



Cross sectional data – calculated for safety class 1

Table 1

| | | | | | |
|----------------------------------|-----------|---------------------|-------|-------|-------|
| Sheet thickness, nominal | t_{nom} | mm | 0,65 | 0,70 | 0,75 |
| Sheet thickness in calculation | t_{ber} | mm | 0,587 | 0,636 | 0,685 |
| Tensile yield stress | f_{ty} | Mpa | 350 | 350 | 350 |
| Mass | m | kg/m | 6,50 | 7,00 | 7,50 |
| Selfweight including overlap | g | kN/m ² | 0,07 | 0,08 | 0,08 |
| Bearing resistance $l_s=100$ mm | R_d | kN/m | 22,19 | 25,61 | 29,24 |
| Bearing resistance $l_s=200$ mm | R_d | kN/m | 29,94 | 34,45 | 39,22 |
| Moment narrow flange | M_d | kNm/m | 2,60 | 3,01 | 3,45 |
| Moment of inertia in compression | I_{efd} | mm ⁴ /mm | 233 | 256 | 279 |
| Moment broad flange | M_d | kNm/m | 2,67 | 3,02 | 3,35 |
| Moment of inertia in compression | I_{efd} | mm ⁴ /mm | 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.

| Snow load S_o kN/m ² | Load reduction factor ψ | Maximum span m (L) for different thicknesses and bearer width $l_s=45$ | | |
|---|---------------------------------|--|------------|------------|
| | | $t = 0,65$ | $t = 0,70$ | $t = 0,75$ |
| 1,0 | 0,6 | 3,84 m | 4,14 m | 4,44 m |
| 1,5 | 0,7 | 3,24 m | 3,50 m | 3,37 m |
| 2,0 | 0,7 | 2,84 m | 3,07 m | 3,30 m |
| 2,5 | 0,7 | 2,55 m | 2,76 m | 2,97 m |
| 3,0 | 0,8 | 2,33 m | 2,53 m | 2,72 m |
| 4,0 | 0,8 | 2,01 m | 2,18 m | 2,35 m |

Explanatory notes to calculations

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| <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 $M_f \leq M_d$</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. 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.</p> |
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TP 45I/150

ROOF

Maximum loads in kN/m²

Table 3

| Bearing Combination | Thick-ness mm | Limitations | Span L (m) | | | | | | | | | | | | |
|---------------------|---------------|--------------|------------|-------|------|------|------|------|------|------|------|------|------|------|----------------------|
| | | | 1,20 | 1,50 | 1,80 | 2,10 | 2,40 | 2,70 | 3,00 | 3,30 | 3,60 | 3,90 | 4,20 | 4,50 | |
| | 0,50 | Moment | 7,17 | 4,59 | 3,19 | 2,34 | 1,79 | 1,42 | 1,15 | 0,95 | 0,80 | 0,68 | 0,59 | 0,51 | Safety class 1 |
| | | Deflection | 4,52 | 2,62 | 1,65 | 1,10 | 0,78 | 0,57 | 0,43 | 0,33 | 0,26 | 0,21 | 0,17 | | |
| | | 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 | Moment | 12,59 | 8,06 | 5,60 | 4,11 | 3,15 | 2,49 | 2,01 | 1,67 | 1,40 | 1,19 | 1,03 | 0,90 | |
| | | Deflection | 10,83 | 5,54 | 3,21 | 2,02 | 1,35 | 0,95 | 0,69 | 0,52 | 0,40 | 0,32 | 0,25 | 0,21 | |
| | | 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 | Moment | 14,84 | 9,50 | 6,60 | 4,85 | 3,71 | 2,93 | 2,37 | 1,96 | 1,65 | 1,41 | 1,21 | 1,06 | |
| | | Deflection | 12,07 | 6,18 | 3,58 | 2,25 | 1,51 | 1,06 | 0,77 | 0,58 | 0,45 | 0,35 | 0,28 | 0,23 | |
| | | 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 | Moment | 16,76 | 10,73 | 7,45 | 5,47 | 4,19 | 3,31 | 2,68 | 2,22 | 1,86 | 1,59 | 1,37 | 1,19 | |
| | | Deflection | 13,38 | 6,85 | 3,96 | 2,50 | 1,67 | 1,17 | 0,86 | 0,64 | 0,50 | 0,39 | 0,31 | 0,25 | |
| | | 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 | Moment | 18,61 | 11,91 | 8,27 | 6,08 | 4,65 | 3,68 | 2,98 | 2,46 | 2,07 | 1,76 | 1,52 | 1,32 | |
| | | Deflection | 14,68 | 7,52 | 4,35 | 2,74 | 1,84 | 1,29 | 0,94 | 0,71 | 0,54 | 0,43 | 0,34 | 0,28 | |
| | | 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 | 5,41 | 3,72 | 2,71 | 2,07 | 1,63 | 1,32 | 1,09 | 0,91 | 0,78 | 0,67 | 0,58 | 0,51 | Safety class 1 and 2 |
| | | Bearer 100 | 6,62 | 4,40 | 3,14 | 2,35 | 1,83 | 1,46 | 1,18 | 0,97 | 0,81 | 0,69 | 0,59 | 0,52 | |
| | | Deflection | 7,17 | 4,59 | 3,19 | 2,34 | 1,79 | 1,42 | 1,15 | 0,95 | 0,80 | 0,68 | 0,59 | 0,51 | |
| | | 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 | Bearer 45 | 9,35 | 6,43 | 4,70 | 3,58 | 2,83 | 2,29 | 1,89 | 1,59 | 1,35 | 1,16 | 1,01 | 0,89 | |
| | | Bearer 100 | 11,42 | 7,62 | 5,44 | 4,08 | 3,18 | 2,54 | 2,06 | 1,69 | 1,42 | 1,21 | 1,04 | 0,90 | |
| | | Deflection | 12,59 | 8,06 | 5,60 | 4,11 | 3,15 | 2,49 | 2,01 | 1,67 | 1,40 | 1,19 | 1,03 | 0,90 | |
| | | 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 | Bearer 45 | 10,95 | 7,53 | 5,50 | 4,20 | 3,31 | 2,68 | 2,21 | 1,86 | 1,58 | 1,36 | 1,19 | 1,04 | |
| | | Bearer 100 | 13,36 | 8,91 | 6,37 | 4,78 | 3,72 | 2,98 | 2,41 | 1,99 | 1,66 | 1,41 | 1,22 | 1,06 | |
| | | Deflection | 14,84 | 9,50 | 6,60 | 4,85 | 3,71 | 2,93 | 2,37 | 1,96 | 1,65 | 1,41 | 1,21 | 1,06 | |
| | | 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 | Bearer 45 | 12,66 | 8,71 | 6,36 | 4,86 | 3,83 | 3,10 | 2,56 | 2,15 | 1,83 | 1,58 | 1,38 | 1,21 | |
| | | Bearer 100 | 15,43 | 10,30 | 7,36 | 5,52 | 4,30 | 3,44 | 2,79 | 2,30 | 1,93 | 1,64 | 1,41 | 1,22 | |
| | | Deflection | 16,76 | 10,73 | 7,45 | 5,47 | 4,19 | 3,31 | 2,68 | 2,22 | 1,86 | 1,59 | 1,37 | 1,19 | |
| 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 | Bearer 45 | 14,47 | 9,96 | 7,28 | 5,56 | 4,38 | 3,55 | 2,93 | 2,46 | 2,10 | 1,81 | 1,57 | 1,38 | | |
| | Bearer 100 | 17,62 | 11,77 | 8,41 | 6,31 | 4,91 | 3,93 | 3,20 | 2,63 | 2,20 | 1,87 | 1,61 | 1,40 | | |
| | Deflection | 18,61 | 11,91 | 8,27 | 6,08 | 4,65 | 3,68 | 2,98 | 2,46 | 2,07 | 1,76 | 1,52 | 1,32 | | |
| | 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 | 6,46 | 4,46 | 3,27 | 2,50 | 1,98 | 1,60 | 1,33 | 1,12 | 0,95 | 0,82 | 0,72 | 0,63 | Safety class 1 and 2 |
| | | Bearer 100 | 7,83 | 5,26 | 3,78 | 2,84 | 2,22 | 1,78 | 1,46 | 1,20 | 1,01 | 0,86 | 0,74 | 0,64 | |
| | | Deflection | 8,97 | 5,74 | 3,99 | 2,93 | 2,24 | 1,77 | 1,43 | 1,19 | 1,00 | 0,85 | 0,73 | 0,64 | |
| | | Wind suction | 8,97 | 5,74 | 3,99 | 2,93 | 2,24 | 1,77 | 1,43 | 1,19 | 1,00 | 0,85 | 0,73 | 0,64 | |
| | 0,60 | Bearer 45 | 11,15 | 7,72 | 5,67 | 4,34 | 3,43 | 2,78 | 2,30 | 1,94 | 1,65 | 1,43 | 1,25 | 1,10 | |
| | | Bearer 100 | 13,51 | 9,09 | 6,54 | 4,93 | 3,85 | 3,09 | 2,53 | 2,11 | 1,77 | 1,50 | 1,29 | 1,12 | |
| | | Deflection | 15,74 | 10,07 | 7,00 | 5,14 | 3,94 | 3,11 | 2,52 | 2,08 | 1,75 | 1,49 | 1,29 | 1,12 | |
| | | Wind suction | 15,74 | 10,07 | 7,00 | 5,14 | 3,94 | 3,11 | 2,52 | 2,08 | 1,75 | 1,49 | 1,29 | 1,12 | |
| | 0,65 | Bearer 45 | 13,06 | 9,04 | 6,64 | 5,09 | 4,02 | 3,26 | 2,70 | 2,27 | 1,94 | 1,67 | 1,46 | 1,28 | |
| | | Bearer 100 | 15,80 | 10,64 | 7,65 | 5,77 | 4,51 | 3,62 | 2,97 | 2,47 | 2,07 | 1,76 | 1,52 | 1,32 | |
| | | Deflection | 18,55 | 11,87 | 8,24 | 6,06 | 4,64 | 3,66 | 2,97 | 2,45 | 2,06 | 1,76 | 1,51 | 1,32 | |
| | | Wind suction | 18,55 | 11,87 | 8,24 | 6,06 | 4,64 | 3,66 | 2,97 | 2,45 | 2,06 | 1,76 | 1,51 | 1,32 | |
| | 0,70 | Bearer 45 | 15,09 | 10,45 | 7,67 | 5,88 | 4,65 | 3,77 | 3,12 | 2,63 | 2,24 | 1,94 | 1,69 | 1,48 | |
| | | Bearer 100 | 18,25 | 12,29 | 8,84 | 6,66 | 5,21 | 4,18 | 3,43 | 2,86 | 2,40 | 2,04 | 1,75 | 1,52 | |
| | | Deflection | 20,95 | 13,41 | 9,31 | 6,84 | 5,24 | 4,14 | 3,35 | 2,77 | 2,33 | 1,98 | 1,71 | 1,49 | |
| Wind suction | | 20,95 | 13,41 | 9,31 | 6,84 | 5,24 | 4,14 | 3,35 | 2,77 | 2,33 | 1,98 | 1,71 | 1,49 | | |
| 0,75 | Bearer 45 | 17,26 | 11,95 | 8,78 | 6,73 | 5,32 | 4,32 | 3,57 | 3,01 | 2,57 | 2,21 | 1,93 | 1,70 | | |
| | Bearer 100 | 20,84 | 14,04 | 10,10 | 7,62 | 5,95 | 4,78 | 3,92 | 3,27 | 2,74 | 2,33 | 2,01 | 1,75 | | |
| | Deflection | 23,26 | 14,88 | 10,34 | 7,59 | 5,81 | 4,59 | 3,72 | 3,08 | 2,58 | 2,20 | 1,90 | 1,65 | | |
| | Wind suction | 23,26 | 14,88 | 10,34 | 7,59 | 5,81 | 4,59 | 3,72 | 3,08 | 2,58 | 2,20 | 1,90 | 1,65 | | |

Foot traffic recommended by Areco

Table 4

| Division into sections | 0,65 | 0,70 | 0,75 |
|------------------------|------|------|------|
| Single section | 1.90 | 2.30 | 2.80 |
| Multiple section | 2.60 | 3.70 | 4.50 |

Explanations

| | |
|--------------|---|
| Moment | Bearing capacity in field. Design load combination 1 |
| Bearer 45 | Bearing capacity for intermediate bearer with ls = 45mm. Design load combination 1 |
| Upplag 100 | Bearing capacity for intermediate bearer with ls = 100mm. Design load combination 1 |
| Deflection | Deflection L/150. 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.