

Metal Density and Weight Chart for Machining and Stamping

Blank weight drives material cost and shipping, and it is simple to work out once you know the density. This table lists the densities we use in quoting and gives the weight of a standard 100 x 100 x 10 mm block for each material.

Density and reference weight

Material	Density (g/cm ³)	Weight of 100 x 100 x 10 mm (g)
Carbon steel	7.85	785
Stainless steel 304	7.93	793
Stainless steel 316	7.98	798
Aluminium 6061	2.70	270
Aluminium 7075	2.81	281
Brass	8.50	850
Phosphor bronze	8.80	880
Copper	8.96	896
Zinc	7.14	714
Titanium	4.51	451

Weight formula

Weight (g) = volume (cm³) x density (g/cm³). For a rectangular blank, volume = length x width x thickness in centimetres.

Blank (mm)	Volume (cm ³)	Steel weight (g)	Aluminium weight (g)
100 x 100 x 5	50	393	135
100 x 100 x 10	100	785	270
100 x 100 x 20	200	1570	540
50 x 50 x 5	12.5	98	34
200 x 200 x 3	120	942	324

Notes

- Sheet and plate are usually sold by weight, so a lighter aluminium part cuts material cost as well as shipping weight.
- For machined parts, subtract the removed volume to get the finished weight, and remember the blank is what you pay for.
- Stamped parts are quoted by the area of the blank and the scrap rate of the strip layout.

Frequently asked questions

How do I calculate the weight of a metal part?

Work out the volume in cubic centimetres and multiply by the material density. For example a 100 x 100 x 10 mm steel block is $100 \text{ cm}^3 \times 7.85 = 785 \text{ g}$.

How much does aluminium weigh compared to steel?

Aluminium 6061 has a density of 2.70 g/cm^3 against 7.85 for carbon steel, so an aluminium part of the same size is about one third the weight.

Does blank weight affect the price?

Yes. Material is usually the largest single cost in a machined or stamped part, and it is charged on the blank weight, not the finished weight.

Can you advise on a lighter material for a part?

Yes. Send the drawing and the load case and we will suggest alternatives, for example swapping steel for aluminium or a thinner high-strength grade where the design allows.