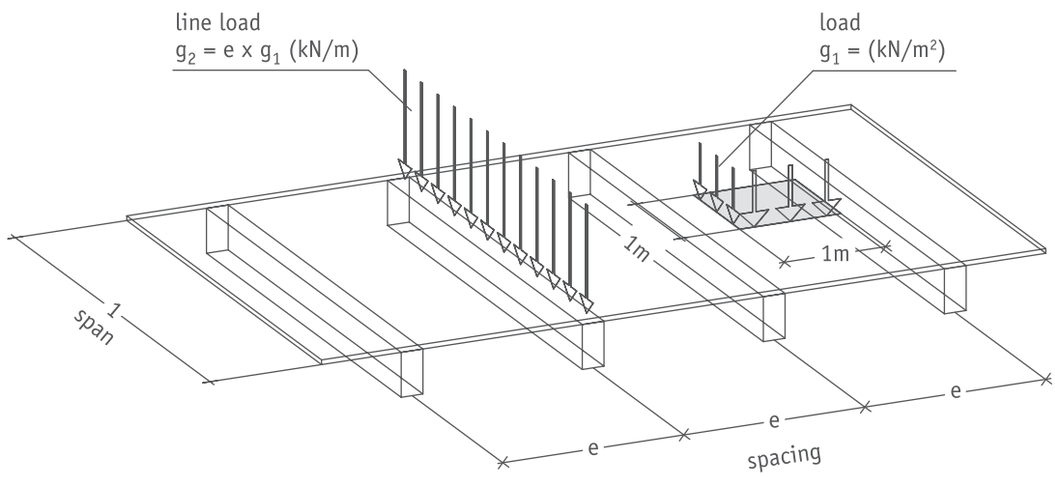
HÜTTEMANN

Design Tables



Example: House ceiling

Loads (DIN 1055)

Permanant loads:	
Flooring	0,50 kN/m²
Chipboard	0,20 kN/m²
Insulating softboard	0,05 kN/m²
Floorboards	0,15 kN/m²
	g = 0,45 kN/m²
Self weight	eg = 0,18 kN/m²
Live loads	p = 0,20 kN/m²

Design

g + eg + p = 0,45 + 0,18 + 2,00 = 2,63 kN/m²

Spacing of beams e = 0,80 m

1. Line load: q = 2,63 · 0,80 = 2,10 kN/m²
2. Span: l = 5,50 m
3. Permissible deflection = l/300
4. Selected from table:
   Row: q = 2,10 kN/m² > 12/24
   Column: l = 5,50 m

Span in meters

kN/m	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0	6,5	7,0	7,5	8,0	8,5	9,0	9,5	10,0
0,5	6/12	6/12	6/12	8/12	8/14	8/16	10/16	8/20	8/20	10/20	12/20	14/20	12/24	12/24	14/24	12/28
0,7	6/12	6/12	8/12	8/14	8/16	10/16	8/20	10/20	12/20	14/20	12/24	12/24	14/24	12/28	14/28	14/28
0,9	6/12	6/12	6/14	8/16	10/16	8/20	8/20	12/20	14/20	12/24	12/24	12/28	14/28	14/28	14/32	14/32
1,1	6/12	8/12	8/14	8/16	8/20	8/20	10/20	8/24	10/24	12/24	12/28	14/28	14/28	14/32	14/32	16/32
1,3	6/12	6/14	8/16	10/16	8/20	10/20	12/20	10/24	12/24	12/28	14/28	14/28	14/32	14/32	16/32	20/32
1,5	6/12	8/14	8/16	12/16	8/20	10/20	14/20	10/24	14/24	12/28	14/28	14/32	14/32	16/32	20/32	20/32
1,7	8/12	8/14	8/16	12/16	10/20	12/20	12/24	12/24	16/24	14/28	14/28	14/32	14/32	20/32	20/32	16/36
1,9	8/12	8/14	8/20	8/20	10/20	14/20	12/24	14/24	14/28	14/28	14/32	14/32	20/32	20/32	16/36	20/40
2,1	6/14	8/16	8/20	8/20	12/20	14/20	12/24	12/28	14/28	14/28	14/32	14/32	20/32	14/36	20/40	20/40
2,3	6/14	8/16	8/20	8/20	12/20	12/24	12/24	12/28	12/32	14/28	14/32	16/32	20/32	16/36	20/40	20/40
2,5	8/14	8/16	8/20	10/20	14/20	12/24	12/28	12/28	12/32	14/32	14/32	16/36	16/36	20/40	20/40	20/44
2,7	8/14	8/16	8/20	10/20	8/24	12/24	12/28	12/28	12/32	14/32	16/32	16/36	20/40	20/40	20/40	20/44

Hüttemann Meisterholz is produced without hog. The design only applies to a permission bending of l/300. The table is a preliminary design guide: It does not replace structural design calculations.

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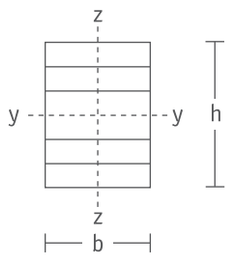

Structural values of the standard cross-section

Standard cross-sections in cm		A (cm^2)	Wy (cm^3)	Wz (cm^3)	Iy (cm^4)	Iz (cm^4)	iy (cm)	iz (cm)
6 cm width	6/12	72	144	72	864	216	3,46	1,73
	6/14	84	196	84	1 372	252	4,04	1,73
	6/16	96	256	96	2 048	288	4,62	1,73
	6/20	120	400	120	4 000	360	5,77	1,73
8 cm width	8/12	96	192	128	1 152	512	3,46	2,31
	8/14	112	261	149	1 829	597	4,04	2,31
	8/16	128	341	171	2 731	683	4,62	2,31
	8/18	144	432	192	3 888	768	5,20	2,31
	8/20	160	533	213	5 333	853	5,77	2,31
	8/24	192	768	256	9 216	1 024	6,93	2,31
10 cm width	10/10	100	167	167	833	833	2,89	2,89
	10/12	120	240	200	1 440	1 000	3,46	2,89
	10/16	160	427	267	3 413	1 333	4,62	2,89
	10/20	200	667	333	6 667	1 667	5,77	2,89
	10/24	240	960	400	11 520	2 000	6,93	2,89
12 cm width	12/12	144	288	288	1 728	1 728	3,46	3,46
	12/16	192	512	384	4 096	2 304	4,62	3,46
	12/20	240	800	480	8 000	2 880	5,77	3,46
	12/24	288	1 152	576	13 824	3 456	6,93	3,46
	12/28	336	1 568	672	21 952	4 032	8,08	3,46
14 cm width	14/14	196	457	457	3 201	3 201	4,04	4,04
	14/20	280	933	653	9 333	4 573	5,77	4,04
	14/24	336	1 344	784	16 128	5 488	6,93	4,04
	14/28	392	1 829	915	25 611	6 403	8,08	4,04
	14/32	448	2 389	1 045	38 229	7 317	9,24	4,04
16 cm width	16/16	256	683	683	5 461	5 461	4,62	4,62
	16/20	320	1 067	853	10 667	6 827	5,77	4,62
	16/24	384	1 536	1 024	18 432	8 192	6,93	4,62
	16/28	448	2 091	1 195	29 269	9 557	8,08	4,62
	16/32	512	2 731	1 365	43 691	10 923	9,24	4,62
	16/36	576	3 456	1 536	62 208	12 288	10,39	4,62
18 cm width	18/18	324	972	972	8 748	8 748	5,20	5,20
20 cm width	20/20	400	1 333	1 333	13 333	13 333	5,77	5,77
	20/32	640	3 413	2 133	54 613	21 333	9,24	5,77
	20/36	720	4 320	2 400	77 760	24 000	10,39	5,77
	20/40	800	5 333	2 667	106 667	26 667	11,55	5,77
22 cm width	22/22	484	1 775	1 775	19 520	19 520	6,35	6,35
24 cm width	24/24	576	2 304	2 304	27 648	27 648	6,93	6,93

Characteristic strengths and calculated values for the elasticity and shear moduli as per DIN 1052: 2004 can be found in the following tables.
Characteristic Values of the Strength and Stiffness Properties in N/mm^2 and the Apparent Density in kg/m^3 (For Combined Glulam Timber)

Strength Class of the Glulam Timber		GL 24c	GL 28c	GL 32c
Flexural strength	$f_{m,g,k}$	24	28	32
Tensile strength	$f_{t,0,g,k}$	14	16.5	19.5
	$f_{t,90,g,k}$	0.5		
Compressive strength	$f_{c,0,g,k}$	21	24	26.5
	$f_{c,90,g,k}$	2.4	2.7	3.0
Shear strength	$f_{v,g,k}$ [a)]	2,5		
Elasticity modulus	$E_{0,g,mean}$ [c)]	11,600	12,600	13,700
	$E_{90,g,mean}$ [c)]	320	390	420
Shear modulus	$G_{g,mean}$ [b)c)]	590	720	780
Apparent density	$P_{g,K}$	350	380	410

a) The characteristic rolling shear strength $f_{g,R,k}$ may be assumed as 1.0 N/mm^2 for all strength classes.
b) The shear modulus associated with rolling shear stresses may be assumed as $G_{g\ R,k} = 0.10\ G_{g,mean}$
c) For the characteristic stiffness values $E_{g,\ 0.05}$; $E_{g,90,0.05}$ and $G_{g,0.05}$, the following calculated values apply:
$E_{g,0,0.05} = 5/6\ E_{g,0,mean}$; $E_{g,90,0.05} = 5/6\ E_{g,90,mean}$; $G_{g,0.05} = 5/6\ G_{g,mean}$