

Unequal-Leg Angles: Dimensions and Mass of 1 m to GOST 8510-86

The table lists unequal-leg angles from 25×16 to 200×125 mm to GOST 8510-86: long and short leg, thickness, section area, the mass of 1 m and how many metres make a tonne. Each size also gives the fillet radii R and r.

Unequal-leg angles: dimensions and mass of 1 m

The legs of an unequal angle have different widths. The designation L75×50×5 reads as a 75 mm long leg, a 50 mm short leg and a thickness of 5 mm. The standard writes the profile number in centimetres, so angle 7.5/5 and L75×50 are the same profile.

The range is large because most leg pairs come in several thicknesses. The 75×50 pair has four, from 5 to 8 mm.

Hot-rolled unequal-leg steel angles · ГОСТ 8510-86

Section	A, cm ²	Mass of 1 m, kg	Metres per tonne	R, mm	r, mm
L25×16×3	1.16	0.91	1099	3.5	1.2
L30×20×3	1.43	1.12	893	3.5	1.2
L30×20×4	1.86	1.46	685	3.5	1.2
L32×20×3	1.49	1.17	855	3.5	1.2
L32×20×4	1.94	1.52	658	3.5	1.2
L40×25×3	1.89	1.48	676	4	1.3
L40×25×4	2.47	1.94	515	4	1.3
L40×25×5	3.03	2.37	422	4	1.3
L40×30×4	2.67	2.1	476	4	1.3
L40×30×5	3.28	2.57	389	4	1.3
L45×28×3	2.14	1.68	595	5	1.7
L45×28×4	2.8	2.2	455	5	1.7
L50×32×3	2.42	1.9	526	5.5	1.8
L50×32×4	3.17	2.49	402	5.5	1.8
L56×36×4	3.58	2.81	356	6	2
L56×36×5	4.41	3.46	289	6	2
L63×40×4	4.04	3.17	315	7	2.3
L63×40×5	4.98	3.91	256	7	2.3
L63×40×6	5.9	4.63	216	7	2.3
L63×40×8	7.68	6.03	166	7	2.3
L65×50×5	5.56	4.36	229	6	2
L65×50×6	6.6	5.18	193	6	2
L65×50×7	7.62	5.98	167	6	2
L65×50×8	8.62	6.77	148	6	2
L70×45×5	5.59	4.39	228	7.5	2.5
L75×50×5	6.11	4.79	209	8	2.7
L75×50×6	7.25	5.69	176	8	2.7
L75×50×7	8.37	6.57	152	8	2.7
L75×50×8	9.47	7.43	135	8	2.7
L80×50×5	6.36	4.99	200	8	2.7
L80×50×6	7.55	5.92	169	8	2.7
L80×60×6	8.15	6.39	156	8	2.7
L80×60×7	9.42	7.39	135	8	2.7
L80×60×8	10.67	8.37	119	8	2.7
L90×56×5.5	7.86	6.17	162	9	3
L90×56×6	8.54	6.7	149	9	3
L90×56×8	11.18	8.77	114	9	3

Section	A, cm ²	Mass of 1 m, kg	Metres per tonne	R, mm	r, mm
L100×63×6	9.58	7.53	133	9	3
L100×63×7	11.09	8.7	115	9	3
L100×63×8	12.57	9.87	101	9	3
L100×63×10	15.47	12.14	82.4	9	3
L100×65×7	11.23	8.81	114	10	3.3
L100×65×8	12.73	9.99	100	10	3.3
L100×65×10	15.67	12.3	81.3	10	3.3
L110×70×6.5	11.45	8.98	111	10	3.3
L110×70×8	13.93	10.93	91.5	10	3.3
L125×80×7	14.06	11.04	90.6	11	3.7
L125×80×8	15.98	12.53	79.8	11	3.7
L125×80×10	19.7	15.47	64.6	11	3.7
L125×80×12	23.36	18.34	54.5	11	3.7
L140×90×8	18	14.13	70.8	12	4
L140×90×10	22.24	17.46	57.3	12	4
L160×100×9	22.87	17.96	55.7	13	4.3
L160×100×10	25.28	19.85	50.4	13	4.3
L160×100×12	30.04	23.58	42.4	13	4.3
L160×100×14	34.72	27.26	36.7	13	4.3
L180×110×10	28.33	22.2	45	13	4.3
L180×110×12	33.69	26.4	37.9	13	4.3
L200×125×11	34.87	27.37	36.5	14	4.7
L200×125×12	37.89	29.74	33.6	14	4.7
L200×125×14	43.87	34.43	29	14	4.7
L200×125×16	49.77	39.07	25.6	14	4.7

a is the width of the long leg, b of the short one, t is the thickness, all in millimetres. A is the section area; the mass of 1 m is calculated for a steel density of 7850 kg/m³. R is the radius between the legs, r is the radius at the leg edge.

How to read the table

Thickness changes the mass more than it seems. An L75×50×5 has a section area of 6.11 cm² and weighs 4.79 kg/m, while an L75×50×8 with the same legs has 9.47 cm² and 7.43 kg/m. The radii stay the same for all four 75×50 thicknesses.

The radii grow with the profile size: for L25×16 they are 3.5 and 1.2 mm, for L200×125 they are 14 and 4.7 mm, the largest in the table.

Example: mass and length by weight

The mass of an angle is its mass per metre times its length. A six-metre L75×50×5 weighs 28.7 kg. For L100×63×8 the mass of 1 m is 9.87 kg, so six metres give 59.2 kg.

The other way round, the metres per tonne equal 1000 divided by the mass of 1 m. A tonne of L63×40×5 is about 256 m, and a tonne of L100×63×8 about 101 m. The "Metres per tonne" column gives these figures directly.

How it differs from an equal-leg angle

An equal-leg angle is symmetrical, while an unequal one has a long and a short leg. Their axes of inertia lie differently, so the designer orients the angle as the calculation requires. The equal-leg tables are on the angle sections page, together with a drawing of the section and its symbols.

Where they are used

Unequal angles are chosen where one direction needs a wider leg: in bracing, beam supports and truss members. The long leg is made the bearing one or set against the larger surface, and the short leg is used for the connection.

Calculator and ordering

How much a batch of angles of a set length will weigh is quick to check in the rolled metal calculator, which has an unequal-leg angle. And when the angles go into a structure, send us a drawing or a specification. The POLYGONAL company makes steel structures to the customer's drawings, prepares KM and KMD drawings and galvanizes the products.

Frequently asked questions

How much does a 75×50×5 angle weigh?

An L75×50×5 angle weighs 4.79 kg per metre. A six-metre bar is about 28.7 kg.

What does angle number 7.5/5 mean?

It gives the leg widths in centimetres: 75 mm long leg, 50 mm short leg. The thickness is not part of the number and is written separately: L75×50×5.

How many metres of 100×63×8 angle make a tonne?

Divide 1000 kg by the mass of 1 m, which is 9.87 kg for L100×63×8. It comes to about 101 m.

What are the largest and smallest unequal angles in the table?

The smallest, L25×16×3, has a mass of 0.91 kg/m. The largest in the table, L200×125×16, weighs 39.07 kg/m.

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