

CORE FORMULA

$$\text{Weight (kg)} = \text{Volume (m}^3\text{)} \times \text{Density (kg/m}^3\text{)}$$

Carbon steel density **7850 kg/m³ (7.85 g/cm³)**

Stainless 7.9–8.0 · aluminium 2.70 g/cm³

COMMON FORMULAS

SHAPE	FORMULA	UNIT
Plate / sheet	$L(m) \times W(m) \times T(mm) \times 7.85$	kg
Flat bar	$W(mm) \times T(mm) \times 0.00785$	kg/m
Round bar / rebar	$D(mm)^2 \times 0.006165$	kg/m
Round tube	$(OD^2 - ID^2) \times 0.006165$	kg/m
Square bar	$Side(mm)^2 \times 0.00785$	kg/m
Rectangular tube*	$[BH - (B-2t)(H-2t)] \times 0.00785$	kg/m

* Sharp-corner approximation. For standard rolled profiles, use the catalog kg/m value.

WORKED EXAMPLES

01 **10 mm plate, 2 m × 1 m** **157 kg**
 $2 \times 1 \times 10 \times 7.85$, or $0.02 \text{ m}^3 \times 7850 \text{ kg/m}^3$.

02 **20 mm round bar, 6 m** **14.80 kg**
 $20^2 \times 0.006165 = 2.466 \text{ kg/m}$, × 6 m.

03 **IPE 200 from the catalog, 6 m** **134.4 kg**
 $22.4 \text{ kg/m} \times 6 \text{ m}$. Check the standard size and the mill tolerance.

WHICH NUMBER TO USE

Geometry formula | Estimating, offcuts, and shapes with no published table.

Catalog kg/m | Preferred for any standard rolled section.

Mill certificate | The binding reference for procurement and invoicing.



The full guide, and 23 free calculators

Scan for worked examples, kg/m tables, and the calculator for every profile.

iron-metal.net/en/guides/steel-weight-calculation-formula