

Crane Rail Sections KR: Dimensions, Mass per Metre and Section Properties

The tables list crane rails KR70, KR80, KR100, KR120 and KR140 to GOST 4121-96: main dimensions, cross-sectional area, mass of 1 m, metres per tonne, moments of inertia and resistance.

What the designation KR70, KR100, KR140 means

Crane rails come in five types: KR70, KR80, KR100, KR120 and KR140. The number in the designation equals the head width in millimetres. The base of the rail is much wider than the head. Rails of this profile are intended for crane tracks.

Main dimensions

The table gives dimensions in millimetres: b is the head width, b2 the base width, s1 the web thickness, h the rail height, h1 the head height.

Crane rails KR: main dimensions · ГОСТ 4121-96

Rail type	b, mm	b2, mm	s1, mm	h, mm	h1, mm
KP70	70	120	21	120	28
KP80	80	130	26	130	35
KP100	100	150	32	150	40
KP120	120	170	38	170	45
KP140	140	170	56	170	50

All dimensions in millimetres. The full set of dimensions and tolerances is in the text of the standard.

Mass of 1 m and section properties

The standard finds the mass of 1 m from the cross-sectional area with a steel density of 7850 kg/m³. Several values are needed to calculate a crane track in bending.

Crane rails KR: area, mass of 1 m and section properties · ГОСТ 4121-96

Rail type	A, cm ²	Mass of 1 m, kg	Metres per tonne	y1, cm	y2, cm	Jx, cm ⁴	Jy, cm ⁴	Wx1, cm ³	Wx2, cm ³	Wy, cm ³
KP70	58.72	46.1	21.7	5.77	6.23	1040.18	281.71	180.26	166.95	46.95
KP80	76.19	59.81	16.7	6.42	6.58	1504.57	438.96	234.35	228.65	67.53
KP100	105.85	83.09	12	7.55	7.45	2768.43	858.99	366.67	371.6	114.53
KP120	144.54	113.47	8.81	8.65	8.35	4754.83	1596.08	549.69	569.43	187.76
KP140	180.51	141.7	7.06	8.7	8.3	5486.19	2484.75	630.59	660.98	292.32

A is the cross-sectional area. y1 and y2 are the distances from the centroid to the extreme fibres along the height; their sum equals the rail height. Jx, Jy are the moments of inertia about the horizontal and vertical axes; Wx1 and Wx2 are the section moduli for the upper and lower fibre (Jx/y1 and Jx/y2), Wy is for the base (Jy divided by half the base width).

How to get the mass of a rail from the table

Mass is the mass of 1 m times the length. A KR70 rail has 46.10 kg per metre, so 10 m weigh 461 kg, and a tonne of such rail is about 21.7 m. A KR100 rail has 83.09 kg per metre, so a tonne is about 12 m.

The mass of a track section made of several rails is easy to add up from the "Mass of 1 m" column.

Calculator and ordering

For other sections the metal weight calculator is handy, and the tables of the rest of the range are collected in the rolled metal handbook. If you need crane-track structures to your drawings, send them with the request and we will price fabrication and galvanizing.

Frequently asked questions

How much does a KR70 crane rail weigh?

A KR70 rail weighs 46.10 kg per metre. Ten metres are 461 kg, and a tonne is about 21.7 m.

What does the number in KR100 mean?

The head width of the rail in millimetres. KR100 has a head 100 mm wide and a rail height of 150 mm.

Which types of crane rail does the standard include?

Five: KR70, KR80, KR100, KR120 and KR140, to GOST 4121-96.

How does a KR rail differ from a railway rail?

KR crane rails have their own standard, GOST 4121-96, and are intended for crane tracks. Railway rails are not covered in this handbook.

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