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TP/VP 45

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Type approval
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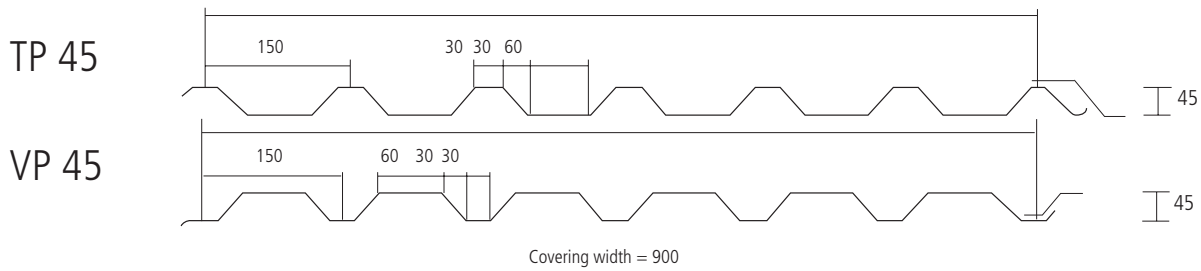
(mm)



Covering width = 900

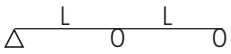
Cross sectional data – calculated for safety class 1

Table 1

Sheet thickness, nominal	t_{nom}	mm	0,50	0,60	0,65	0,70	0,75
Sheet thickness in calculation	t_{ber}	mm	0,441	0,538	0,587	0,636	0,685
Tensile yield stress	f_{ty}	Mpa	250	350	350	350	350
Mass	m	kg/m	5,00	6,00	6,50	7,00	7,50
Selfweight including overlap	g	kN/m²	0,06	0,07	0,07	0,08	0,08
Bearing resistance l_s=45 mm	R_d	kN/m	11,22	18,98	22,19	25,61	29,24
Bearing resistance l_s=100 mm	R_d	kN/m	15,29	25,70	29,94	34,45	39,22
Moment narrow flange	M_d	kNm/m	1,27	2,22	2,60	3,01	3,45
Moment of inertia in compression	I_{efd}	mm⁴/mm	171	210	233	256	279
Moment broad flange	M_d	kNm/m	1,29	2,27	2,67	3,02	3,35
Moment of inertia in compression	I_{efd}	mm⁴/mm	142	174	194	215	236

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

Specifies limited foot traffic, see table 4 on reverse of this sheet.
Other pitches, see table 3.

Snow load S_o kN/m²	Load reduction factor ψ	Maximum span (L) for different thicknesses and bearer width l_s				
		t=0,50 L_s=45	t=0,60 L_s=45	t=0,65 L_s=45	t=0,70 L_s=45	t=0,75 L_s=45
1,0	0,6	3,02 m	4,06 m	4,41 m	4,71 m	4,97 m
1,5	0,7	2,43 m	3,29 m	3,59 m	3,83 m	4,06 m
2,0	0,7	2,08 m	2,83 m	3,09 m	3,30 m	3,50 m
2,5	0,7	1,84 m	2,50 m	2,74 m	2,93 m	3,11 m
3,0	0,8	1,66 m	2,27 m	2,48 m	2,66 m	2,82 m
4,0	0,8	1,40 m	1,93 m	2,12 m	2,27 m	2,42 m

Explanatory notes to calculations

All data are based on Swedish Board of Housing,Building and Planning design regulations BKR 99 and StBK-N5.

The sheeting should be checked for the following load combinations.

Loadbearing capacity Snow + Selfweight: (1) $Q_d = 1,3 \times \mu \times S_o + G$
Wind suction + Selfweight: (2) $Q_d = 1,3 \times \mu \times q_k - 0,85 \times G$
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 = caracteristic value of wind load
ψ = load reduction factor for ordinary load (See table 2)

At pitches greater than 20°, load combinations with wind pressure should also be considered. Accumulation of snow should be considered.

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

Where the span tables are insufficient,the sheeting should be designd in accordance with the conditions set out below.

Field	$M_f \leq M_d$
Intermediate	$M_s - R_s \times l_s/8 \leq M_d$
bearer	$(M_s - R_s \times l_s/4) / M_d + 0,64 \times R_s/R_d \leq 1,16$
	$R_s \leq R_d$
End bearer	$R_s \leq R_d$ or $R^d/2$

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. For bearer widths of between 45 and 100 mm, R_d is interpolated rectilinearly.
Deflection has been checked for L/90.For other deflection requirements, the specified maximum loads with respect to deflection can be obtained by proportion.

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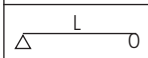
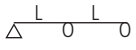
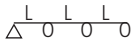
ROOF/WALL

Maximum loads in kN/m²

Table 3

Bearing combination	Thick-ness mm	Limitation	Span L (m)												
		Bearer 100	1,20	1,50	1,80	2,10	2,40	2,70	3,00	3,30	3,60	3,90	4,20	4,50	
	0,65	Moment	7,04	4,51	3,13	2,30	1,76	1,39	1,13	0,93	0,78	0,67	0,58	0,50	Safety class 1
		Deflection								0,86	0,66	0,52	0,42	0,34	
		Wind suction	7,17	4,59	3,19	2,34	1,79	1,42	1,15	0,95	0,80	0,68	0,59	0,51	
	0,60	Moment	12,33	7,89	5,48	4,03	3,08	2,44	1,97	1,63	1,37	1,17	1,01	0,88	
		Deflection						1,93	1,40	1,05	0,81	0,64	0,51	0,42	
		Wind suction	12,59	8,06	5,60	4,11	3,15	2,49	2,01	1,67	1,40	1,19	1,03	0,90	
	0,65	Moment	14,46	9,25	6,43	4,72	3,61	2,86	2,31	1,91	1,61	1,37	1,18	1,03	
		Deflection				4,54	3,04	2,13	1,56	1,17	0,90	0,71	0,57	0,46	
		Wind suction	14,84	9,50	6,60	4,85	3,71	2,93	2,37	1,96	1,65	1,41	1,21	1,06	
	0,70	Moment	16,73	10,71	7,44	5,46	4,18	3,30	2,68	2,21	1,86	1,58	1,37	1,19	
		Deflection				4,98	3,34	2,35	1,71	1,28	0,99	0,78	0,62	0,51	
		Wind suction	16,76	10,73	7,45	5,47	4,19	3,31	2,68	2,22	1,86	1,59	1,37	1,19	
	0,75	Moment	19,15	12,26	8,51	6,25	4,79	3,78	3,06	2,53	2,13	1,81	1,56	1,36	
		Deflection				5,43	3,64	2,56	1,86	1,40	1,08	0,85	0,68	0,55	
		Wind suction	18,61	11,91	8,27	6,08	4,65	3,68	2,98	2,46	2,07	1,76	1,52	1,32	
	0,50	Bearer 45	5,37	3,69	2,70	2,06	1,62	1,31	1,08	0,91	0,77	0,67	0,58	0,51	
		Bearer 100	6,57	4,38	3,13	2,34	1,82	1,46	1,19	0,99	0,83	0,70	0,60	0,53	
		Deflection													
		Wind suction	7,04	4,51	3,13	2,30	1,76	1,39	1,13	0,93	0,78	0,67	0,58	0,50	
	0,60	Bearer 45	9,27	6,38	4,67	3,56	2,81	2,28	1,88	1,58	1,35	1,16	1,01	0,89	Safety class 1 and 2
		Bearer 100	11,33	7,57	5,41	4,06	3,16	2,53	2,07	1,73	1,45	1,23	1,06	0,92	
		Deflection													
		Wind suction	12,33	7,89	5,48	4,03	3,08	2,44	1,97	1,63	1,37	1,17	1,01	0,88	
	0,65	Bearer 45	10,83	7,46	5,46	4,17	3,29	2,66	2,20	1,85	1,58	1,36	1,18	1,04	
		Bearer 100	13,23	8,84	6,33	4,75	3,70	2,96	2,42	2,02	1,71	1,45	1,25	1,09	
		Deflection												1,05	
		Wind suction	14,46	9,25	6,43	4,72	3,61	2,86	2,31	1,91	1,61	1,37	1,18	1,03	
	0,70	Bearer 45	12,65	8,70	6,36	4,85	3,83	3,10	2,56	2,15	1,83	1,58	1,37	1,21	
		Bearer 100	15,42	10,29	7,36	5,52	4,30	3,44	2,80	2,30	1,93	1,64	1,41	1,23	
		Deflection												1,15	
		Wind suction	16,73	10,71	7,44	5,46	4,18	3,30	2,68	2,21	1,86	1,58	1,37	1,19	
	0,75	Bearer 45	14,64	10,06	7,34	5,60	4,41	3,57	2,95	2,47	2,10	1,79	1,54	1,34	
		Bearer 100	17,81	11,87	8,48	6,36	4,91	3,85	3,11	2,56	2,14	1,82	1,57	1,36	
		Deflection												1,26	
		Wind suction	19,15	12,26	8,51	6,25	4,79	3,78	3,06	2,53	2,13	1,81	1,56	1,36	
	0,50	Bearer 45	6,53	4,52	3,31	2,54	2,01	1,63	1,35	1,13	0,97	0,83	0,73	0,64	
		Bearer 100	7,93	5,33	3,83	2,88	2,25	1,80	1,48	1,23	1,03	0,87	0,75	0,65	
		Deflection												0,61	
		Wind suction	8,80	5,63	3,91	2,87	2,20	1,74	1,41	1,16	0,98	0,83	0,72	0,63	
	0,60	Bearer 45	11,28	7,82	5,75	4,41	3,49	2,83	2,34	1,97	1,68	1,45	1,27	1,11	
		Bearer100	13,68	9,22	6,64	5,01	3,91	3,14	2,58	2,15	1,80	1,53	1,32	1,15	
		Deflection							2,52	1,90	1,46	1,15	0,92	0,75	
		Wind suction	15,41	9,86	6,85	5,03	3,85	3,04	2,47	2,04	1,71	1,46	1,26	1,10	
	0,65	Bearer 45	13,25	9,19	6,75	5,18	4,10	3,33	2,76	2,32	1,98	1,71	1,49	1,31	Safety class 1 and 2
		Bearer 100	16,06	10,83	7,80	5,88	4,60	3,69	3,03	2,53	2,13	1,81	1,56	1,35	
		Deflection							2,80	2,11	1,62	1,28	1,02	0,83	
		Wind suction	18,07	11,56	8,03	5,90	4,52	3,57	2,89	2,39	2,21	1,71	1,48	1,29	
	0,70	Bearer 45	15,11	10,81	7,68	5,89	4,66	3,78	3,13	2,63	2,25	1,94	1,69	1,49	
		Bearer 100	18,27	12,30	8,85	6,68	5,21	4,19	3,44	2,87	2,40	2,04	1,76	1,53	
		Deflection							3,09	2,32	1,79	1,41	1,13	0,92	
		Wind suction	20,91	13,38	9,29	6,83	5,23	4,13	3,35	2,77	2,32	1,98	1,71	1,49	
	0,75	Bearer 45	16,97	11,73	8,61	6,59	5,21	4,22	3,49	2,94	2,51	2,16	1,89	1,66	
		Bearer 100	20,48	13,77	9,90	7,46	5,82	4,67	3,83	3,18	2,67	2,27	1,95	1,70	
		Deflection						4,63	3,37	2,53	1,95	1,54	1,23	1,00	
		Wind suction	23,94	15,32	10,64	7,82	5,98	4,73	3,83	3,17	2,66	2,27	1,95	1,70	

Foot traffic recommended by Areco

Table 4

Division into sections	0,50	0,60	0,65	0,70	0,75
Single section	0,80	1,60	1,80	2,30	2,80
Multiple section	1,00	1,80	2,70	3,60	4,50

Explanations

Moment	Bearing capacity in field. Design load combination 1
Bearer 45	Bearing capacity for intermediate bearer with l_s = 45mm. 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 x M_{dim}. Wind load, se Swedish Board of Housing, snow and wind load BSV 97 edition 2 page 80.

For more information visit www.areco.se

***** Subject to alteration without notice *****