PFEIFER

THREE-PLY SOLID TIMBER PANELS WITH TONGUE AND GROOVE

DELIVERY PROGRAMME

Laying panel made of spruce, long side with wedge tongue/wedge groove

QUALITY	*AB/B*	*B/C*	*B/K*	*C/C*	*C/K*	*QTY./ PU*	*PANEL STRUCTURE*
FORMAT				5,000 x 665 / 5,000 x 1,010 mm			
19 mm	–	–	●	–	–	30	6/7/6
22 mm	–	–	●	–	–	25	6/10/6
27 mm	–	–	●	–	–	21	9/9/9

Laying panel made of spruce - 4-sided with wedge tongue/wedge groove

QUALITY	*AB/B*	*B/C*	*B/K*	*C/C*	*C/K*	*QTY./ PU*	*PANEL STRUCTURE*
FORMAT				2,480 x 665 mm			
19 mm	–	–	●	–	–	30	6/7/6
27 mm	–	–	●	–	–	21	9/9/9

Laying panel made of larch, long side with wedge tongue/wedge groove

QUALITY	*AB/B*	*B/C*	*B/K*	*C/C*	*C/K*	*QTY./ PU*	*PANEL STRUCTURE*
FORMAT				5,000 x 665 mm / 5,000 x 1,010 mm			
19 mm	●	–	–	–	–	30	6/7/6
27 mm	●	–	–	–	–	21	9/9/9

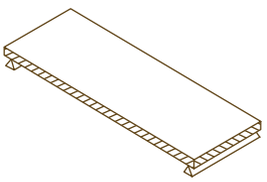
Laying panel made of larch - 4-sided with wedge tongue/wedge groove

QUALITY	AB/B	B/C	B/K	C/C	C/K	QTY./ PU	PANEL STRUCTURE
FORMAT				2,480 x 665 mm			
19 mm	●	–	–	–	–	30	6/7/6
27 mm	●	–	–	–	–	21	9/9/9

[1] 27 mm format, 6 mm top layer only ex works from lmst possible [2] On request, not all sizes are always in stock. ● available ○ out of stock, order-related production

SINGLE-SPAN BEAM

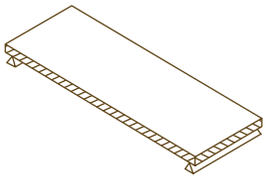
Load at right angles to the plane of the panel and parallel to the cover fibre course.

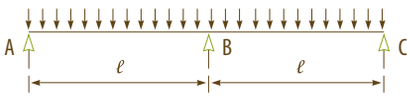


PERMANENTLY APPLIED LOAD in $g_{2,k}$	CARRYING CAPACITY in n_k		SPAN WIDTH OF SINGLE-SPAN BEAM in mm				
[kN/m²]	CATEGORY	[kN/m²]	500	750	1000	1250	1500
0.5	A	1.5	3s 19 mm	3s 19 mm	3s 19 mm	3s 27 mm	–
		2			3s 22 mm		
	B	2.5			3s 27 mm	–	
		3					
	C	4		3s 22 mm			
		5			–		
1.0	A	1.5	3s 19 mm	3s 19 mm	3s 22 mm	3s 27 mm	–
		2					
	B	2.5			3s 27 mm	–	
		3					
	C	4		3s 22 mm			
		5			–		
1.5	A	1.5	3s 19 mm	3s 19 mm	3s 22 mm	3s 27 mm	–
		2					
	B	2.5			3s 27 mm	–	
		3					
	C	4		3s 22 mm			
		5			–		
2.0	A	1.5	3s 19 mm	3s 19 mm	3s 27 mm	–	–
		2					
	B	2.5					
		3					
	C	4		3s 22 mm	–		
		5					

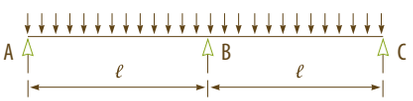
TWO-SPAN BEAM

Load at right angles to the plane of the panel and parallel to the cover fibre course.





PERMANENTLY APPLIED LOAD in $g_{2,k}$	*CARRYING CAPACITY in n_k*		*SPAN WIDTH OF SINGLE-SPAN BEAM in mm*				
[kN/m²]	*CATEGORY*	*[kN/m²]*	*500*	*750*	*1000*	*1250*	*1500*
0.5	A	1.5	3s 19 mm	3s 19 mm	3s 19 mm	3s 19 mm	3s 22 mm
		2					3s 27 mm
	B	2.5				3s 22 mm	
		3					
	C	4			3s 22 mm	3s 27 mm	–
		5					
1.0	A	1.5	3s 19 mm	3s 19 mm	3s 19 mm	3s 19 mm	3s 22 mm
		2					3s 27 mm
	B	2.5				3s 22 mm	
		3					
	C	4			3s 22 mm	3s 27 mm	–
		5					
1.5	A	1.5	3s 19 mm	3s 19 mm	3s 19 mm	3s 22 mm	3s 27 mm
		2					
	B	2.5					
		3					
	C	4			3s 22 mm	3s 27 mm	–
		5					
2.0	A	1.5	3s 19 mm	3s 19 mm	3s 19 mm	3s 22 mm	3s 27 mm
		2					
	B	2.5				3s 27 mm	
		3					
	C	4			3s 22 mm		–
		5					

	SINGLE-SPAN BEAM				TWO-SPAN BEAM			
				1. MATERIAL				
THICKNESS OF THE OUTER LAYERS	d_1		9 mm		d_1		9 mm	
THICKNESS OF THE MIDDLE LAYER	d_2		9 mm		d_2		9 mm	
THICKNESS OF THE 3S PANEL:	d		27 mm		d		27 mm	
BEND MODULUS OF ELASTICITY	$E_{m,o}$		12000 N/mm²		$E_{m,o}$		12000 N/mm²	
(ROLLING) SHEAR MODULUS	G		90 N/mm²		G		90 N/mm²	
CHAR. FLEXURAL STRENGTH	$f_{m,0}$		30 N/mm²		$f_{m,0}$		30 N/mm²	
CHAR. SHEAR STRENGTH	fv		1.5 N/mm²		fv		1.5 N/mm²	
RATED VALUE OF THE FLEXURAL STRENGTH	$f_{m,0,d}$		18.46 N/mm²		$f_{m,0,d}$		18.46 N/mm²	
RATED VALUE OF THE SHEAR STRENGTH	$f_{v,d}$		0.92 N/mm²		$f_{v,d}$		0.92 N/mm²	
DEFORMATION COEFFICIENT	k_{def}		0.6		k_{def}		0.6	
L=1.50 m								
				2. LOAD				
CLASS OF UTILISATION	*1*				*1*			
PERMANENT LOADS	g_k		0.50 KN/m		g_k		2.00 KN/m	
CARRYING CAPACITY	g_k		0.50 KN/m		g_k		2.00 KN/m	
CATEGORY	A				B			
	k_{mod}		0.8		k_{mod}		0.8	
				2.1 Load-bearing capacity analyses				
$q_d = 1.35 \times g_k + 1.5 \times q_k$	q_d		3.11 KNm		q_d		7.38 KNm	
MAXIMUM TORQUE	M_d		0.87 KNm		M_d		2.08 KNm	
MAXIMUM TRANSVERSE FORCE	V_d		2.33 KNm		V_d		13.84 KNm	
	$\sigma_{m,d} / f_{m,0,d}$	40.7%	η	106.6%	$\sigma_{m,d} / f_{m,0,d}$	96.7%	η	87.4%
	$\tau_{v,d} / f_{v,d}$	12.9%	η	101.9%	$\tau_{v,d} / f_{v,d}$	76.8%	η	93.7%
			η	82.3%			η	94.3%
				2.2 Usability analyses				
	$q_{k,g}$		0.64 KNm		$q_{k,g}$		2.14 KNm	
	$q_{k,q}$		1.50 KNm		$q_{k,q}$		3.00 KNm	

	SINGLE-SPAN BEAM		TWO-SPAN BEAM	
		3. DETERMINATION OF CROSS-SECTIONAL CHARACTERISTICS		
AREA	A_1	9000 mm^2	A_1	9000 mm^2
RESISTANCE MODULUS	W_1	13500 mm^2	W_1	13500 mm^3
FIRST MOMENT OF AREA 1ST DEGREE	S_1	82874 mm^3	S_1	82874 mm^3
FIRST MOMENT OF AREA 2ND DEGREE	I_1	60750 mm^4	I_1	60750 mm^4
CALCULATION	y_1	0.954768691	y_1	0.9547687
	y_2	1	y_2	1
	a_1	9.21	a_1	9.21
	a_2	8.79	a_2	8.79
EFFECTIVE SECOND MOMENT OF AREA	I_{ef}	1545763,401 mm^4	I_{ef}	1545763,4 mm^4
		4. LOAD-BEARING CAPACITY ANALYSES		
		4.1 Bending stress analysis		
	$\sigma_{m,d}$	7.51 N/mm^2	$\sigma_{m,d}$ / $f_{m,0,}$	40.7%
	$\sigma_{m,d}$	17.85 N/mm^2	$\sigma_{m,d}$ / $f_{m,0,}$	96.7%
		4.2 Shear stress analysis		
	$\tau_{v,d}$	0.119	$\tau_{v,d}$ / $f_{v,d}$	12.9%
	$\tau_{v,d}$	0.709	$\tau_{v,d}$ / $f_{v,d}$	76.8%
		5 SUITABILITY FOR USE ANALYSIS ACCORDING TO DIN 1052-2008-12		
		5.1 Initial elastic deflection		
	$w_{g,inst}$	2.257 mm	$w_{g,inst}$	3.111 mm
	$w_{q,inst}$	5.331 mm	$w_{q,inst}$	4.371 mm
		5.2 Final deflections		
		5.2.1 As a result of permanent loads		
	$w_{G,fin}$	3.611 mm	$w_{G,fin}$	4.977 mm
		5.2.2 As a result of variable loads		
	$w_{Q,fin}$	6.290 mm	$w_{Q,fin}$	5.158 mm
	$w_{Q,fin}$	2.559 mm	$w_{Q,fin}$	2,098 mm
	$\psi 2$	0.3	$\psi 2$	0.3

	SINGLE-SPAN BEAM			TWO-SPAN BEAM		
			5.3 Final deflections			
			5.3.1 Deflection in the characteristic (rare) design situation			
	$w_{q,inst}$	5.331 mm		$w_{q,inst}$	4.371 mm	
	<l/300	η	106.6%	<l/300	η	87.4%
	$w_{fin} - w_{g,inst}$	7.644 mm		$w_{fin} - w_{g,inst}$		
	<l/200	η	101.9%	<l/200	η	93.7%
			5.3.2 Deflection in the quasi-permanent design situation			
	w_{fin}	6.169 mm		w_{fin}	7.075 mm	
	<l/200	η	82.3%	<l/200	η	94.3%