BRITISH STEEL

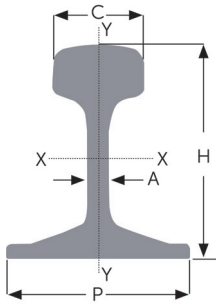
Steel products for rail applications

Profiles and grades

Dimensions, properties and compositions RAIL

Knowing exactly which profile is suitable for your track can sometimes be a challenge. The technical tables below show the range of rail products and grades we manufacture.

Available in lengths of up to 120m (216m welded), these can be precisely matched to track conditions, track types, environmental conditions and a host of other variables to ensure that every rail we deliver provides the best performance throughout its service life.



EN 13674-1 Flat bottom rails >46kg/m

Rail profile	Equivalent profile name	Section weight kg/m	Rail height mm (H)	Head width mm (C)	Web thickness mm (A)	Foot width mm (P)	Moment of inertia Ixx cm^4	Moment of inertia Iyy cm^4
54E1	UIC 54	54.77	159.00	70.00	16.00	140.00	2337.9	419.2
54E4	–	54.31	154.00	67.00	16.00	125.00	2056.2	352.7
56E1	BS 113lb	56.3	158.75	69.85	20.00	140.00	2321.0	421.6
60E1	UIC 60	60.21	172.00	72.00	16.50	150.00	3038.3	512.3
60E2	–	60.03	172.00	72.00	16.50	150.00	3021.5	510.5

EN 13674-4 Flat bottom rail 27kg/m to 46kg/m

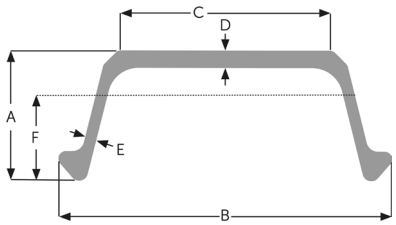
Rail profile	Equivalent profile name	Section weight kg/m	Rail height mm (H)	Head width mm (C)	Web thickness mm (A)	Foot width mm (P)	Moment of inertia Ixx cm^4	Moment of inertia Iyy cm^4
39E1	BS 80A	39.77	133.35	63.50	13.10	117.47	1204.9	219.6

AREMA Flat bottom rail

Rail profile	Equivalent profile name	Section weight kg/m	Rail height mm (H)	Head width mm (C)	Web thickness mm (A)	Foot width mm (P)	Moment of inertia Ixx cm^4	Moment of inertia Iyy cm^4
115RE	–	56.82	168.28	68.04	15.88	139.70	2726.3	445.6
136RE 14	–	67.76	185.74	73.71	17.46	152.40	3954.2	603.5

Special rail sections

Rail profile	Equivalent profile name	Section weight kg/m	Rail height mm (H)	Head width mm (C)	Web thickness mm (A)	Foot width mm (P)	Moment of inertia Ixx cm^4	Moment of inertia Iyy cm^4
BS 95RBH	Bullhead	47.07	145.26	69.85	19.05	69.85	1458.00	171.00
Section 75	Conductor	75.17	138.00	89.00	22.50	140.00	2163.93	891.66



Steel sleepers

Sleeper profile	Plate weight kg/m	Section height mm (A)	Section width mm (B)	Rail seat width mm (C)	Rail seat thickness mm (D)	Leg thickness mm (E)	Moment of inertia Ixx cm^4	Section modulus cm^3	Height of neutral axis from base mm (F)
202	22.10	82	240	160	7.5/12.0	6.75	200.0	34.4	58.1
300	28.36	92	254	160	12.0	7.0	283.3	42.3	67.0
402	28.54	100	260	168	10.0	7.0	426.0	62.8	67.1
436	31.69	100	260	168	12.0	7.0	432.8	65.8	68.4
600	39.53	115	280	168	14.5	7.6	654.7	81.3	80.5

Notes: Can be supplied for all rail sizes and with the inclination required for your network. Can be tailored to any rail gauge – 1,000mm, 1,067mm (3' 6"), standard and broad gauge.

Rail application steel grades

The tables below indicate the typical steel compositions and mechanical properties for British Steel's rail application grades.

Flat bottom rail grades

		Chemical composition % by mass									Mechanical properties		
Specification	Grade	C	Si	Mn	P	S	Cr	Al	V	H2 (ppm)	Rm (MPa)	Elongation (%)	HBW running surface
UIC 860-R	700	0.40-0.60	0.05-0.35	0.80-1.25	≤ 0.050	≤ 0.050	–	–	–	–	680-830	≥ 14	–
	900A	0.60-0.80	0.10-0.50	0.80-1.30	≤ 0.040	≤ 0.040	–	–	–	–	880-1030	≥ 10	–
	900B	0.55-0.75	0.10-0.50	1.30-1.70	≤ 0.040	≤ 0.040	–	–	–	–	880-1030	≥ 10	–
EN 13674-1	R200	0.40-0.60	0.15-0.58	0.70-1.20	≤ 0.035	0.008-0.035	≤ 0.15	≤ 0.004	≤ 0.03	≤ 3.0	≥ 680	≥ 14	200-240
	R220	0.50-0.60	0.20-0.60	1.00-1.25	≤ 0.025	0.008-0.025	≤ 0.15	≤ 0.004	≤ 0.03	≤ 3.0	≥ 770	≥ 12	220-260
	R260	0.62-0.80	0.15-0.58	0.70-1.20	≤ 0.025	0.008-0.025	≤ 0.15	≤ 0.004	≤ 0.03	≤ 2.5	≥ 880	≥ 10	260-300
	R260Mn	0.55-0.75	0.15-0.60	1.30-1.70	≤ 0.025	0.008-0.025	≤ 0.15	≤ 0.004	≤ 0.03	≤ 2.5	≥ 880	≥ 10	260-300
IRS	880	0.60-0.80	0.10-0.50	0.80-1.30	≤ 0.030	≤ 0.030	–	≤ 0.015	–	≤ 1.6	≥ 880	≥ 10	≥ 260
British Steel	Premium: HP335	0.87-0.97	0.75-1.00	0.75-1.00	≤ 0.020	0.008-0.020	≤ 0.10	≤ 0.004	0.09-0.13	≤ 2.5	≥ 1175	≥ 8	335-375
	Premium: HP350	0.87-0.97	0.75-1.00	0.75-1.00	≤ 0.020	0.008-0.020	≤ 0.10	≤ 0.004	0.09-0.13	≤ 2.5	≥ 1175	≥ 8	350-390

Conductor rail grade

		Chemical composition % by mass									Electrical properties
Specification	Grade	C	Si	Mn	P	S	Cr	Al	V	H2 (ppm)	Resistance (μΩ.cm)
BS 7865	Conductor rail	≤ 0.08	≤ 0.05	≤ 0.30	≤ 0.05	≤ 0.05	–	–	–	–	<11.04

Steel sleeper grade

		Chemical composition % by mass									Mechanical properties	
Specification	Grade	C	Si	Mn	P	S	Cr	Al	V	H2 (ppm)	Rm (MPa)	Elongation (%)
British Steel	Sleeper	≤ 0.21	0.14-0.25	≤ 1.50	≤ 0.035	≤ 0.035	–	≤ 0.008	–	–	410-560	≥ 23

Other rail profiles and grades may be available – please contact us to discuss your requirements.

Additional processing for corrosion protection

For aggressive track conditions, our rail can also be coated to provide superior durability and corrosion protection – please contact us to discuss your Zinoco® requirements.

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