



MetaLite Z

Thin-walled open Z-sections used as purlins to support roof cladding on all types of buildings

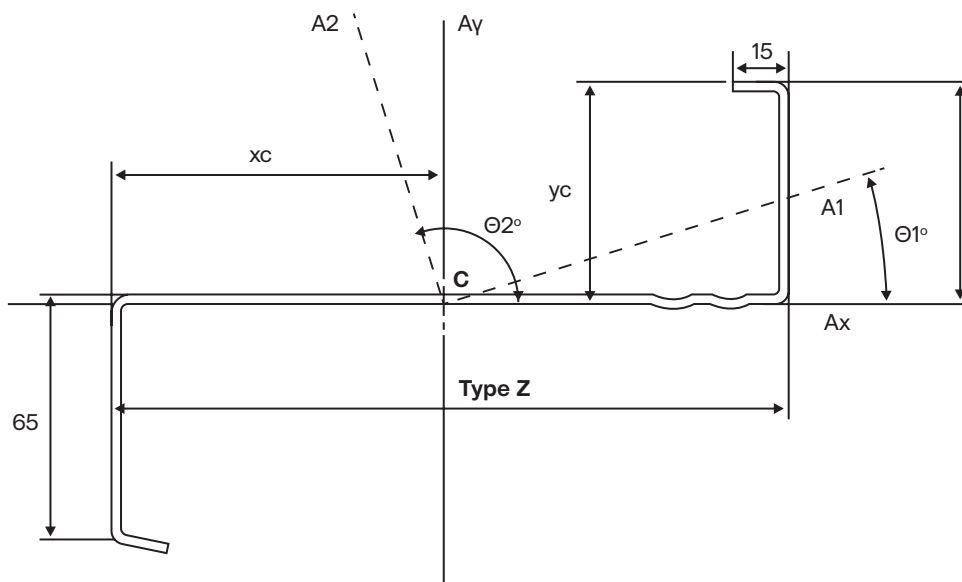


Available in

Effective cover width 140mm, 180mm & 210mm | Nominal thickness 1,50mm, 2,00mm, 2,50mm & 3,00mm

Bespoke lengths up to 14m, depending on project requirements

Provision for Ø6, Ø8, Ø10, Ø12.5, Ø14, Ø16, Ø18, Ø20 and Ø22 holes in any position



Section Type Z

- Ax:** Neutral X-axis
- Ay:** Neutral Y-axis
- yc:** Distance of the extreme fiber from the neutral axis Ax (minimum case)
- xc:** Distance of the extreme fiber from the neutral axis Ay (minimum case)
- A1:** main axis 1
- A2:** main axis 2
- Θ1°:** angle of the main axis 1
- Θ2°:** angle of the main axis 2
- C:** center of mass

Dimensional Tolerances

(Standards EN 1090 and EN 10162)

- The thickness of the section, t , is defined according to EN 10143 for steel. Variations in thickness may occur at the bending points.
- The nominal bending angle is defined as 90° . The angular tolerances are given in Table 1.
- The internal bending radius, r_{ii} , is given in Table 2, where:
 $r_{ii} \leq \pm 20\%$ and $r_{ii} \leq \pm 0.5 \text{ mm}$
- The minimum external dimensions of the section h , h' are defined as:
 $h_1, h'_1 = 10 \cdot t$, for dimensions between two internal radii. The tolerances for these dimensions are given in Table A.
 $h_2, h'_2 = r_{ii} + 3t$, for dimensions between one radius and a free edge.
The tolerances are given in Table B.
- The length tolerances of the profile are given in Table 3.
- The permissible deviation from straightness must not exceed $0.002 \times l$ (length). There is no limitation for non-symmetrical sections.
- The permissible twist angle must not exceed $\leq 1^\circ$ per meter. There is no limitation for non-symmetrical sections.
- The permissible concavity or convexity must not exceed:
 $\leq 0,8\% \cdot h$ (h') $\dot{\eta} \leq 0,5 \text{ mm}$.
- The weight per running meter is calculated based on: the length, the cross-sectional area at nominal dimensions, and the density of steel = 7850 kg/m^3 .

Steel sheets: thickness $> 0,6 \text{ mm}$.

Aluminium sheets $> 0,7 \text{ mm}$.

Stainless steel sheets $0,7 \text{ mm}$.

The tolerances for aluminium sheets are described in the EN 485-4 standard.

Table 1. Bend angle tolerances

(based on the length of the smaller side)

$h' \leq 10 \text{ mm}$	$\pm 3^\circ$
$10 \text{ mm} < h' \leq 40 \text{ mm}$	$\pm 1^\circ 45'$
$40 \text{ mm} < h' \leq 80 \text{ mm}$	$\pm 1^\circ 15'$
$80 \text{ mm} < h' \leq 110 \text{ mm}$	$\pm 1^\circ$
$h' > 110 \text{ mm}$	$\pm 0^\circ 45'$

Table 2. Permissible internal radius r_{ii}

(depending on the steel grade and the zinc coating, $Z < 450 \text{ g/m}^2$)

DX51D+Z	= t	S280GD+Z	= t
S220GD+Z	= $0.5 \cdot t$	S320GD+Z	= $1.5 \cdot t$
S250GD+Z	= $0.5 \cdot t$	S350GD+Z	= $1.5 \cdot t$

Where t is the sheet thickness $\leq 3.00 \text{ mm}$.

For thickness $t > 3.00 \text{ mm}$, there is no restriction.

Table A. Cross-section dimension tolerances (a)

Thickness t , mm	$\leq 1,50$	$> 1,50 \leq 3,00$	$> 3,00 \leq 6,00$
≤ 40	$\pm 0,50$	$\pm 0,75$	$\pm 1,00$
$> 40, \leq 100$	$\pm 0,50$	$\pm 0,75$	$\pm 1,00$
$> 100, \leq 200$	$\pm 0,75$	$\pm 1,00$	$\pm 1,25$
$> 200, \leq 400$	$\pm 1,25$	$\pm 1,50$	$\pm 1,75$
$h > 400$	*	$\pm 1,75$	$\pm 2,00$

No requirement, subject to agreement upon order.

Table B. Cross-section dimension tolerances (b)

Thickness t , mm	$\leq 1,50$	$> 1,50 \leq 3,00$	$> 3,00 \leq 6,00$
≤ 40	$\pm 0,75$	$\pm 0,80$	$\pm 1,00$
$> 40, \leq 100$	$\pm 0,75$	$\pm 1,00$	$\pm 1,25$
$> 100, \leq 150$	$\pm 1,00$	$\pm 1,25$	$\pm 1,50$
$> 150, \leq 200$	*	$\pm 1,50$	$\pm 1,75$
$h > 200$	*	*	$\pm 2,00$

No requirement, subject to agreement upon order.

Table 3. Profile length tolerances

Standard length	6000 mm	0mm ~ +50mm
Fixed lengths	4000 ~ 24000mm	0mm ~ +50mm
Specific lengths	≤2000mm	±1,00mm
	>2000, ≤6000mm	±2,00mm
	>6000, ≤10000mm	±3,00mm
	>10000, ≤15000mm	±4,00mm

By agreement upon order, for specific lengths the tolerances may be only negative (-2* ~ 0 mm) or only positive (0 ~ +2* mm).

Type Z	Thickness mm	Weight Kg/m	Moment of Inertia of Area (J) – Axes X & Y		Principal Moments of Inertia of an Area (J) Principal Axes 1 & 2				Section Modulus (S)		Center of Mass (C)	
			Jx cm ⁴	Jy cm ⁴	J1 cm ⁴	Θ1°	J2 cm ⁴	Θ2°	Sx cm ³	Sy cm ³	xc mm	yc mm
140	1,50	3,40	36.406	132.548	13.702	23.61	155.252	123.61	5.875	18.524	68.4	56.0
	2,00	4,50	47.222	173.239	17.784	23.52	202.678	123.52	7.604	24.167	68.3	55.9
	2,50	5,60	70.186	219.959	26.085	25.50	264.060	125.50	11.206	30.524	67.9	55.4
	3,00	6,70	82.616	259.081	30.705	25.49	310.993	125.49	13.179	35.863	67.8	55.3
180	1,50	3,80	37.613	240.966	16.219	17.15	262.36	107.15	5.772	26.274	88.3	59.8
	2,00	5,00	48.794	315.774	21.066	17.05	343.502	107.05	7.473	34.368	88.1	59.7
	2,50	6,30	59.326	387.875	25.646	16.96	421.555	106.96	9.068	42.139	88.0	59.6
	3,00	7,50	69.227	457.296	29.967	16.86	496.557	106.86	10.560	49.589	87.8	59.4
210	1,50	4,00	37.624	346.104	17.507	13.90	366.222	113.90	5.763	32.401	103.2	59.7
	2,00	5,40	48.812	454.176	22.749	13.81	480.238	113.81	7.460	42.446	103.0	59.6
	2,50	6,80	59.353	558.655	27.708	13.72	590.300	113.72	9.051	52.123	102.8	59.4
	3,00	8,10	69.265	659.577	32.391	13.63	696.451	113.63	10.540	61.434	102.6	59.3

The weight per linear metre was calculated taking into account a steel density of 7850 kg/m³.

The lower yield strength of S320GD steel is taken as 320 MPa.

Where Axo and A1o are taken as 0°, Ayo and A2o are taken as 90°.

The holes shown in the sketches are indicative and are not included in the calculations.

For structural applications, the reduction in strength due to holes shall be calculated in accordance with EN 1993-1-3.