

Rebar Sections: Mass of 1 m, Section Area and Metres per Tonne

The table covers reinforcing steel of Ø6–80 mm under GOST 5781-82: the cross-sectional area, the mass of 1 m and the number of metres in one tonne. With these figures you can convert tonnes of rebar to metres and back.

Rebar Ø6–80 mm: section area and mass of 1 m

The rebar diameter in the table is nominal: it is the size of a round section with the ribs of the profile ignored. The area A is the area of that circle, and the mass of 1 m follows from it at a steel density of 7850 kg/m³.

Reinforcing steel: cross-sectional area and mass of 1 m · GOST 5781-82

Diameter, mm	A, cm ²	Mass of 1 m, kg	Metres per tonne
6	0.283	0.222	4505
8	0.503	0.395	2534
10	0.785	0.617	1622
12	1.13	0.888	1126
14	1.54	1.21	828
16	2.01	1.58	634
18	2.54	2	501
20	3.14	2.47	405
22	3.8	2.98	335
25	4.91	3.85	260
28	6.16	4.83	207
32	8.04	6.31	158
36	10.18	7.99	125
40	12.57	9.86	101
45	15.9	12.48	80.1
50	19.63	15.41	64.9
55	23.76	18.65	53.6
60	28.27	22.2	45.1
70	38.48	30.21	33.1
80	50.27	39.46	25.3

A is the cross-sectional area in cm²; the mass of 1 m is theoretical, based on the nominal diameter; "Metres per tonne" is 1000 kg divided by the mass of 1 m.

Why the mass is based on the nominal section

A rebar profile has ribs, so its true area is hard to measure. The range therefore takes the mass from the nominal section, and the actual mass of a batch differs slightly because of rolling tolerances.

For accounting and ordering, rely on the supplier's documents: the table gives the theoretical value.

How to work out the mass of an 11.7 m or 12 m bar

The mass of a bar is the mass of 1 m times its length. Ø12 rebar is 0.888 kg/m, so an 11.7 m bar weighs about 10.4 kg and a 12 m bar about 10.7 kg.

The gap is wider for thicker bars. A 12 m bar of Ø20 (2.47 kg/m) comes to about 29.6 kg, and one of Ø25 (3.85 kg/m) to about 46.2 kg.

The "Metres per tonne" column helps when buying by weight: a tonne of Ø25 rebar is only 260 m, while a tonne of Ø8 is 2534 m.

Where rebar is used

Reinforcing steel works in reinforced concrete together with the concrete, which is weak in tension. Bars are tied into cages for foundations, columns, beams and slabs.

The diameter sets the weight of a cage and the number of bars in a section, which is why the mass of rebar is worked out at the specification stage.

Calculator and ordering

The online calculator shows the mass of a mixed batch of bars. Other kinds of rolled steel are collected in the rolled metal handbook. Is rebar part of a product? Send a drawing or a specification, and the POLYGONAL company will make the steel structures to your drawings.

Frequently asked questions

How much does 1 m of Ø12 rebar weigh?

Ø12 rebar weighs 0.888 kg per metre. An 11.7 m bar is about 10.4 kg and a 12 m bar about 10.7 kg.

How many metres of Ø10 rebar are in a tonne?

Divide 1000 kg by the mass of 1 m. Ø10 rebar weighs 0.617 kg/m, so a tonne is about 1622 m.

What does the rebar diameter in the table mean?

It is the nominal diameter of a round section, ignoring the ribs. The section area and the mass of 1 m are calculated from it.

Does the actual mass of rebar match the table?

The table gives the theoretical mass for the nominal section. The actual mass differs slightly because of rolling tolerances, so use the supplier's documents for settlements.

Reference information. Check the values against the current standard before using them in a project.