



WHERE
IDEAS
CAN
GROW.

M  **M**
MAYR MELNHOF HOLZ



K1 yellowplan

Formwork panels

HT 20plus

HT 12/16/24plus Formwork beams





WHERE IDEAS CAN GROW.

Mayr-Melnhof Holz Holding AG is one of the leading companies in the timber-processing industry in Europe, a major producer of glued laminated timber, and a driving force in the advance of cross laminated timber, the material for buildings of the future. Only with strong roots can you grow and flourish; processing timber exclusively from sustainably managed forests, the roots of the Mayr-Melnhof Holz group of companies go back to 1850. Secure raw material supply, chain of custody traceability, transparent product quality assurance and ongoing process optimization are the foundations of more than 170 years of reliability and product quality at Mayr-Melnhof Holz.





Products of Mayr-Melnhof Holz



MM masterline
Glued-laminated timber



MM vistaline
Duo-/Trio beams



MM profideck
Glulam ceiling elements



MM blockdeck
Floor and wall beams



MM HBE
Solid timber construction element



MM crosslam
Cross-laminated timber



K1 yellowplan
Formwork panels



HT 20plus
Formwork beams

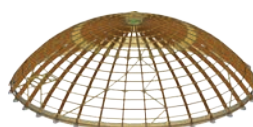


MM sawn timber

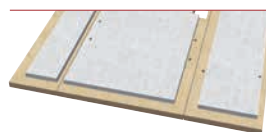


MM royalpellets

Custom elements & engineering solutions



MM complete
Timber engineering & turn-key construction
by **HUTEMANN**



X-LAM CONCRETE
Timber-concrete composite element
by **MMK**

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Formwork beams that exceed your expectations

The HT 20plus formwork beam and K1 yellowplan formwork panels from Mayr-Melnhof Holz are globally established brand products for concrete construction.

As pioneers and quality leaders in formwork and engineered timber construction, we have manufactured these products for over 50 years.

Thanks to their remarkable quality, our formwork products are used in over 60 countries. Today, Mayr-Melnhof Holz is one of the leading companies in the industry.



Properties

The concrete formwork beam with the globally proven protective cap system

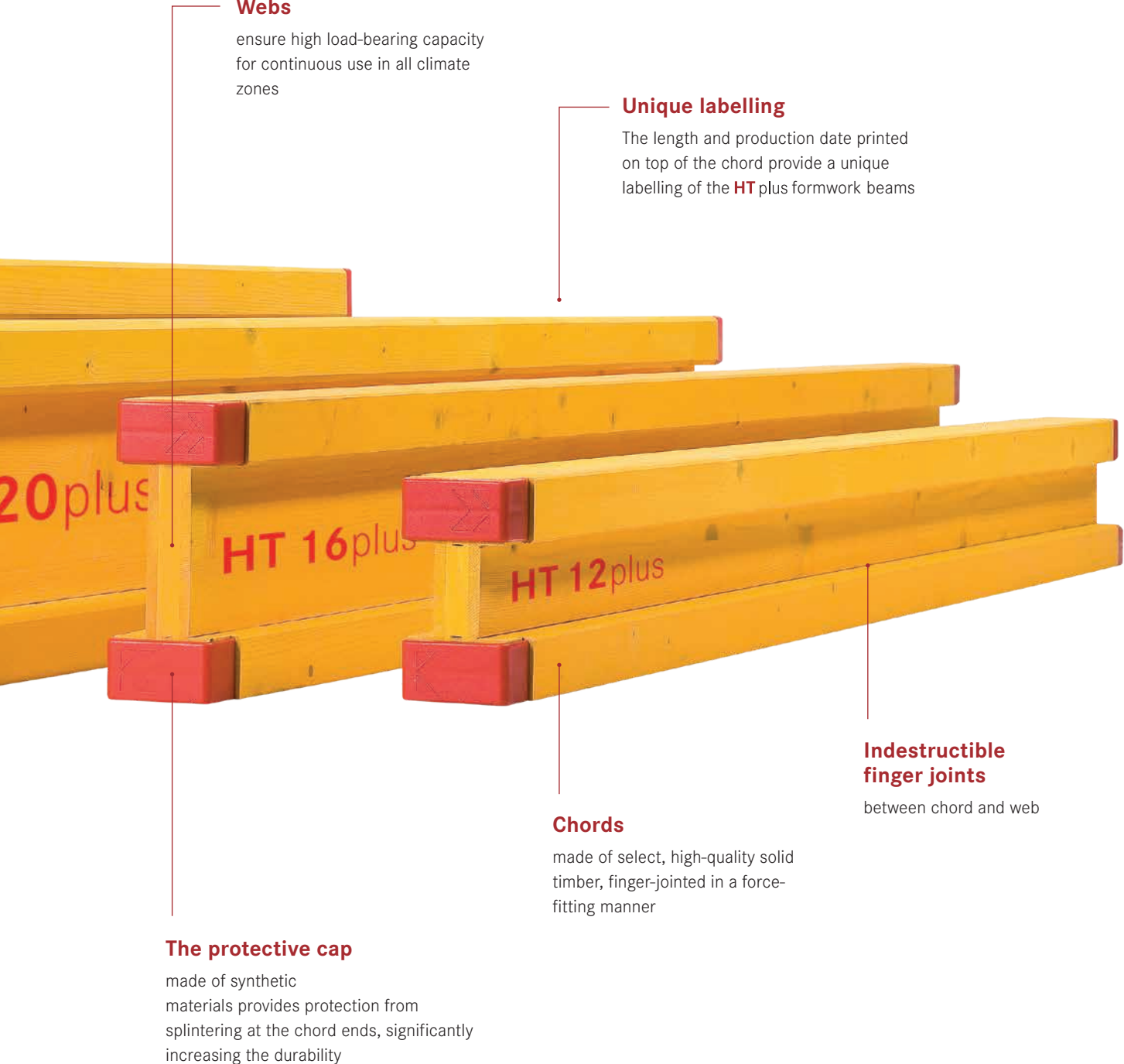
HT 20plus is the global brand for the concrete formwork beam from Mayr-Melnhof Holz. High-quality materials, flawless workmanship, and the globally proven protective cap system give the **HT plus** formwork beams their unsurpassed lifecycle. **HT 20plus** stands for top quality in construction.

The **HT 20plus** formwork beam from Mayr-Melnhof Holz has become one of the leading brands in concrete construction. With its robustness and exceptional lifecycle, the **HT 20plus** enjoys an elite reputation among industry experts.

In 2010 the product spectrum of the **HT 20plus** was expanded with the addition of three new beam types, the **HT 12plus**, **HT 16plus** and **HT 24plus**.

The versatility of our current product line allows for specifically tailored applications of our formwork beams. The ability to select the optimal beam type allows structural engineers, technicians, and project managers to further improve efficiency.





Webs

ensure high load-bearing capacity for continuous use in all climate zones

Unique labelling

The length and production date printed on top of the chord provide a unique labelling of the HT plus formwork beams

Chords

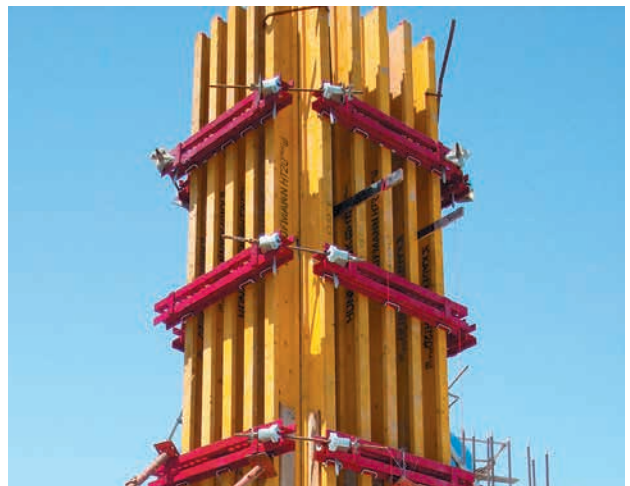
made of select, high-quality solid timber, finger-jointed in a force-fitting manner

Indestructible finger joints

between chord and web

The protective cap

made of synthetic materials provides protection from splintering at the chord ends, significantly increasing the durability



Technical data

Product

Wooden formwork beams, glued, solid-walled I-beams

Wood species

Spruce, fir

Wood moisture

12% ± 3%

Gluing

Melamine resin-based adhesive, adhesive type I EN 301 approved for gluing of load-bearing structural wood elements.

Flanges

- Automatically strength-graded and finger-jointed (at least strength class C24)
- Flanges are grooved on the side facing away from the core
- Planed, edges chamfered to approx. 4 mm

Webs

- 3-ply solid wooden panel for structural and exterior application acc. to EN 13353 SWP/3
- Edge-glued top layer and intermediate plies




Surface protection

Impregnation of the entire beam with waterproof colour glaze.

Packaging

The packages are delivered suitable for the construction site and protected by integrated supporting timber.

Product overview

Formwork beam	HT 12plus	HT 16plus	HT 20plus	HT 24plus
				
Weight and dimensions				
Beam height	120 mm	160 mm	200 mm	240 mm
Flange height	35 mm	35 mm	40 mm	40 mm
Flange width	65 mm	65 mm	80 mm	80 mm
Web thickness	24 mm	24 mm	24 mm	24 mm
Weight	2.7 kg/m	3.1 kg/m	4.4 kg/m	4.9 kg/m
Calculated values				
E_x modulus of elasticity - x moment of inertia	97 kNm ²	212 kNm ²	486 kNm ²	775 kNm ²
E_{flange} modulus of elasticity flange (C24)	11,000 N/mm ²	11,000 N/mm ²	11,000 N/mm ²	11,000 N/mm ²
E_{web} modulus of elasticity web (3S panel)	6,700 N/mm ²	6,700 N/mm ²	6,700 N/mm ²	6,700 N/mm ²
V_k characteristic shear force value	15.3 kN	18.4 kN	23.9 kN	28.2 kN
$R_{b,k}$ characteristic reaction force value	29.4 kN	36.8 kN	47.8 kN	56.4 kN
M_k characteristic moment value	4.4 kNm	5.9 kNm	10.9 kNm	14.1 kNm
Quality-monitored production	WPK	WPK	WPK + MPA	WPK

FPC = Internal factory production control / MPA = External monitoring by Material Testing Institute in Stuttgart

Carrying capacity values for the construction site

Conversion of characteristic value for permissible measurement value using old measurement concept according to EN 13377 Appendix E

$$X_d = k_{mod} \times X_k / \gamma_m$$

X_d Rated value of material property

X_k Characteristic value of material property

k_{mod} Modification value of wood moisture < 20% is 0.9

γ_m Partial safety factor for wood and wood materials is 1.3

perm. $X = X_k / \gamma_m$

perm. $X =$ Permissible value of material property

γ_F Partial safety factor for the load is 1.5

Technical data HT 12plus



Dimensions and tolerances

Dimensions	HT 12plus	Tolerances
Beam height	120 mm	± 2.0 mm
Flange thickness	35 mm	- 1.5%
Flange width	65 mm	- 1.5%
Web thickness	24 mm	± 0.5 mm

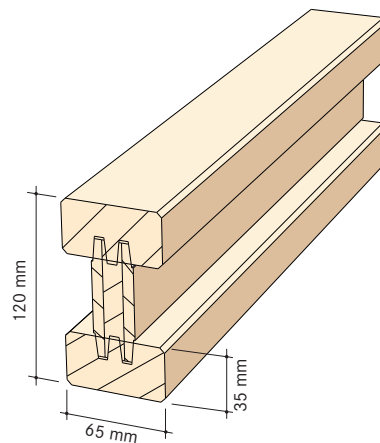
Product standard

Industrially manufactured timber formwork beams are to be used in supporting structures and formwork for concrete buildings. The load is applied in the direction of the formwork beam height. The EN 13377 standard defines the classification, requirements and test methods for timber formwork beams with construction heights of $h = 16$ cm, $h = 20$ cm and $h = 24$ cm. The **HT 12plus** timber formwork beam is manufactured with reference to this standard.

Calculated values

According to EN 13377	Carrying capacity characteristics	
Lateral force	$V_k = 15.3$ kN	perm. Q = 7 kN
Bending moment	$M_k = 4.4$ kNm	perm. M = 2.1 kNm
Reaction of support	$R_{b,k} = 29.4$ kN	

Modulus of elasticity - x moment of inertia	$E_i = 97$ kNm ²	
Modulus of elasticity flange (C24)	$E_{flange} = 11,000$ N/mm ²	
Modulus of elasticity web (3S panel)	$E_{web} = 6,700$ N/mm ²	



Length

on request: max. 5.00 m

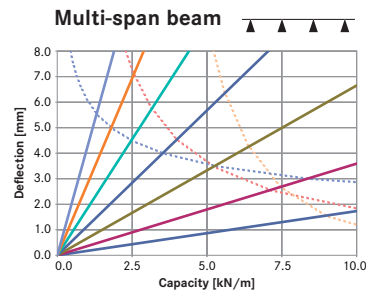
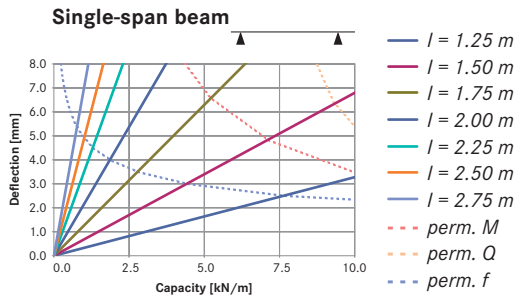
Weight

2.7 kg/m

Package units

Standard package: 144 pieces

Span table



Promoting Sustainable Forest Management
www.pefc.org

		Table 1: Crossbeams Distance between crossbeams [m]								Table 2: Main beams Selected distance between main beams [m]				
		0.3	0.4	0.5	0.625	0.675	0.75	0.875	1	1.25	1.5	1.75	2	2.25
Floor thickness [cm]	Total load [kN/m ²]	Max. support width of crossbeam = Max. distance between main beams								Max. permissible support width = Distance between supports				
10	4.60	2.52	2.29	2.13	1.97	1.92	1.86	1.76	1.69	1.57	1.47	1.40	1.32	1.24
12	5.12	2.39	2.18	2.02	1.87	1.83	1.76	1.68	1.60	1.49	1.40	1.33	1.25	1.18
14	5.64	2.29	2.08	1.93	1.79	1.75	1.69	1.60	1.53	1.42	1.34	1.27	1.19	1.10
16	6.16	2.20	2.00	1.86	1.72	1.68	1.62	1.54	1.47	1.37	1.29	1.22	1.14	1.01
18	6.68	2.12	1.93	1.79	1.66	1.62	1.57	1.49	1.42	1.32	1.24	1.17	1.05	0.93
20	7.20	2.06	1.87	1.74	1.61	1.57	1.52	1.44	1.38	1.28	1.20	1.11	0.97	0.86
22	7.72	2.00	1.82	1.69	1.56	1.53	1.47	1.40	1.34	1.24	1.17	1.04	0.91	0.81
24	8.24	1.95	1.77	1.64	1.52	1.49	1.43	1.36	1.30	1.21	1.13	0.97	0.85	0.76
26	8.76	1.90	1.72	1.60	1.49	1.45	1.40	1.33	1.27	1.18	1.07	0.91	0.80	0.71
28	9.28	1.86	1.69	1.56	1.45	1.42	1.37	1.30	1.24	1.15	1.01	0.86	0.75	0.67
30	9.80	1.82	1.65	1.53	1.42	1.39	1.34	1.27	1.22	1.13	0.95	0.82	0.71	0.63
32	10.37	1.78	1.62	1.50	1.39	1.36	1.31	1.25	1.19	1.08	0.90	0.77	0.68	0.60
34	10.94	1.75	1.59	1.47	1.37	1.33	1.29	1.22	1.17	1.02	0.85	0.73	0.64	0.57
36	11.51	1.71	1.56	1.45	1.34	1.31	1.26	1.20	1.15	0.97	0.81	0.70	0.61	0.54
38	12.08	1.69	1.53	1.42	1.32	1.29	1.24	1.18	1.13	0.93	0.77	0.66	0.58	0.52
40	12.65	1.66	1.51	1.40	1.30	1.27	1.22	1.16	1.11	0.89	0.74	0.63	0.55	0.49
45	14.08	1.60	1.45	1.35	1.25	1.22	1.18	1.12	0.99	0.80	0.66	0.57	0.50	0.44
50	15.50	1.54	1.40	1.30	1.21	1.18	1.14	1.03	0.90	0.72	0.60	0.52	0.45	0.40

Sample calculation

- Required: Distance between main beams and between supports
- Available: ○ 20 cm concrete ceiling with total load of 7.20 kN/m²
- Selected: ○ Distance between crossbeams of 0.5 m
- Result: □ 1.74 m distance between main beams
(select next larger distance between main beams, ▢ here 1.75 m)
- 1.11 m distance between supports (check carrying capacity of supports)

Technical data HT 16plus



Dimensions and tolerances

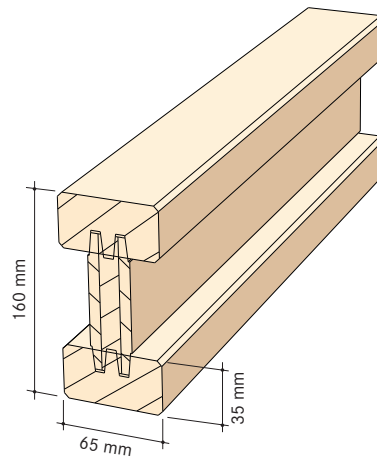
Dimensions	HT 16plus	Tolerances
Beam height	160 mm	± 2.0 mm
Flange thickness	35 mm	- 1.5%
Flange width	65 mm	- 1.5%
Web thickness	24 mm	± 0.5 mm

Product standard

Industrially manufactured timber formwork beams are to be used in supporting structures and formwork for concrete buildings. The load is applied in the direction of the formwork beam height. The EN 13377 standard specifies the classification, the requirements, and verification procedures for formwork beams in the heights $h = 16$, $h = 20$ and $h = 24$ cm.

Calculated values

According to EN 13377	Carrying capacity characteristics	
Lateral force	$V_k = 18.4$ kN	perm. Q = 8.5 kN
Bending moment	$M_k = 5.9$ kNm	perm. M = 2.7 kNm
Reaction of support	$R_{b,k} = 36.8$ kN	
Modulus of elasticity - x moment of inertia	$E_I = 212$ kNm ²	
Modulus of elasticity flange (C24)	$E_{flange} = 11,000$ N/mm ²	
Modulus of elasticity web (3S panel)	$E_{web} = 6,700$ N/mm ²	



Length

on request: max. 8.00 m

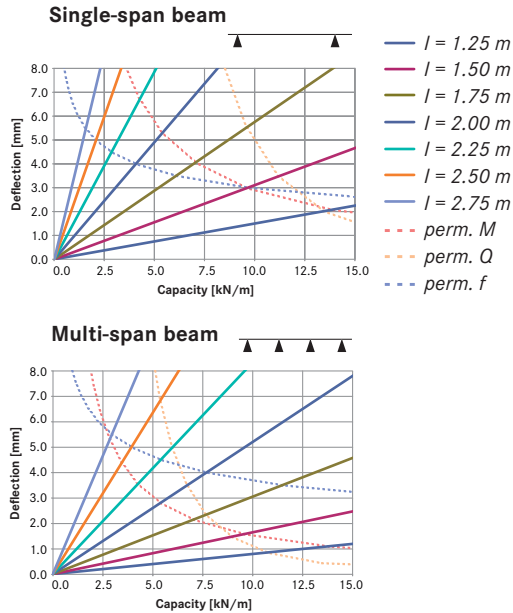
Weight

3.1 kg/m

Package units

Standard package: 150 pieces

Span table



Floor thickness [cm]	Total load [kN/m ²]	Table 1: Crossbeams Distance between crossbeams [m]								Table 2: Main beams Selected distance between main beams [m]				
		0.4	0.5	0.625	0.675	0.75	1	1.25	1.5	1.75	2	2.25	2.5	3
10	4.60	2.97	2.76	2.56	2.50	2.41	2.17	1.94	1.77	1.64	1.53	1.44	1.37	1.22
12	5.12	2.82	2.62	2.43	2.37	2.29	2.05	1.84	1.68	1.55	1.45	1.37	1.30	1.09
14	5.64	2.70	2.51	2.33	2.27	2.19	1.96	1.75	1.60	1.48	1.38	1.30	1.19	0.99
16	6.16	2.59	2.41	2.24	2.18	2.10	1.87	1.67	1.53	1.42	1.32	1.21	1.09	0.91
18	6.68	2.50	2.33	2.16	2.10	2.03	1.80	1.61	1.47	1.36	1.26	1.12	1.01	0.84
20	7.20	2.43	2.25	2.09	2.04	1.97	1.73	1.55	1.41	1.31	1.17	1.04	0.93	0.78
22	7.72	2.36	2.19	2.03	1.98	1.91	1.67	1.50	1.37	1.24	1.09	0.97	0.87	0.73
24	8.24	2.29	2.13	1.98	1.93	1.86	1.62	1.45	1.32	1.17	1.02	0.91	0.82	0.68
26	8.76	2.24	2.08	1.93	1.88	1.81	1.57	1.40	1.28	1.10	0.96	0.85	0.77	0.64
28	9.28	2.19	2.03	1.88	1.84	1.76	1.53	1.36	1.21	1.03	0.91	0.80	0.72	0.60
30	9.80	2.14	1.99	1.84	1.80	1.71	1.48	1.33	1.14	0.98	0.86	0.76	0.69	0.57
32	10.37	2.10	1.95	1.81	1.76	1.67	1.44	1.29	1.08	0.93	0.81	0.72	0.65	0.54
34	10.94	2.06	1.91	1.77	1.71	1.62	1.41	1.23	1.02	0.88	0.77	0.68	0.61	0.51
36	11.51	2.02	1.88	1.73	1.67	1.58	1.37	1.17	0.97	0.83	0.73	0.65	0.58	0.49
38	12.08	1.99	1.84	1.69	1.63	1.54	1.34	1.11	0.93	0.79	0.70	0.62	0.56	0.46
40	12.65	1.95	1.81	1.65	1.59	1.51	1.31	1.06	0.89	0.76	0.66	0.59	0.53	0.44
45	14.08	1.88	1.75	1.57	1.51	1.43	1.19	0.95	0.80	0.68	0.60	0.53	0.48	0.40
50	15.50	1.82	1.67	1.49	1.44	1.36	1.08	0.87	0.72	0.62	0.54	0.48	0.43	0.36
55	16.93	1.77	1.60	1.43	1.38	1.30	0.99	0.79	0.66	0.57	0.50	0.44	0.40	0.33
60	18.35	1.72	1.53	1.37	1.32	1.22	0.92	0.73	0.61	0.52	0.46	0.41	0.37	0.31
65	19.78	1.65	1.48	1.32	1.26	1.13	0.85	0.68	0.57	0.49	0.42	0.38	0.34	0.28
70	21.20	1.60	1.43	1.27	1.17	1.06	0.79	0.63	0.53	0.45	0.40	0.35	0.32	0.26

Sample calculation

- Required: Distance between main beams and between supports
- Available: 24 cm concrete ceiling with total load of 8.24 kN/m²
- Selected: Distance between crossbeams of 0.625 m
- Result: 1.98 m distance between main beams
 (select next larger distance between main beams, here 2 m)
- 1.02 m distance between supports (check carrying capacity of supports)

Technical data HT 20plus



Dimensions and tolerances

Dimensions	HT 20plus	Tolerances
Beam height	200 mm	± 2.0 mm
Flange thickness	40 mm	- 1.5%
Flange width	80 mm	- 1.5%
Web thickness	24 mm	± 0.5 mm

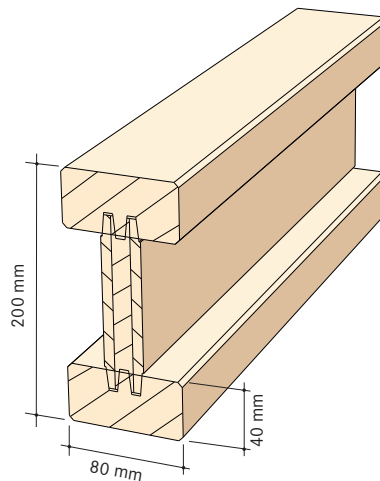
Product standard

Industrially manufactured timber formwork beams are to be used in supporting structures and formwork for concrete buildings. The load is applied in the direction of the formwork beam height. The EN 13377 standard defines the classification, requirements and test methods for timber formwork beams with construction heights of $h = 16$ cm, $h = 20$ cm and $h = 24$ cm. In Germany, the DIN EN 13377 standard applies in with DIN 20000-2. The **HT 20plus** is marked with an "Ü" according to the regulations applicable in Germany.

Calculated values

According to EN 13377	Carrying capacity characteristics	
Lateral force	$V_k = 23.9$ kN	perm. Q = 11 kN
Bending moment	$M_k = 10.9$ kNm	perm. M = 5 kNm
Reaction of support	$R_{b,k} = 47.8$ kN	

Modulus of elasticity - x moment of inertia	$E_I = 486$ kNm ²	
Modulus of elasticity flange (C24)	$E_{flange} = 11,000$ N/mm ²	
Modulus of elasticity web (3S panel)	$E_{web} = 6,700$ N/mm ²	



Length

1.80/1.90/2.00/2.45/2.50/2.65/2.90/3.30/3.60/3.90/4.20/4.50/4.90/5.90/max. 10.00 m

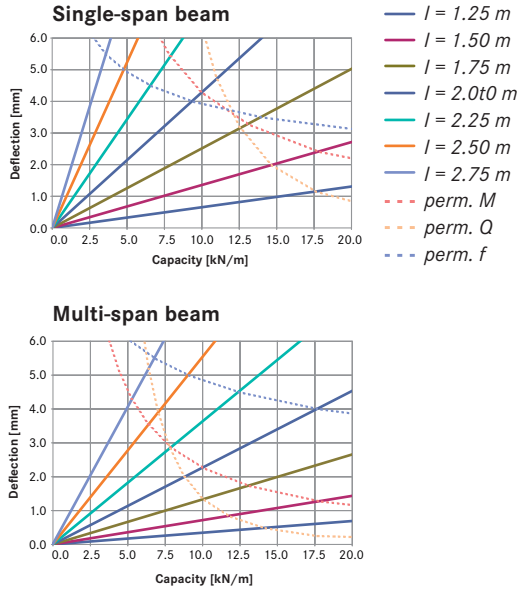
Weight

4.4 kg/m

Package units

Standard package: 100 pieces, Container package: 105 pieces

Span table



Floor thickness [cm]	Total load [kN/m ²]	Table 1: Crossbeams Distance between crossbeams [m]								Table 2: Main beams Selected distance between main beams [m]				
		0.5	0.625	0.675	0.75	1	1.25	1.5	1.75	2	2.25	2.5	3	3.5
10	4.60	3.64	3.38	3.29	3.18	2.89	2.64	2.41	2.23	2.09	1.97	1.87	1.59	1.37
12	5.12	3.46	3.21	3.13	3.02	2.74	2.50	2.28	2.11	1.98	1.86	1.72	1.43	1.23
14	5.64	3.30	3.07	2.99	2.89	2.62	2.38	2.17	2.01	1.88	1.73	1.56	1.30	1.11
16	6.16	3.18	2.95	2.87	2.77	2.52	2.28	2.08	1.93	1.79	1.59	1.43	1.19	1.02
18	6.68	3.07	2.85	2.77	2.68	2.43	2.19	2.00	1.85	1.65	1.46	1.32	1.10	0.94
20	7.20	2.97	2.76	2.69	2.59	2.36	2.11	1.92	1.75	1.53	1.36	1.22	1.02	0.87
22	7.72	2.88	2.68	2.61	2.52	2.28	2.04	1.86	1.63	1.42	1.27	1.14	0.95	0.81
24	8.24	2.81	2.61	2.54	2.45	2.20	1.97	1.78	1.53	1.33	1.19	1.07	0.89	0.76
26	8.76	2.74	2.54	2.48	2.39	2.14	1.91	1.67	1.44	1.26	1.12	1.00	0.84	0.72
28	9.28	2.68	2.49	2.42	2.34	2.08	1.86	1.58	1.35	1.19	1.05	0.95	0.79	0.68
30	9.80	2.62	2.43	2.37	2.29	2.02	1.80	1.50	1.28	1.12	1.00	0.90	0.75	0.64
35	11.23	2.50	2.32	2.26	2.18	1.89	1.57	1.31	1.12	0.98	0.87	0.78	0.65	0.56
40	12.65	2.39	2.22	2.16	2.05	1.74	1.39	1.16	0.99	0.87	0.77	0.70	0.58	0.50
45	14.08	2.30	2.13	2.05	1.95	1.56	1.25	1.04	0.89	0.78	0.69	0.63	0.52	0.45
50	15.50	2.23	2.03	1.96	1.85	1.42	1.14	0.95	0.81	0.71	0.63	0.57	0.47	0.41
55	16.93	2.16	1.94	1.87	1.73	1.30	1.04	0.87	0.74	0.65	0.58	0.52	0.43	0.37
60	18.35	2.09	1.87	1.78	1.60	1.20	0.96	0.80	0.69	0.60	0.53	0.48	0.40	0.34
65	19.78	2.01	1.78	1.65	1.48	1.11	0.89	0.74	0.64	0.56	0.49	0.45	0.37	0.32
70	21.20	1.94	1.66	1.54	1.38	1.04	0.83	0.69	0.59	0.52	0.46	0.42	0.35	0.30
75	22.50	1.89	1.56	1.45	1.30	0.98	0.78	0.65	0.56	0.49	0.43	0.39	0.33	0.28
80	23.80	1.83	1.48	1.37	1.23	0.92	0.74	0.62	0.53	0.46	0.41	0.37	0.31	0.26
85	25.10	1.75	1.40	1.30	1.17	0.88	0.70	0.58	0.50	0.44	0.39	0.35	0.29	0.25
90	26.40	1.67	1.33	1.23	1.11	0.83	0.67	0.56	0.48	0.42	0.37	0.33	0.28	0.24
95	27.70	1.59	1.27	1.18	1.06	0.79	0.64	0.53	0.45	0.40	0.35	0.32	0.26	0.23
100	29.00	1.52	1.21	1.12	1.01	0.76	0.61	0.51	0.43	0.38	0.34	0.30	0.25	0.22

Sample calculation

- Required: Distance between main beams and between supports
- Available: 30 cm concrete ceiling with total load of 9.80 kN/m²
- Selected: Distance between crossbeams of 0.75 m
- Result: 2.29 m distance between main beams
 (select next larger distance between main beams, here 2.5 m)
- 0.90 m distance between supports (check carrying capacity of supports)

Technical data HT 24plus



Dimensions and tolerances

Dimensions	HT 24plus	Tolerances
Beam height	240 mm	± 2.0 mm
Flange thickness	40 mm	- 1.5%
Flange width	80 mm	- 1.5%
Web thickness	24 mm	± 0.5 mm

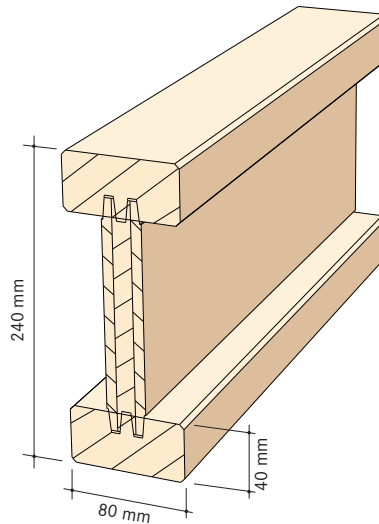
Product standard

Industrially manufactured timber formwork beams are to be used in supporting structures and formwork for concrete buildings. The load is applied in the direction of the formwork beam height. The EN 13377 standard specifies the classification, the requirements, and verification procedures for formwork beams in the heights $h = 16$, $h = 20$ and $h = 24$ cm.

Calculated values

According to EN 13377	Carrying capacity characteristics	
Lateral force	$V_k = 28.2$ kN	perm. Q = 13 kN
Bending moment	$M_k = 14.1$ kNm	perm. M = 6.5 kNm
Reaction of support	$R_{b,k} = 56.4$ kN	

Modulus of elasticity - x moment of inertia	$E_I = 775$ kNm ²	
Modulus of elasticity flange (C24)	$E_{flange} = 11,000$ N/mm ²	
Modulus of elasticity web (3S panel)	$E_{web} = 6,700$ N/mm ²	



Length

on request: max. 10.00 m

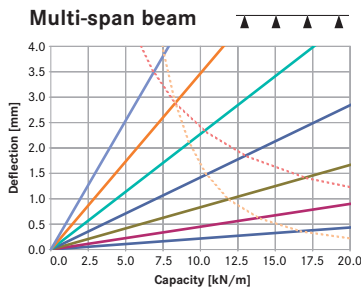
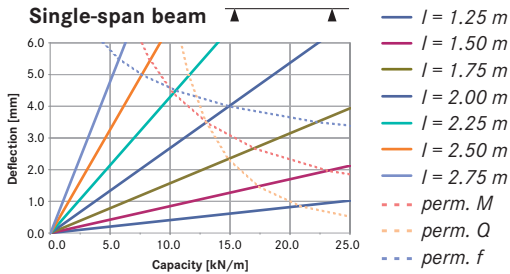
Weight

4.9 kg/m

Package units

Standard package: 80 pieces

Span table



Floor thickness [cm]	Total load [kN/m ²]	Table 1: Crossbeams Distance between crossbeams [m]								Table 2: Main beams Selected distance between main beams [m]				
		0.5	0.625	0.675	0.75	1	1.25	1.5	1.75	2	2.25	2.5	3	3.5
		Max. support width of crossbeam = Max. distance between main beams								Max. permissible support width = Distance between supports				
16	6.16	3.71	3.44	3.36	3.24	2.91	2.60	2.37	2.20	2.05	1.88	1.69	1.41	1.21
18	6.68	3.58	3.33	3.24	3.13	2.79	2.50	2.28	2.11	1.95	1.73	1.56	1.30	1.11
20	7.20	3.47	3.22	3.14	3.03	2.69	2.40	2.19	2.03	1.81	1.60	1.44	1.20	1.03
22	7.72	3.37	3.13	3.05	2.94	2.60	2.32	2.12	1.92	1.68	1.50	1.35	1.12	0.96
24	8.24	3.28	3.05	2.97	2.87	2.51	2.25	2.05	1.80	1.58	1.40	1.26	1.05	0.90
26	8.76	3.20	2.97	2.90	2.80	2.44	2.18	1.98	1.70	1.48	1.32	1.19	0.99	0.85
28	9.28	3.13	2.90	2.83	2.73	2.37	2.12	1.87	1.60	1.40	1.25	1.12	0.93	0.80
30	9.80	3.06	2.84	2.77	2.66	2.30	2.06	1.77	1.52	1.33	1.18	1.06	0.88	0.76
32	10.37	3.00	2.78	2.71	2.59	2.24	2.00	1.67	1.43	1.25	1.11	1.00	0.84	0.72
34	10.94	2.94	2.73	2.65	2.52	2.18	1.90	1.58	1.36	1.19	1.06	0.95	0.79	0.68
36	11.51	2.89	2.68	2.59	2.45	2.13	1.81	1.51	1.29	1.13	1.00	0.90	0.75	0.65
38	12.08	2.84	2.62	2.53	2.40	2.07	1.72	1.43	1.23	1.08	0.96	0.86	0.72	0.61
40	12.65	2.80	2.56	2.47	2.34	2.03	1.64	1.37	1.17	1.03	0.91	0.82	0.69	0.59
45	14.08	2.69	2.43	2.34	2.22	1.85	1.48	1.23	1.06	0.92	0.82	0.74	0.62	0.53
50	15.50	2.59	2.32	2.23	2.11	1.68	1.34	1.12	0.96	0.84	0.75	0.67	0.56	0.48
55	16.93	2.48	2.22	2.13	2.02	1.54	1.23	1.02	0.88	0.77	0.68	0.61	0.51	0.44
60	18.35	2.38	2.13	2.05	1.89	1.42	1.13	0.94	0.81	0.71	0.63	0.57	0.47	0.40
65	19.78	2.29	2.05	1.95	1.75	1.31	1.05	0.88	0.75	0.66	0.58	0.53	0.44	0.38
70	21.20	2.21	1.96	1.82	1.64	1.23	0.98	0.82	0.70	0.61	0.55	0.49	0.41	0.35
75	22.50	2.15	1.85	1.71	1.54	1.16	0.92	0.77	0.66	0.58	0.51	0.46	0.39	0.33
80	23.80	2.09	1.75	1.62	1.46	1.09	0.87	0.73	0.62	0.55	0.49	0.44	0.36	0.31
85	25.10	2.04	1.66	1.53	1.38	1.04	0.83	0.69	0.59	0.52	0.46	0.41	0.35	0.30
90	26.40	1.97	1.58	1.46	1.31	0.98	0.79	0.66	0.56	0.49	0.44	0.39	0.33	0.28
95	27.70	1.88	1.50	1.39	1.25	0.94	0.75	0.63	0.54	0.47	0.42	0.38	0.31	0.27
100	29.00	1.79	1.43	1.33	1.20	0.90	0.72	0.60	0.51	0.45	0.40	0.36	0.30	0.26

Sample calculation

- Required: Distance between main beams and between supports
- Available: ○ 36 cm concrete ceiling with total load of 11.51 kN/m²
- Selected: ○ Distance between crossbeams of 0.75 m
- Result: □ 2.45 m distance between main beams
 (select next larger distance between main beams, here □ 2.5 m)
 ○ 0.90 m distance between supports (check carrying capacity of supports)



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Hardly any crack formation

due to the lamella structure in the covering layers, not even after many usage cycles

Special PU edge sealing

prevents moisture ingress and concrete slurry from sticking

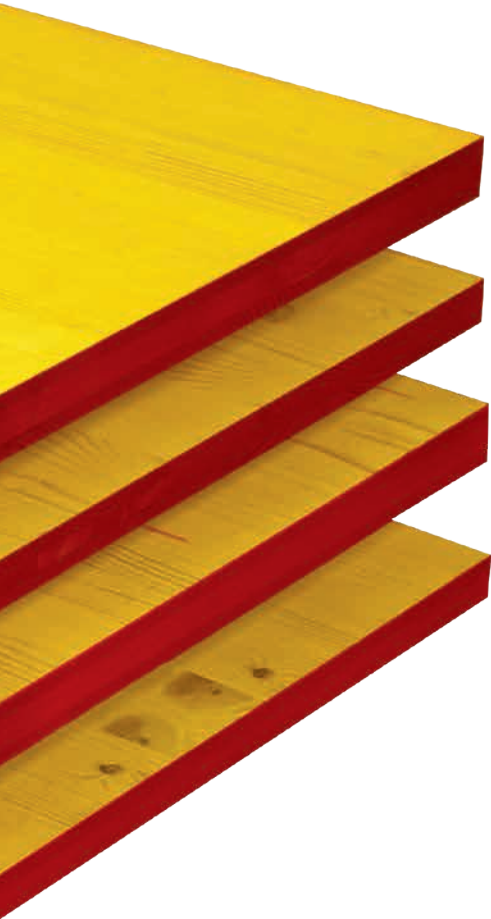
The surface,

completely sanded and coated with a melamin resin, assist an optimal pore structure of the concrete face

Stable longitudinal edges

even at high mechanical stress, thanks to full-length middle layers

Properties



3 laminated plies in top quality for the most exacting requirements

K1 yellowplan is the concrete formwork panel made by Mayr-Melnhof Holz and can be used many times on construction sites. The internationally established panels are used wherever quality, long service life and variable use are required.

K1 yellowplan panels have been manufactured in Reuthe in Austria's Bregenzerwald region for 50 years and are promptly delivered from there to your location, or – by request – directly to the construction site. Since the 1980s **K1 yellowplan** panels have been manufactured on an industrial production line. Today this 3-ply laminated formwork panel continues to impress with its unique quality and high structural stability.

K1 yellowplan formwork panels are made in a jumbo size of 2 x 6 m as well as thicknesses of 21 and 27 mm and are then cut to smaller standard formats.

A closed, laminated cover and middle layer without edge bands and predominantly vertical growth rings is the basis for the **K1**'s typical concrete finish.



Technical data K1 yellowplan

Product

3-ply concrete formwork panel with smooth surface and melamine resin coating according to Austrian standard ÖN B 3023 for concrete formwork panels

Wood species

Spruce, fir

Wood moisture

12% ± 3%

Gluing

Alkali-proof, water-resistant and weather-proof bonding according to ÖN B 3023

Weight

21 mm approx. 10.0 kg/m²

27 mm approx. 12.5 kg/m²

Design

- Three-ply panel, sealed, glued crosswise
- Continuously calibrated, sanded cover layer and intermediate plies
- Densely fitting, glued intermediate ply, providing stable longitudinal edges
- Edge-glued cover layer and intermediate ply, no concealed edge bands
- Production as large-format board
- Standard formats and small formats are cut precisely from large-format boards

Formats

Standard formats (length x width in cm)

100 x 50

150 x 50

200 x 50

250 x 50

300 x 50

Jumbo formats (length x width in cm)

200 x 100/150/200

250 x 100/150/200

300 x 100/150/200

400 x 50/100/150/200

500 x 50/100/150/200

600 x 50/100/150/200

Thicknesses

21 and 27 mm

Surface quality

- Completely sanded surface
- Sturdy melamine resin coating

Edge-coating

- Water-based edge paint, grey, yellow, red
- PU edge sealing, red available on request

Packaging

Packages: 50 pieces of 21 mm or 40 pieces of 27 mm thickness

- Delivered suitable for the construction site, protected by integrated supporting timber
- The package units for jumbo formats are subject to arrangement

Dimensional tolerances

Thicknesses	21 and 27 mm	± 1 mm
Widths	50 ≤ 200 cm	± 1 mm
Lengths	100 ≤ 250 cm	± 1 mm
	300 ≤ 600 cm	± 2 mm
Longitudinal curvature	100 ≤ 300 cm	± 1 mm
	301 ≤ 600 cm	± 1.5 mm
	Widths < 50 cm	± 1 ‰

Calculated values

Mechanical characteristics according to ÖN B 3023 for a nominal thickness of 21 and 27 mm

Mean modulus of elasticity	10,000 N/mm ²
Characteristic value of bending strength	22 N/mm ²

The calculated values apply to a wood moisture of 12%. In case of strong moisture saturation up to the fibre saturation point, the values for bending strength and flexural modulus may be reduced by up to 30%.

Quality

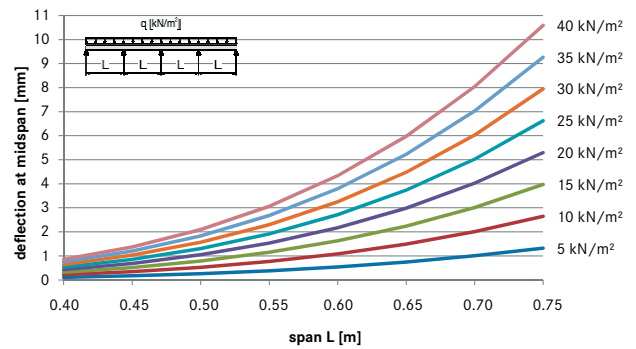
		Span L [m]							
d = 21 mm		0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75
Load q [kN/m ²]	5 kN/m ²	0.11	0.17	0.26	0.38	0.54	0.75	1.00	1.32
	10 kN/m ²	0.21	0.34	0.52	0.77	1.08	1.49	2.01	2.65
	15 kN/m ²	0.32	0.51	0.78	1.15	1.63	2.24	3.01	3.97
	20 kN/m ²	0.43	0.69	1.05	1.53	2.17	2.99	4.02	5.30
	25 kN/m ²	0.54	0.86	1.31	1.91	2.71	3.74	5.02	6.62
	30 kN/m ²	0.64	1.03	1.57	2.30	3.25	4.48	6.03	7.95
	35 kN/m ²	0.75	1.20	1.83	2.68	3.80	5.23	7.03	9.27
	40 kN/m ²	0.86	1.37	2.09	3.06	4.34	5.98	8.04	10.59

d = 21 mm

E = 10,000 N/mm² of K1 yellowplan d = 21 mm

k = 0.646 Deformation factor contingent depends on number of fields for constant load

Deflection of formwork panel K1 yellowplan d = 21 mm



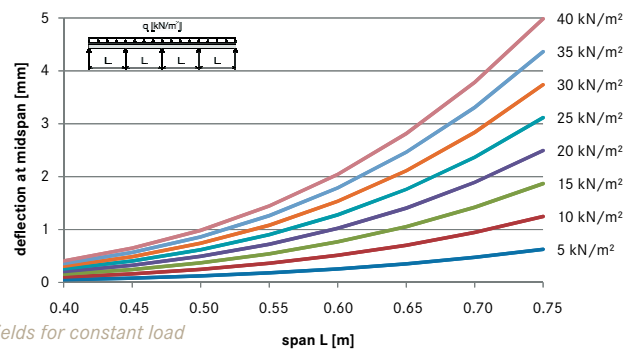
		Span L [m]							
d = 27 mm		0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75
Load q [kN/m ²]	5 kN/m ²	0.05	0.08	0.12	0.18	0.26	0.35	0.47	0.62
	10 kN/m ²	0.10	0.16	0.25	0.36	0.51	0.70	0.95	1.25
	15 kN/m ²	0.15	0.24	0.37	0.54	0.77	1.05	1.42	1.87
	20 kN/m ²	0.20	0.32	0.49	0.72	1.02	1.41	1.89	2.49
	25 kN/m ²	0.25	0.40	0.62	0.90	1.28	1.76	2.36	3.12
	30 kN/m ²	0.30	0.48	0.74	1.08	1.53	2.11	2.84	3.74
	35 kN/m ²	0.35	0.57	0.86	1.26	1.79	2.46	3.31	4.36
	40 kN/m ²	0.40	0.65	0.98	1.44	2.04	2.81	3.78	4.98

d = 27 mm

E = 10,000 N/mm² of K1 yellowplan d = 27 mm

k = 0.646 Deformation factor contingent depends on number of fields for constant load

Deflection of formwork panel K1 yellowplan d = 27 mm

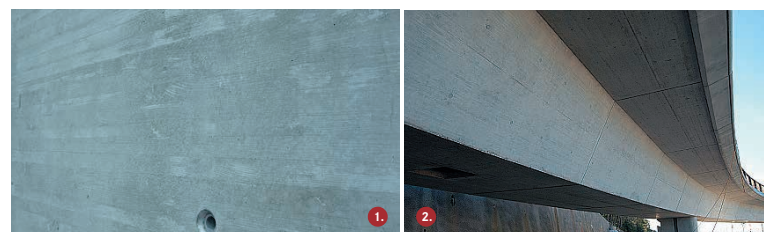


Product standard and quality definition

The product standard for 3-ply concrete formwork panels (ÖN B 3023) refers, for purposes of classification and test procedures for factory-owned production control, to the relevant European standards on solid wood panels. When it comes to wood quality, the surface meets appearance class S for solid wood panels (EN 13017-1 Tab.1). The surface structure and coating is assigned to the smooth GL category according to ÖN B 3023. The bonding quality must be tested according to ÖN EN 13354 and must comply with the requirements of ÖN EN 13353 for multi-layer solid wood panels used in humid areas (SWP/2).

1 Concrete appearance

Due to the lamella structure of the outer layers, the concrete will display a smooth and light wood grain which becomes more pronounced as the panel gets older. The yellow melamine coating protects the panel and ensures the surface finish. It is classified as lightly absorbent. With time and the number of applications, the absorptive capacity of the panel surface decreases and the concrete face becomes lighter.



2 Fair-faced concrete

A large amount of experience is available when it comes to the use of three-ply, melamine resin coated concrete formwork panels for fair-faced concrete. Depending on the materials, surface defects in the wood (knots, resin pockets, nail holes, filled knot holes or cracks) will influence the absorptive capacity of the formwork facing and cause dark spots in the concrete when panels are used for the first time. Better results for fair-faced concrete are obtained after the 2nd application, when residue on the melamine coating of the formwork facing is removed through alkaline reaction or neutralised by the concrete. The recommendations and guidelines of the Cement and Construction Industry must be taken into account - e.g. DBV/VDZ data sheet on "Fair-Faced Concrete" (revised edition 06/2015, published by DBV Deutscher Beton- und Bautechnikerverein e.V.).

Formwork technology for construction sites – world-wide!



Mayr-Melnhof Holz formwork technology is used all over the world. We are a pioneer and quality leader in glued timber and formwork construction, offering you optimum, efficient and extraordinarily long-lasting solutions for the most varied requirements with our **K1 yellowplan** formwork panel and our **HT 12plus**, **HT 16plus**, **HT 20plus** and **HT 24plus** formwork beams. From our location in Reuthe, Austria, we always deliver our products on time to customers or directly to construction sites all over the world.





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