

BS EN 10219-2 : 1997

Cold formed welded structural hollow sections of non-alloy and fine grain steels

Part 2. Tolerances, dimensions and sectional properties

Tolerances

Tolerances on the dimensions and mass of cold formed hollow sections shall not exceed the values given in table 1 for external corner profiles, table 2 for shape and mass, table 3 for the height of the internal and external weld bead of submerged arc welded hollow sections and table 4 for length.

The internal corners of square and rectangular hollow sections shall be rounded.

NOTE: The internal corner profile is not specified.

Table 1. External corner profile

| Thickness <i>T</i> | External corner profile <i>C₁, C₂ or R¹⁾</i> |
|---|--|
| $T \leq 6$ | 1.6 <i>T</i> to 2.4 <i>T</i> |
| $6 < T \leq 10$ | 2.0 <i>T</i> to 3.0 <i>T</i> |
| $10 < T$ | 2.4 <i>T</i> to 3.6 <i>T</i> |
| ¹⁾ The sides need not be tangential to the corner arcs | |

Table 2. Tolerances for shape and mass

| Characteristic | Circular hollow sections | Square and rectangular hollow sections | |
|--|---|--|--|
| | | Side length mm | Tolerance |
| Outside dimensions (D, B and H) | $\pm 1\%$ with a minimum of $\pm 0.5\text{mm}$ and a maximum of $\pm 10\text{mm}$ | $H, B < 100$ $100 \leq H, B \leq 200$ $H, B > 200$ | $\pm 1\%$ with a minimum of $\pm 0.5\text{mm}$ $\pm 0.8\%$ $\pm 0.6\%$ |
| Thickness (T) | For $D \leq 406.4\text{ mm}$: $T \leq 5\text{ mm} \pm 10\%$ $T > 5\text{ mm} \pm 0.50\text{ mm}$ For $D > 406.4\text{ mm}$: $\pm 10\%$ with a maximum of 2 mm | $T \leq 5\text{ mm} \pm 10\%$ $T > 5\text{ mm} \pm 0.5\text{ mm}$ | |
| Out-of-roundness (O) | 2% for hollow sections having a diameter to thickness ratio not exceeding 100 (1) | – | |
| Concavity/convexity (2) | – | Max. 0.8 % with a minimum of 0.5 mm | |
| Squareness of side | – | $90^\circ \pm 1^\circ$ | |
| External corner profile | – | See table 2 | |
| Twist (V) | – | 2mm plus 0.5 mm/m length | |
| Straightness | 0.2% of total length | 0.15 % of total length | |
| Mass (M) | $\pm 6\%$ on individual lengths | | |
| (1) Where the diameter to thickness ratio exceeds 100 the tolerance on out-of-roundness shall be agreed. | | | |
| (2) The tolerance on convexity and concavity is independent of the tolerance on outside dimensions. | | | |

Table 3. Tolerances on height of internal and external weld bead for submerged arc welded hollow sections

| Thickness (T) | Maximum weld bead height |
|---------------|--------------------------|
| ≤ 14.2 | 3.5 |
| > 14.2 | 4.8 |



Table 4. Tolerances on length ⁽¹⁾- dimensions in mm

| Type of length | Range (mm) | Tolerances |
|--------------------|---|---|
| Random length | 4000 to 16000 with a range of 2000 per order item | 10 % of sections supplied may be below the minimum for the ordered range but not less than 75 % of the minimum of the range |
| Approximate length | ≥ 4000 | + 50 0 mm |
| Exact length | < 6000 | + 5 0 mm |
| | ≥ 6000 to ≤ 10000 | + 15 0 mm |
| | > 10000 | + 5 0 mm |

⁽¹⁾The purchaser shall indicate in the enquiry and order the type of length required and the length range or length required as appropriate.

Fig 1. Limiting cross-sectional positions for measuring the dimensions B, H and T for square or rectangular hollow sections

