  
Intended for multiple use.
- + **Dolga tradicija proizvodnje (že od leta 1961).**  
Long tradition of manufacturing (since 1961).
- + **Več kot 50-letne izkušnje pri prodaji plošč na zahtevnih trgih Zahodne Evrope.**  
More than 50 years of experience in selling panels on the highly competitive western European markets.

## Lastnosti in uporaba

### Features and application

- + **Primerno za opaženje betonskih konstrukcij.**  
Used as formwork for concrete constructions.
- + **Večkratna in preprosta uporaba.**  
Multiple and easy use.
- + **Plošče so izdelane iz treh medsebojno križno in vodoodporno zlepljenih slojev lesa, predvsem smrekovine. Zunanji sloj sestavljajo širinsko zlepljene lamele, ki potekajo v vzdolžni smeri, srednji sloj pa prečno položene deščice, ki so uokvirjene z vzdolžnimi in čelnimi zaključnimi letvicami.**  
The panels are made of three wooden layers, mostly spruce, which are glued together crosswise and are waterproof. The two external layers consist of longitudinal lamellas glued sideways to each other. The middle layer is made of small crosswise boards framed with side and head battens.
- + **Kakovost ploskovnega lepljenja je v skladu s standardom AW 100 (DIN 68705), kakovost celotne plošče pa s standardom ÖN B 3023.**  
The layers are glued together according to the AW 100 standard (DIN 68705). The quality of the entire panel meets the ÖN B 3023 standard.
- + **Plošče so zaščitene z melaminsko smolo, izdelane po vročem postopku (se ne sprijemajo z betonom).**  
The panels are coated with a melamine resin made in accordance with a high-temperature method (prevents adhesion with the concrete).
- + **Robovi plošč so zaščiteni z akrilnim premazom.**  
Panel edges are protected by an acrylic layer.
- + **Plošče so dimenzijsko stabilne, zaradi trislojnega lepljenja pa je njihovo ukrivljanje minimalno.**  
The warping of the dimensionally stable panels is minimal due to their structure of three layers glued together.
- + **Velika upogibna trdnost.**  
High bending strength.
- + **Barva plošč rumena.**  
Panel colour: yellow.

- Lepljeno z melaminsko smolo  
Glued with melamine resin
- Vodoodporen lepilni spoj  
Bonded with waterproof adhesive
- Kakovost ploskovnega lepljenja je v skladu s standardom AW 100 (DIN 68705), kakovost celotne plošče pa s standardom ÖN B 3023  
The layers are glued together according to the AW 100 standard (DIN 68705). The quality of the entire panel meets the ÖN B 3023 standard.
- Zaradi trislojnega lepljenja je delovanje plošče minimalno  
Minimal panel warping due to the three-layer gluing procedure.



Debelina (mm) Thickness (mm)	Širina (mm) Width (mm)	Dolžina (mm) Length (mm)
21 mm (20,9 mm ± 1 mm) 27 mm (26,6 mm ± 1 mm)	500	1.000, 1.500, 2.000, 2.500, 3.000

## Prevoz na tovornem vozilu Transport by freight vehicles

- + debelina / 27 mm: 1.900 m<sup>2</sup> / vlačilec (13,6 m)  
thickness / 27 mm: 1.900 m<sup>2</sup> / lorry (13,6 m)
- + debelina / 21 mm: 2.300 m<sup>2</sup> / vlačilec (13,6 m)  
thickness / 21 mm: 2.300 m<sup>2</sup> / lorry (13,6 m)

## Pakiranje Packaging

- + Paletno: standardno po 40 kos/zložaj (27 mm),  
2 x 50 kos/zložaj (21 mm), zaščiten s folijo PVC.  
Pallet: standard 40pc./pallet (27mm),  
2 x 50pc./pallet (21mm), protected with a PVC foil.
- + Zložaje sestavimo tudi po želji kupca.  
Packages may also be arranged according to the customer's needs.



**Debelina plošče**  
**Panel thickness**

**21 mm**

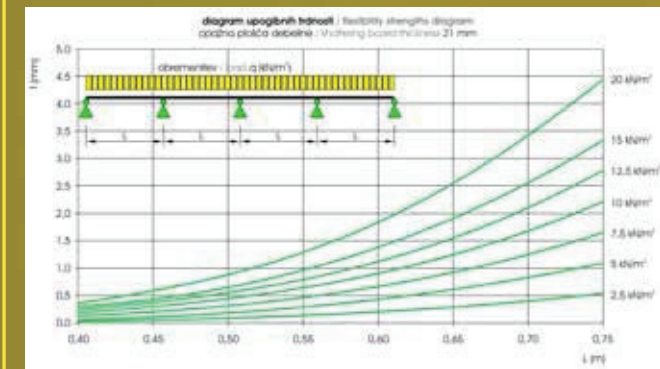
Prerez  
Cross section  $A_{bruto} = 20.900 \text{ mm}^2/\text{m}$   $MOE = 12.000 \text{ N/mm}^2$

Odpor. moment  
Section modulus  $W_{bruto} = 72.802 \text{ mm}^3/\text{m}$   $f_{m,k} = 40 \text{ N/mm}^2$

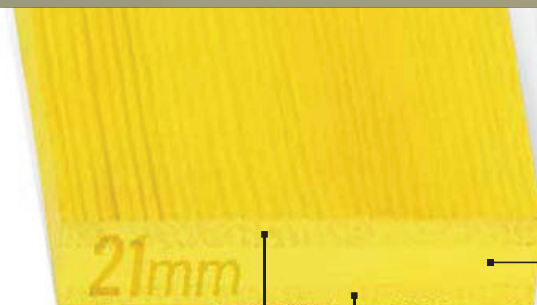
Vztr. moment  
Moment of inertia  $J_{bruto} = 760.777 \text{ mm}^4/\text{m}$   $M_k = 2,91 \text{ kNm/m}$

Zun. sloj  
External layer 6,3 mm

Srednji sloj  
Middle layer 8,3 mm



Testirano po standardu EN 789:2005 Tested in accordance with EN 789:2005



vodoodporen lepilni  
sloj (AW 100)  
waterproof adhesion layer  
(AW 100)





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Laboratorijski test upogibne trdnosti opažne plošče (Tehnična univerza Graz / Austrija)

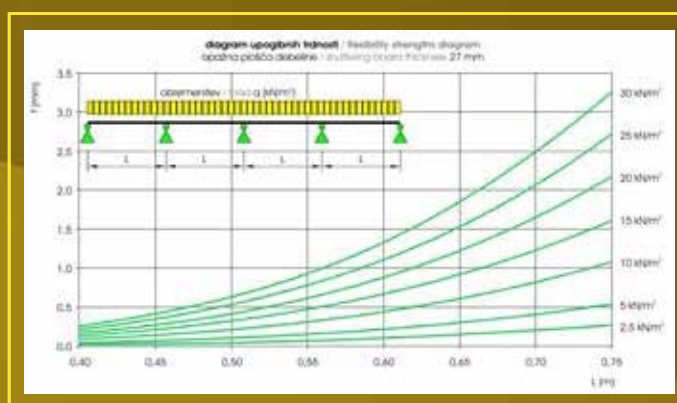
Laboratory test of the bending strength of the formwork panel (Technische Universität Graz / Austria)

**Debelina plošče**  
**Panel thickness**
**27 mm**
**Prerez**  
**Cross section**
 $A_{bruto} = 26.600 \text{ mm}^2/\text{m}$ MOE = 11.000 N/mm<sup>2</sup>
**Odpor. moment**  
**Section modulus**
 $W_{bruto} = 117.927 \text{ mm}^3/\text{m}$  $f_{m,k} = 40 \text{ N/mm}^2$ 
**Vztr. moment**  
**Moment of inertia**
 $J_{bruto} = 1.568.425 \text{ mm}^4/\text{m}$  $M_k = 4,72 \text{ kNm/m}$ 
**Zun. sloj**  
**External layer**

6,3 mm

**Srednji sloj**  
**Middle layer**

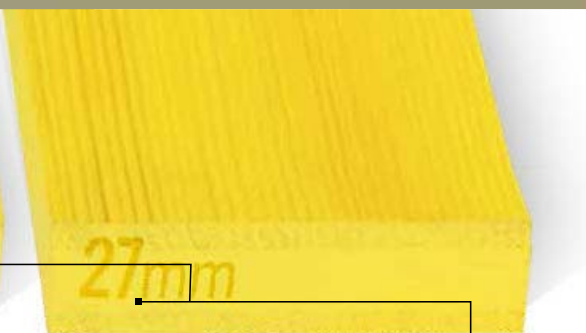
14 mm



Testirano po standardu EN 789:2005 Tested in accordance with EN 789:2005

## Navodila za uporabo Application instruction

- + Plošče pred betoniranjem vedno temeljito navlažimo z vodo.  
Prior to concreting, moisten the panels thoroughly with water.
- + Plošče po razopaževanju čim prej očistimo in zložimo na ravno podlago.  
After removing the panels from the concrete, clean them as quickly as possible and place them on a flat surface.
- + Za nego plošč priporočamo uporabo parafinskih voskov in olj (tudi pred prvo uporabo), ki se uporabijo v skladu z navodili proizvajalca.  
For panel maintenance, we recommend using paraffin wax and oil in accordance with the manufacturer's instructions (also prior to the first application).
- + Plošče ne smejo biti dlje časa izpostavljene neposredni sončni svetlobi.  
Protect the panels from long periods in direct sunlight.
- + Priporočamo skladiščenje v senci.  
It is recommended to store the panels in the shade.
- + V plošče čim manj žebliamo, vijačimo in vrtamo.  
Avoid damaging the panels with nails, screws and drill holes.


 robovi, zaprti z vzdolžnimi in  
 čelnimi letvami  
 edges framed with side and  
 head battens

 lepljeno z melaminsko smolo  
 glued with melamine resin

# PREMIUM

## SB opažna plošča shuttering panel

- novost našega razvoja  
Developed by lipbled
- za opaženje vidnega betona  
Used for formworking exposed concrete
- brezhibna površina  
Flawless surface

## Lastnosti in uporaba Features and application

- + Primerno za opaženje betonskih konstrukcij s posebnimi zahtevami (vidni beton z nevtralno strukturo).

Used for formworking concrete constructions with special demands (exposed concrete with a neutral structure).

- + PREMIUM SB »Sichtbeton« (vidni beton).

PREMIUM SB "Exposed Concrete"

- + Večkratna in preprosta uporaba, izredna ekonomičnost in uporabna vrednost.

Multiple and easy use, high efficiency and practical value.

- + Plošče so izdelane iz treh medsebojno vodoodporno zlepljenih slojev lesa, predvsem smrekovine. Zunanji sloj sestavljajo širinsko zlepljene lamele, ki potekajo v vzdolžni smeri, srednji sloj pa prečno položene deščice, ki so uokvirjene z vzdolžnimi in čelnimi zaključnimi letvicami

Konstrukcija je oplemenitena z 1,6 mm debelim slojem iz neoporečnega polipropilenskega materiala, ki je primeren za recikliranje.

The panels are made of three wooden layers, mostly spruce, which are glued together crosswise and are waterproof. The two external layers consist of longitudinal lamellas glued sideways to each other. The middle layer is made of small crosswise boards framed with side and head battens.

The construction is finished with a 1.6mm thick layer of environmentally-friendly and recyclable polypropylene.

- + Kakovost ploskovnega lepljenja je v skladu s standardom AW 100 (DIN 68705), kakovost celotne plošče pa s standardom ÖN B 3023.

The layers are glued together according to the AW 100 standard (DIN 68705). The quality of the entire panel meets the ÖN B 3023 standard.

- + Robovi plošč so zaščiteni z akrilnim premazom.

The panel edges are protected by an acrylic layer.

- + Plošče so dimenzijsko stabilne, zaradi trislojnega lepljenja pa je njihovo ukrivljanje minimalno.

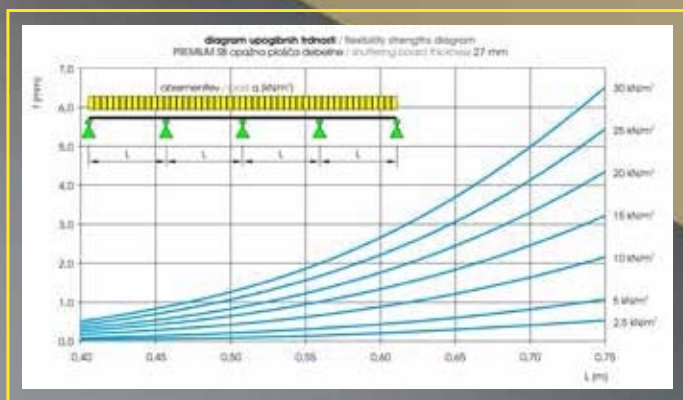
Due to their structure of three layers glued together, the warping of the dimensionally stable panels is minimal.

- + Velika upogibna trdnost.

High bending strength.

- + Barva plošč siva.

Panel colour: grey.



Testirano po standardu EN 789:2005 Tested in accordance with EN 789:2005

Debelina (mm) Thickness (mm)	Širina (mm) Width (mm)	Dolžina (mm) Length (mm)
27	500	2.000, 2.500, 3.000
Prerez Cross section	$A_{bruto} = 27.000 \text{ mm}^2/\text{m}$ $MOE = 8.000 \text{ N/mm}^2$	
Odpor. moment Section modulus	$W_{bruto} = 120.000 \text{ mm}^3/\text{m}$ $f_{m,k} = 33 \text{ N/mm}^2$	
Vztr. moment Moment of inertia	$J_{bruto} = 1.600.000 \text{ mm}^4/\text{m}$ $M_k = 3,96 \text{ kNm/m}$	
Zun. sloj External layer	6,4 mm	
Srednji sloj Middle layer	10,8 mm	

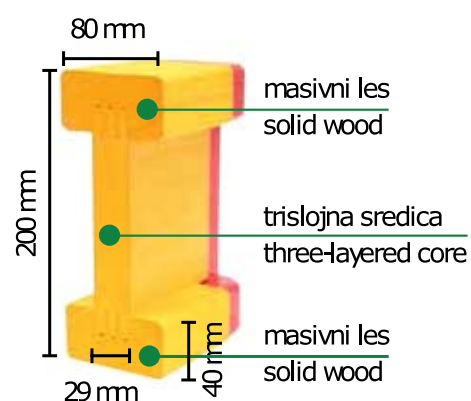
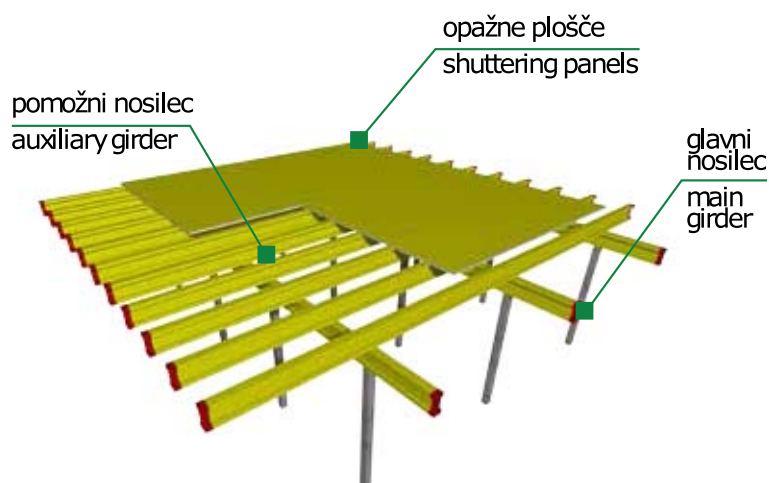


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# OPAŽNI nosilci FORMWORK girders »H-20«

Kakovost Quality	DIN 1052-1:1988-04   DIN 1052:2008-12 / EUROCODE 5	
Dolžine nosilcev (m) Girder lengths (m)	2,45 / 2,90 / 3,30 / 3,60 / 3,90 / 4,90 / 5,90	druge dolžine po dogovoru other lengths on request
Višina prereza Cross-section height	200 mm +/-2 mm	
Kosov v zložaju Pieces per package	50	pezzi / pacco pièces / paquet
Teža Weight	4,7 kg/m	



# OPAŽNI SISTEM FORMWORK SYSTEM



nastavljiv veznik za stebre (A012A)  
adjustable pillar binder (A012A)



zagozda tip A (A013A)  
wedge, type A (A013A)

Prednosti opažnih sistemov  
Advantages of formwork systems

- + Enostavno  
Simple
- + Hitro  
Quick
- + Ugodno  
Inexpensive



Vezniki:  
Binders:

A006A



A006B



A006C



Distančniki:  
Spacers:

tip Y (ADY ...)  
type Y (ADY ...)



tip B (ADB ...)  
type B (ADB ...)





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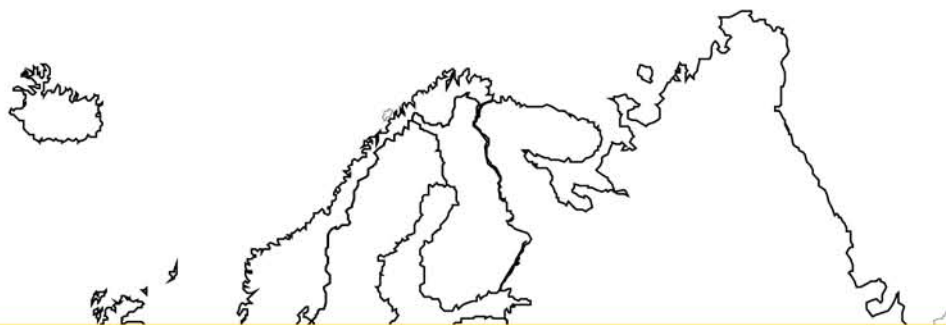
From **wood** to **wonders**.



**Razvoj praktičnih celostnih rešitev je izziv,  
s katerim se uspešno srečujemo vsak dan.  
Zato je vsak projekt zgodba zase.**

**Our strength lies in the ability to develop  
flexible overall solutions. That is why each  
project is unique.**





Iz skrbno negovanih slovenskih gozdov ... z ljubeznijo do narave in lesa ...  
From sustainably cultivated Slovenian forests ... with the love of wood and nature ...



# LIP BOHINJ

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