Steeline 22 and 40 Top Hat Battens

Introduction

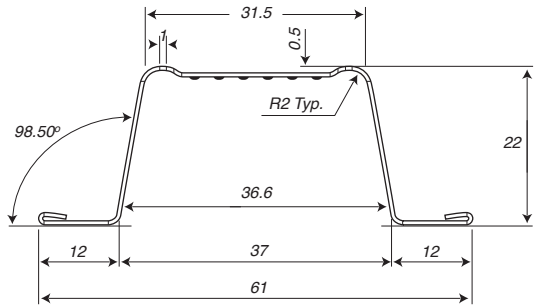
These non-cyclonic load tables have been prepared using software developed by the University of Sydney
These tables comply with the requirements of AS/NZ 4600.
Table 1. Full Sectional Properties for 22mm and 40mm Battens.
Table 2. Screw uplift Connection Capacity
Table 3. Batten Load Capacity (Non-Cyclonic)
Table 4. Pull out Screw Capacity (KN/Screw)

Specifications

The Battens are made from G550 high tensile steel. The 22mm battens are available in 0.42 and 0.48mm BMT and the 40mm battens are available in 0.48, 0.55 and 0.75mm BMT.
Material Specification Truecore® G550 AM125

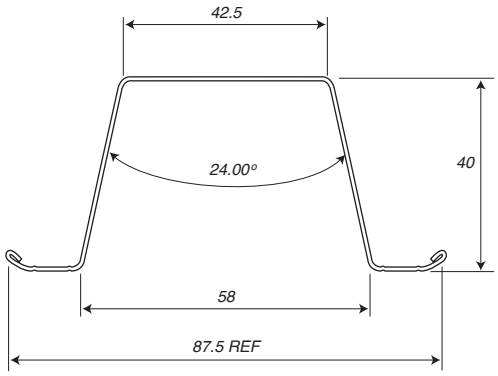
Batten Profiles

The profiles of the battens are shown below.



Nominal dimensions are shown

22mm batten - available in 0.42 and 0.48mm BMT



Nominal dimensions are shown

40mm batten –available in 0.48, 0.55 and 0.75mm BMT

Table 1. Full section properties of battens

Section	Height⁺ (mm)	BMT (mm)	Area (mm^2)	Mass (kg/m)	I_x ($10^3 mm^4$)	I_y ($10^3 mm^4$)	Z_{x_top} ($10^3 mm^3$)	Z_{x_bottom} ($10^3 mm^3$)	Z_y ($10^3 mm^3$)	r_x (mm)	r_y (mm)	J (mm^4)	B_x (mm)	I_w ($10^6 mm^4$)
TH2242	22	0.42	40.17	0.315	3.089	12.13	0.300	0.264	0.398	8.769	17.377	2.362	-57.59	0.292
TH2248	22	0.48	45.90	0.360	3.530	13.86	0.341	0.301	0.455	8.770	17.377	3.525	-57.59	0.333
TH4048	40	0.48	72.75	0.571	17.82	47.60	0.970	0.824	1.084	15.651	25.579	5.587	-92.62	3.177
TH4055	40	0.55	83.36	0.654	20.42	54.55	1.109	0.943	1.243	15.651	25.581	8.405	-92.62	3.640
TH4075	40	0.75	113.70	0.893	27.84	74.38	1.504	1.280	1.694	15.648	25.577	21.31	-92.62	4.964

⁺ *Nominal height*

Table 2. Screw uplift connection capacity – triple span (non-cyclonic) (kN/m)

Span (mm)	Connection Type 2 x #10 Screws		Connection Type 2 x #12 Screws		Connection Type 2 x M6 Screws		Connection Type 2 x #14 Screws		Buildex 2 x #12-11 Batten Zips®
	Support Material G550 High Tensile Steel								Timber (F7 Pine or F17 Hardwood)
	Support Thickness		Support Thickness		Support Thickness		Support Thickness		Min. embedment 36mm
	0.75mm	1.0mm	0.75mm	1.0mm	0.75mm	1.0mm	0.75mm	1.0mm	
450	3.40	4.53	3.90	5.19	4.25	5.67	4.46	5.95	7.67
600	2.55	3.40	2.92	3.90	3.19	4.25	3.35	4.46	5.77
900	1.70	2.27	1.95	2.60	2.13	2.83	2.23	2.98	3.85
1200	1.28	1.70	1.46	1.95	1.59	2.13	1.67	2.23	2.89

⁺ Nominal height

Table 3. Batten load capacity (non-cyclonic) (kN/m)

Section	Span	Single Span (kN/m)			Double Span (kN/m)			Triple Span (kN/m)		
		Load Downwards	Load Upwards	Deflection⁺ Span/150	Load Downwards	Load Upwards	Deflection⁺ Span/150	Load Downwards	Load Upwards	Deflection⁺ Span/150
TH2242	450	3.33	2.72	3.47	2.91	3.26	8.37	3.61	4.05	6.65
	600	1.87	1.42	1.46	1.64	1.85	3.53	2.05	2.24	2.80
TH2248	450	4.08	3.38	3.97	3.63	3.99	9.56	4.50	4.94	7.60
	600	2.29	1.76	1.67	2.05	2.26	4.04	2.55	2.73	3.20
TH4048	900	1.98	2.31	2.50	2.64	1.94	6.04	2.98	2.34	4.79
	1200	1.11	1.14	1.06	1.50	1.06	2.55	1.60	1.25	2.02
TH4055	900	2.50	2.76	2.87	3.26	2.46	6.92	3.73	2.94	5.49
	1200	1.41	1.35	1.21	1.81	1.33	2.92	2.00	1.56	2.32
TH4075	900	4.24	3.97	3.91	5.19	4.11	9.43	6.24	4.87	7.49
	1200	2.38	1.76	1.65	2.81	2.22	3.98	3.30	2.56	3.16

⁺ Load required to get a deflection of (Span/150) mm

Table 4. Pull-out capacity of screws (kN/screw)

Screw size	Material grade and BMT (Metal Trusses/Rafters)								Timber Trusses/Rafters			
	G550	G500	G450				G300		Screw size (Buildex)	Min. embedment – 36mm		
	1.0mm	1.2mm	1.5mm	1.9mm	2.4mm	3.0mm	1.0mm	1.2mm		F7 Pine⁺	F17 Hardwood⁺	Ultra hard timber⁺
10g	1.12	1.27	1.47	1.86	2.35	2.94	0.69	0.83	10g-12 TPI	1.90	2.0	-
12g	1.29	1.46	1.68	2.13	2.69	3.37	0.79	0.95	#12-11 Batten Zips®	1.90	2.15	2.32
14g	1.47	1.67	1.93	2.44	3.08	3.48	0.91	1.09	14g-10 TPI	1.27	2.33	-

Screw pull-out capacity valid for:

a. Min. edge distance = 3 times nominal screw diameter

b. Min. screw head diameter is in accordance with AS3566.1

⁺ Capacities in timber are only valid for Buildex screws (Pull-out capacities were calculated from test results published by Buildex)

DISCLAIMER

These load tables have been prepared having made some assumptions which have been clearly stated in this document. Steeline recommends that specialist advice be sought to confirm the suitability of the product for the proposed application.

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