

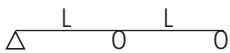
Cross sectional data – calculated for safety class 1

Table 1

Sheet thickness, nominal	t_{nom}	mm	0,4	0,5	0,6	0,65	0,70	0,75	0,80	0,90
Sheet thickness in calculation	t_{ber}	mm	0,332	0,441	0,538	0,587	0,655	0,705	0,750	0,855
Tensile yield stress	f_{ty}	Mpa	250	250	350	350	350	350	350	350
Mass	m	kg/m	3,9	4,8	5,8	6,3	6,8	7,2	7,7	8,7
Selfweight including overlap	g	kN/m ²	0,04	0,05	0,06	0,06	0,07	0,07	0,08	0,09
Bearing resistance $l_s=100$ mm	R_d	kN/m	4,91	8,22	13,91	16,36	19,78	22,56	25,19	31,80
Bearing resistance $l_s=200$ mm	R_d	kN/m	6,75	11,21	18,83	21,95	26,59	30,23	33,67	42,30
Moment narrow flange	M_d	kNm/m	0,44	0,74	1,30	1,54	1,89	2,09	2,27	2,71
Moment of inertia in compression	I_{efd}	mm ⁴ /mm	61	90	111	125	143	157	169	195
Moment broad flange	M_d	kNm/m	0,70	1,01	1,72	1,90	2,14	2,32	2,48	2,86
Moment of inertia in compression	I_{efd}	mm ⁴ /mm	67	94	116	129	146	159	170	195

Rapid design – Two section sheeting of safety class 1 and 2

Table 2



Rapid design has been done for snow load +Tp.
Roof pitch 0 degrees.
Other span, see table 3.


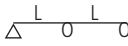
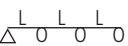
Snow load S_o kN/m ²	Load reduction factor ψ	Maximum span m (L) for different thicknesses and bearer width $l_s=45$							
		t = 0,40	t = 0,50	t = 0,60	t = 0,65	t = 0,70	t = 0,75	t = 0,80	t = 0,90
1,0	0,6	2,08 m	2,61 m	3,51 m	3,72 m	3,99 m	4,18 m	4,35 m	4,71 m
1,5	0,7	1,64 m	2,08 m	2,80 m	2,99 m	3,21 m	3,37 m	3,50 m	3,81 m
2,0	0,7	1,38 m	1,78 m	2,41 m	2,56 m	2,76 m	2,90 m	3,02 m	3,29 m
2,5	0,7	1,21 m	1,57 m	2,13 m	2,27 m	2,45 m	2,58 m	2,69 m	2,93 m
3,0	0,8	1,08 m	1,41 m	1,92 m	2,06 m	2,22 m	2,34 m	2,44 m	2,66 m
4,0	0,8	0,90 m	1,19 m	1,63 m	1,75 m	1,90 m	2,00 m	2,09 m	2,28 m

Explanatory notes to calculations

<p>All data are based on Swedish Board of Housing, Building and Planning design regulations BKR 99 and StBK-N5.</p> <p>The sheeting should be checked for the following load combinations.</p> <p>Loadbearing capacity Snow + Selfweight: (1) $Q_d = 1,3 \times \mu \times S_o + G$ Wind suction + Selfweight: (2) $Q_d = 1,3 \times \mu \times q_k - 0,85 \times G$</p> <p>Deflection Ord. snow + Selfweight: (3) $Q_n = 1,0 \times \mu \times \psi \times S_o + G$ μ = shape factor for snow load and wind load S_o = basic value of snow load G = selfweight q_k = characteristic value of wind load ψ = load reduction factor for ordinary load (See table 2)</p> <p>At pitches greater than 20°, load combinations with wind pressure should also be considered. Accumulation of snow should be considered.</p> <p>Minimum fastening: End bearer 2 screw in bottom of each profile Intermediate, end overlap 1 screw in bottom of each profile Side overlap Maximum c/c 500 mm</p>	<p>Where the span tables are insufficient, the sheeting should be designed in accordance with the conditions set out below.</p> <p>Field $M_l \leq M_d$</p> <p>Intermediate $M_s - R_s \times l_s/8 \leq M_d$</p> <p>bearer $(M_s - R_s \times l_s/4) / M_d + 0,64 \times R_s/R_d \leq 1,16$</p> <p> $R_s \leq R_d$</p> <p>End bearer $R_s \leq R_d$ or $R^d/2$</p> <p>For end bearers, the design value R_d is the same as for intermediate bearers if the distance from the end of the sheeting to the nearest purlin is greater than 65 mm; otherwise $R_d/2$ applies.</p> <p>Deflection has been checked for L/90. For other deflection requirements, the specified maximum loads with respect to deflection can be obtained by proportion.</p>
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Maximum loads in kN/m²

Table 3

Bearing combination	Thickness mm	Limitations	Span L (m)												
			0,9	1,2	1,5	1,8	2,1	2,4	2,7	3,0	3,3	3,6	3,9	4,2	
	0,40	Moment	4,35	2,44	1,56	1,09	0,80	0,61	0,48	0,39	0,32	0,27	0,23	0,20	Safety class 1
		Deflection	6,91	3,89	2,49	1,72	1,27	0,97	0,77	0,62	0,51	0,43	0,37	0,32	
	0,50	Moment	7,31	4,11	2,63	1,83	1,34	1,03	0,81	0,66	0,54	0,46	0,39	0,34	
		Deflection	9,97	5,61	3,59	2,49	1,83	1,40	1,11	0,90	0,74	0,62	0,53	0,46	
	0,60	Moment	12,84	7,22	4,62	3,21	2,36	1,81	1,43	1,16	0,96	0,80	0,68	0,59	
		Deflection	16,98	9,56	6,12	4,25	2,15	1,44	1,01	0,74	0,55	0,43	0,34	0,27	
	0,65	Moment	15,21	8,56	5,48	3,80	2,79	2,14	1,69	1,37	1,13	0,95	0,81	0,70	
		Deflection	18,77	10,56	6,76	4,69	3,44	2,64	2,09	1,69	1,40	1,17	1,00	0,86	
0,70	Moment	18,67	10,50	6,72	4,67	3,43	2,63	2,07	1,68	1,39	1,17	0,99	0,86		
	Deflection	21,14	11,89	7,61	5,28	3,88	2,97	2,35	1,90	1,57	1,32	1,13	0,97		
0,75	Moment	20,64	11,61	7,43	5,16	3,79	2,90	2,29	1,86	1,54	1,29	1,10	0,95		
	Deflection	22,91	12,89	8,25	5,73	4,21	3,22	2,55	2,06	1,70	1,43	1,22	1,05		
0,80	Moment	22,42	12,61	8,07	5,60	4,12	3,15	2,49	2,02	1,67	1,40	1,19	1,03		
	Deflection	24,49	13,78	8,82	6,12	4,50	3,44	2,72	2,20	1,82	1,53	1,30	1,12		
0,90	Moment	26,77	15,06	9,64	6,69	4,92	3,76	2,97	2,41	1,99	1,67	1,43	1,23		
	Deflection	28,25	15,89	10,17	7,06	5,19	3,97	3,14	2,54	2,10	1,77	1,50	1,30		
	0,40	Moment	4,24	2,71	1,88	1,39	1,07	0,85	0,69	0,57	0,48	0,41	0,35	0,31	Safety class 1 and 2
		Deflection	4,35	2,44	1,56	1,09	0,80	0,61	0,48	0,39	0,32	0,27	0,23	0,20	
	0,50	Moment	6,61	4,17	2,87	2,10	1,61	1,27	1,03	0,85	0,71	0,61	0,53	0,46	
		Deflection	7,31	4,11	2,63	1,83	1,34	1,03	0,81	0,66	0,54	0,46	0,39	0,34	
	0,60	Moment	11,23	7,08	4,88	3,58	2,73	2,16	1,75	1,45	1,22	1,04	0,89	0,78	
		Deflection	12,84	7,22	4,62	3,21	2,36	1,81	1,43	1,16	0,96	0,80	0,68	0,59	
	0,65	Moment	12,79	8,02	5,52	4,03	3,07	2,42	1,96	1,62	1,36	1,16	1,00	0,87	
		Deflection	15,21	8,56	5,48	3,80	2,79	2,14	1,69	1,37	1,13	0,95	0,81	0,70	
0,70	Moment	14,91	9,30	6,36	4,63	3,53	2,78	2,24	1,85	1,55	1,32	1,14	0,99		
	Deflection	18,67	10,50	6,72	4,67	3,43	2,63	2,07	1,68	1,39	1,17	1,05	0,84		
0,75	Moment	16,54	10,28	7,02	5,10	3,87	3,05	2,46	2,02	1,70	1,44	1,24	1,08		
	Deflection	20,64	11,61	7,43	5,16	3,79	2,90	2,29	1,86	1,54	1,29	1,15	0,92		
0,80	Moment	18,03	11,16	7,60	5,52	4,19	3,29	2,65	2,18	1,83	1,55	1,34	1,16		
	Deflection	22,42	12,61	8,07	5,60	4,12	3,15	2,49	2,02	1,67	1,40	1,19	1,03		
0,90	Moment	21,63	13,29	9,01	6,51	4,93	3,86	3,11	2,55	2,14	1,81	1,56	1,36		
	Deflection	26,76	15,06	9,64	6,69	4,92	3,76	2,97	2,41	1,99	1,67	1,43	1,23		
	0,4	Moment	5,07	3,25	2,28	1,68	1,30	1,03	0,84	0,70	0,59	0,50	0,44	0,38	Safety class 1 and 2
		Deflection	5,43	3,06	1,96	1,36	1,00	0,76	0,60	0,49	0,40	0,34	0,29	0,25	
	0,50	Moment	7,93	5,03	3,49	2,56	1,96	1,55	1,26	1,04	0,88	0,75	0,65	0,56	
		Deflection	9,14	5,14	3,29	2,28	1,68	1,28	1,02	0,82	0,68	0,57	0,49	0,42	
	0,60	Moment	13,46	8,54	5,92	4,35	3,34	2,64	2,14	1,78	1,49	1,28	1,10	0,96	
		Deflection	16,05	9,03	5,78	4,01	2,95	2,26	1,78	1,44	1,19	1,00	0,85	0,74	
	0,65	Moment	15,37	9,70	6,70	4,91	3,76	2,97	2,41	1,99	1,67	1,43	1,23	1,07	
		Deflection	19,01	10,69	6,84	4,75	3,49	2,67	2,20	1,60	1,21	0,93	0,73	0,58	
0,70	Moment	17,98	11,26	7,74	5,66	4,20	3,41	2,76	2,28	1,91	1,63	1,40	1,22		
	Deflection	23,33	13,13	8,40	5,83	4,29	3,28	2,59	2,10	1,73	1,46	1,24	1,07		
0,75	Moment	19,94	12,46	8,54	6,23	4,75	3,74	3,02	2,49	2,09	1,78	1,53	1,34		
	Deflection	25,80	14,51	9,29	6,45	4,74	3,62	2,75	2,00	1,51	1,16	0,91	0,73		
0,80	Moment	21,76	13,55	9,27	6,75	5,13	4,04	3,26	2,69	2,25	1,92	1,65	1,44		
	Deflection	28,02	15,76	10,09	7,01	5,15	3,94	3,11	2,52	2,08	1,75	1,49	1,29		
0,90	Moment	26,16	16,18	11,01	7,98	6,06	4,75	3,83	3,15	2,64	2,24	1,93	1,68		
	Deflection	33,46	18,82	12,04	8,36	6,15	4,70	3,40	2,48	1,86	1,43	1,13	0,90		

Foot traffic recommended by Areco

Division into sections	0,50	0,60	0,65
Single section	0,80	1,40	1,60
Multiple section	1,00	1,60	2,40

Explanations

Moment	Bearing capacity in field. Design load combination 1
Bearer 45	Bearing capacity for intermediate bearer with $I_s = 45\text{mm}$. Design load combination 1
Deflection	Deflection 90. Design load combination 3
Wind suction	Bearing capacity for upwardly directed wind load. Design load combination 2

Wind suction

When designing the sheeting for wind suction, check that M_{akt} is less than M_{dim} . If the sheeting is fixed with only 1 screw/every other profile bottom, M_{akt} less than $0,75 \times M_{dim}$. Wind load, see Swedish Board of Housing, snow and wind load BSV 97 edition 2 page 80.