

SCOPE & PRODUCTS COVERED

- Hot-rolled structural steel **bars and sections** for structures designed to AS 4100 / AS 5100.6.
- Universal Beams (UB), Universal Columns (UC), Universal Bearing Piles (UBP)
- Parallel Flange Channels (PFC), Taper Flange Channels & Beams (TFC / TFB)
- Equal Angles (EA) & Unequal Angles (UA)
- Flats, rounds, squares and merchant bar

Covers	Chemical composition, mechanical properties, dimensional tolerances, surface condition, marking, test methods.
Marking	Standard number, grade, cast/heat number and manufacturer identification.
Testing	Tensile, bend and Charpy V-notch impact (AS 1391 / AS 1544.2).
Excludes	Plate & floorplate (AS/NZS 3678), hollow sections (AS/NZS 1163), welded three-plate sections (AS/NZS 3679.2).

IMPACT (CHARPY V-NOTCH) DESIGNATIONS

GRADE SUFFIX	TEST TEMP.	AVG OF 3	MIN. SINGLE
none — e.g. 300, 350	not required	–	–
L0 — e.g. 300L0, 350L0	0 °C	27 J	20 J
L15 — e.g. 350L15	–15 °C	27 J	20 J
S0 — seismic, e.g. 300S0	0 °C	70 J	50 J

Values are for full-size 10 × 10 mm specimens; sub-size specimens are pro-rated. S0 seismic grades also carry a capped yield/tensile ratio and higher minimum elongation.

GRADES & MECHANICAL PROPERTIES

GRADE	MATERIAL THICKNESS	MIN. YIELD F_y	MIN. TENSILE F_u	MIN. ELONG.
300 300PLUS®	< 11 mm	320 MPa		
	11 – 17 mm	300 MPa	440 MPa	22 %
	> 17 mm	280 MPa		
350	< 11 mm	360 MPa		
	11 – 17 mm	340 MPa	480 MPa	20 %
	> 17 mm	330 MPa		
400	bars / flats	400 MPa	520 MPa	18 %

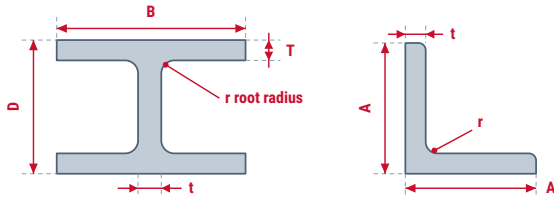
Key point: the grade number is the *nominal* minimum yield strength — the specified minimum steps **down** as material thickness increases, so a thick flange is weaker than a thin web in the same section. Grade 300 is the default Australian supply grade for UB / UC / PFC / angles; not all grades are rolled in all sizes.

TOLERANCE HEADLINES

PROPERTY	PERMISSIBLE VARIATION
Mass — individual length	Not less than 97.5 % of nominal mass/m
Mass — group / consignment	Within ±2.5 % of nominal
Straightness — universal sections	Deviation $\leq L / 1000$
Straightness — other sections	Deviation $\leq L / 500$
Length — ≤ 7 m	+50 / –0 mm
Length — > 7 m to 12 m	+75 / –0 mm
Length — > 12 m	+100 / –0 mm
Cross-section (D, B, T, t, e)	Size-dependent — see diagrams below

DIMENSIONAL TOLERANCES – WHAT IS CONTROLLED

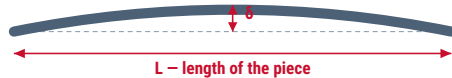
1 Cross-section size – rolled profile



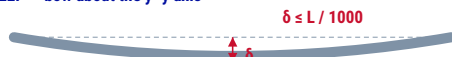
Left: universal section (UB/UC/PFC). Right: equal / unequal angle. Rolled sections are a single continuous profile with **root radii** at every web-to-flange and leg junction — not plates joined together. **Indicative magnitude:** depth **±1.5–3 mm**; flange width or leg length **±1.5–4 mm**, widening with size. Thickness (T, t) is largely policed by the **mass tolerance**.

3 Straightness – camber & sweep

CAMBER — bow about the x-x axis

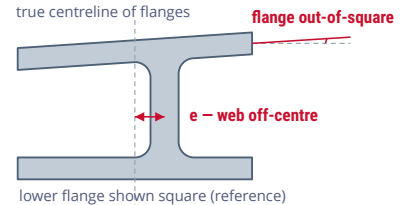


SWEEP — bow about the y-y axis



Universal sections (UB, UC, UBP): $\delta \leq L/1000$. Channels, angles and bars: $\delta \leq L/500$. A compliant 12 m UB may bow **12 mm**; a 12 m PFC **24 mm**. Allow for this in fit-up and pre-camber assumptions.

2 Shape – web off-centre & flange out-of-square



Web off-centre (e): the web must sit near the flange centreline — indicatively **±1–5 mm** by size. **Flange out-of-square:** tilt of the flange relative to the web, indicatively limited to about **1.5 % of B** (order of 1–4 mm). Both are exaggerated here for clarity.

4 Length & mass

CUT LENGTH — always plus, never minus



MASS PER METRE



Individual length ≥ 97.5 % of nominal mass/m
Group / consignment within ± 2.5 % of nominal

Why it matters: a compliant section can be up to **2.5 % light** — relevant to shop weights, transport limits, and any check that leans on nominal section properties.

Verify before use. AS/NZS 3679.1 is copyright Standards Australia / Standards New Zealand and is not reproduced here. Grade, mass, length and straightness figures are drawn from published industry and manufacturer sources and are believed correct. The **cross-section and squareness values in panels 1 and 2 are indicative ranges only** — the standard sets these per section designation. Read the exact figure for your section from a licensed copy, or from current supplier tolerance tables, before accepting or rejecting material.

Sources: AS/NZS 3679.1:2016, Standards Australia / Standards New Zealand · InfraBuild, *Hot Rolled and Structural Steel Products*, 9th Ed. · Australian Steel Institute, *Range and properties of open sections*. | **Related:** AS/NZS 3678 (plate) · AS/NZS 3679.2 (welded sections) · AS/NZS 1163 (hollow sections) · AS 4100 · AS/NZS 5131.

WARNING: While all care has been taken to provide accurate information here, it should be noted that it is for a guide only and any information must be checked by the manufacturer before being relied upon.