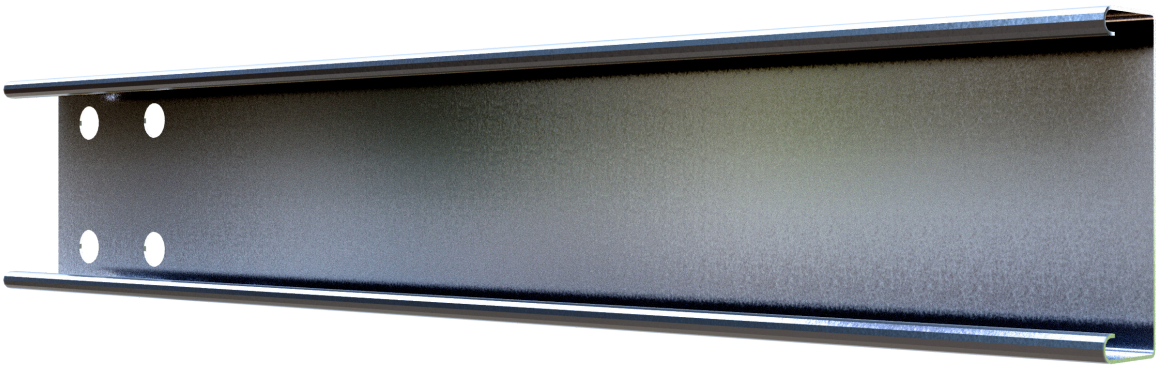
MetaLite C

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

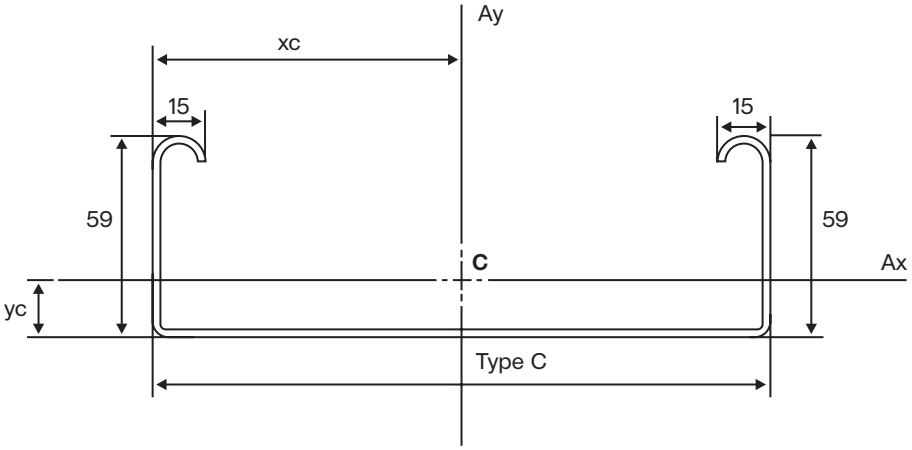


Available in

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 C

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)
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, rii, is given in Table 2, where:
  rii ≤ ±20% and rii ≤ ±0.5 mm
- The minimum external dimensions of the section h, h' are defined as:
  h1,h'1 = 10*t, for dimensions between two internal radii. The tolerances for these dimensions are given in Table A.
  h2, h'2 = rii+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 × l (length).
  There is no limitation for non-symmetrical sections.
- The permissible twist angle must not exceed ≤ 1° per meter. There is no limitation for non-symmetrical sections.
- The permissible concavity or convexity must not exceed:
  ≤ 0,8%*h (h') ή ≤ 0,5mm.
- 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/m³.

Steel sheets: thickness > 0,6 mm.
Aluminium sheets > 0,7mm.
Stainless steel sheets 0,7mm.
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' ≤ 10 mm	±3o
10 mm < h' ≤ 40 mm	±1o 45'
40 mm < h' ≤ 80 mm	±1o 15'
80 mm < h' ≤ 110 mm	±1o
h' > 110 mm	±0o 45'

Table 2. Permissible internal radius rii
(depending on the steel grade and the zinc coating, Z < 450 g/m²)

DX51D+Z	= t	S280GD+Z	= t
S220GD+Z	= 0.5*t	S320GD+Z	= 1.5*t
S250GD+Z	= 0.5*t	S350GD+Z	= 1.5*t

Where t is the sheet thickness ≤ 3.00 mm.
For thickness t > 3.00 mm, there is no restriction.

Table A. Cross-section dimension tolerances (a)

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

No requirement, subject to agreement upon order.

Table B. Cross-section dimension tolerances (b)

Thickness t, mm	≤1,50	>1,50 ≤3,00	>3,00 ≤6,00
≤40	±0,75	±0,80	±1,00
>40, ≤100	±0,75	±1,00	±1,25
>100, ≤150	±1,00	±1,25	±1,50
>150, ≤200	*	±1,50	±1,75
h>200	*	*	±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).

			Area Moment of Inertia (J) – X & Y axes		Section Modulus (S)		Center of Mass (C)	
Type C	**Thickness mm**	**Weight Kg/m**	**Jx cm^4**	**Jy cm^4**	**Sx cm^3**	**Sy cm^3**	**xc mm**	**yc mm**
140	1,50	3,40	19,091	129.106	4.664	18.444	70.0	18.1
	2,00	4,50	24,599	168.642	6.010	24.092	70.0	18.1
	2,50	5,60	29,704	206.457	7.259	29.494	70.0	18.1
	3,00	6,70	34,420	242.567	8.413	34.652	70.0	18.1
180	1,50	3,80	20.666	232.306	4.795	25.812	90.0	15.9
	2,00	5,10	26.636	304.092	6.180	33.788	90.0	15.9
	2,50	6,40	32.172	373.089	7.466	41.454	90.0	15.9
	3,00	7,70	37.290	439.315	8.654	48.813	90.0	15.9
210	1,50	4,20	21.611	334.602	4.867	31.867	105.0	14.6
	2,00	5,60	27.855	438.538	6.275	41.766	105.0	14.6
	2,50	7,00	33.646	538.713	7.582	51.306	105.0	14.6
	3,00	8,40	39.001	635.150	8.792	60.490	105.0	14.6

The weight per linear metre was calculated taking into account a steel density of 7850 kg/m^3.
The lower yield strength of S320GD steel is taken as 320 MPa.
Axo and A1o are taken as 0°, while 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.