



BRITISH
STEEL

Product Range

BUILDING STRONGER FUTURES

2020

WELCOME TO BRITISH STEEL

British Steel is one of Europe's leading steel manufacturers, producing around 3 million tonnes of quality steel products every year. We supply high-quality rail, sections, special profiles, wire rod and a variety of semi-finished products for some of the most demanding applications around the world.

In March 2020, we were bought by distinguished Chinese multi-industrial company Jingye Group, beginning a new chapter in British steelmaking.

Our steelworks have existed for around 150 years and we're excited about what we can collectively achieve to build a successful future for many years to come.



Our operations

We have a range of operations across the UK and Europe, supported by an international chain of sales offices.

Our steel is produced in Scunthorpe via the basic oxygen steelmaking (BOS) route. Our mills take this carefully made steel and roll it into a range of products that we supply across the world.

- STEELMAKING
- MANUFACTURING
- SERVICE CENTRE
- R&D FACILITIES
- DISTRIBUTION FACILITIES



Location	Semi-finished products	Sections	Special profiles	Wire rod	Rail	Services
Scunthorpe	●	●		●	●	
Teesside		●				Processing, cutting, shotblasting and painting
Skinningrove			●			
Darlington			●			Cutting, shotblasting, drilling and notching
Workington						Engineering
Lisburn						Processing, cutting, shotblasting and painting
Alblaserdam				●		Wire drawing, annealing and pickling

THE MARKETS WE SERVE

Our wide range of products, manufactured to internationally recognised standards, are used in many markets and demanding applications, helping share the modern world we see around us every day.

Our steel has helped build some of the world's most iconic and awe-inspiring projects, including:

- The Shard, London
- Crossrail, London
- Petronas Towers, Kuala Lumpur
- Camlica Tower, Istanbul
- Yankees Stadium, New York
- Harmony of the Seas cruise ship

Automotive



Construction



Energy & Power



Construction & Earthmoving Equipment



Defence & Security



Rail Infrastructure



Consumer Goods



CONTENTS

1	SPECIAL PROFILES	6
1.1	Bulb flats	8
1.2	Condumax® cathode bars	16
1.3	Crane rail	20
1.4	Cutting edge	24
1.5	Forklift profiles	30
1.6	Mining – tophats	34
1.7	Trackshoe profiles	40
1.8	Melting Base Iron (MBI)	47
2	WIRE ROD	48
2.1	Cold heading	50
2.2	Freecutting	53
2.3	Tyre reinforcement	56
2.4	Automotive spring steel	58
2.5	Rail clip	60
2.6	Bearing steel	62
2.7	Welding steel	65
2.8	High tensile	68
2.9	PC Strand	70
2.10	Wire Processing Centre	72
3	CONSTRUCTION	75
3.1	UK sections	77
	• Universal beams	78
	• Universal columns	81
	• Universal bearing piles	82
	• Parallel flange channels	83
	• Asymmetric beams	84
	• Unequal angles	84
	• Equal angles	85
3.2	American sections	86
	• American wide flange beams (W)	88
	• American wide flange bearing piles (HP)	90
3.3	European sections	94
	• European I beams (IPE)	95
	• European wide flange beams (HE)	96
3.4	Service centres and distribution facilities	98
4	RAIL	100
4.1	Rail profiles and grades	102
4.2	HP range	105
4.2	Zinoco®	107
4.3	Steel sleepers	109
5	SEMI-FINISHED PRODUCTS	111
5.1	Slabs	113
5.2	Blooms	116
5.3	Billets	118
6	CONTACTS	122



1 SPECIAL PROFILES

ABOUT SPECIAL PROFILES

Our Special Profiles mill is located in Skinningrove in the north east of England; from here we are able to deliver all around the world.

We provide unique steel solutions for unique applications; our extensive range of special profiles is used to make components for a wide range of industries from shipbuilding to construction and earthmoving equipment; material handling to mining.

Whether its building a ship, manufacturing earthmoving equipment or designing a mine shaft, our technical and roll design teams are on hand to work with you to create the optimum profile shape for your application.

We can roll profiles up to 260kg/metre – from simple profiles with non-standard dimensions, to highly complex and asymmetrical shapes. We supply both ‘reserved’ profiles designed for individual customer needs and ‘open’ roll profiles which are available to all customers. Through establishing long-term relationships with our customers we are able to help them develop and modify the profile ranges they require.

We also offer additional processing including cold sawing to exact length, shot blasting, painting and a range of fabrication and machining operations to meet our customers’ requirements.



1.1 BULB FLATS



1.1 BULB FLATS

Light weight corrosion resistant solution for plate stiffening

Bulb flats are the most cost-effective, efficient and corrosion-resistant solution for plate stiffening. They provide an excellent strength to weight ratio delivering buckling resistance at a lower weight than flat bars or angles.

We supply bulb flats in a wide range of steel types and grades. We also offer a choice of finishing services to meet our customers' needs. These include:

- Shot blasting and priming – to provide improved fabrication performance and protection
- Weld edge preparation to reduce preparation required for automated welding
- A range of enhanced dimensional tolerances giving further weight and engineering enhancements to your designs

Our flexible and regular rolling programme of all our products means we can help our customers achieve closer project schedule adherence.

We are ISO 9001 and ISO 14001 compliant. We also have approval of the world's leading classification societies including: ABS, BV, CCS, DNV, GL, LRS, RINA and MRRS.

Steel types and grades

Shipbuilding steels

Strength	Grade	
Normal	A, B	●
	D	●
	E	●
High strength	A32	●
	D32	●
	A36	●
	D36	●
	E36	●

Grades that are held in bloom stock, readily available to roll in the next available capacity ●

The following grades are within our capability and steel is made to order ●

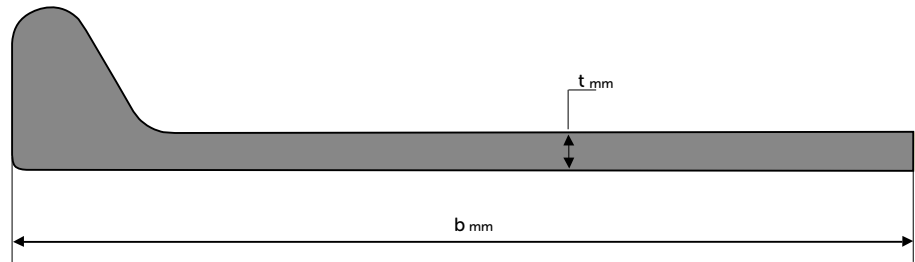
Other grades may also be available upon request.

Structural steels

Euronorm	Grade	
ASTM	A572 Gr50	●
	S235JR+AR	●
	S235J0+AR	●
EN10025-2	S235J2+AR	●
	S275JR+AR	●
	S275J0+AR	●
	S275J2+AR	●
	S355JR+AR	●
	S355J0+AR	●
	S355J2+AR	●
EN10025-4	S355M	●
EN10225	G11	●
	G12	●

1.1 BULB FLATS

Dimensions



Width, b (mm)	160-430
Thickness, t (mm)	7-20
Length (m)	6-16.5*

* short cuts and longer lengths up to 18m available on request

Dimensional tolerances

Width

Width b, (mm)	EN10067 Standard	Special 1	Special 2
$\geq 160 \leq 180$	$\pm 2.0\text{mm}$	$\pm 2.0\text{mm}$	$\pm 1.5 \text{ mm}$
$\geq 180 \leq 300$	$\pm 3.0\text{mm}$	$\pm 2.2\text{mm}$	$\pm 1.7 \text{ mm}$
$\geq 300 \leq 430$	$\pm 4.00\text{mm}$	$\pm 3.0\text{mm}$	$\pm 2.0 \text{ mm}$

Our special width tolerances are achieved through an offline 100% weld edge grinding process. This ensures clean flat edges for superior welding.

Thickness

Thickness **t** tolerances for different widths ranges.

Width b, (mm)	EN10067 Standard	Special 1
$\geq 160 \leq 180$	-0.3 / + 1.0mm	-0.2 / + 0.6mm
$> 180 \leq 300$	-0.4/ + 1.0mm	-0.3 / + 0.6mm
$> 300 \leq 430$	-0.4/ + 1.2mm	-0.3 / + 0.6mm

Length

Closer tolerances may be achieved by special agreement.

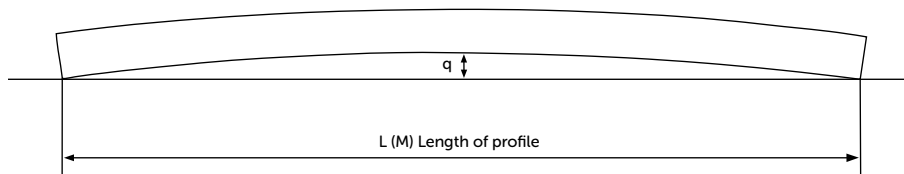
Length, L	EN10067 Standard
All	-0 / + 100 mm

Individual lengths between 6m and 16.5m are available as a standard stackable length. Lengths outside this range (1.5m to 18m) may be available on request on a limited tonnage basis.

1.1 BULB FLATS

Straightness – bow and camber

As measured over the length of the bar.



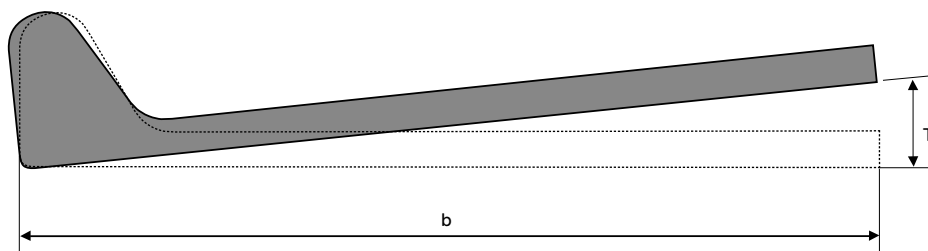
Length	EN10067 Standard	Special 1	Special 2
$L \leq 18\text{m}$	$q \leq 0.0035 \times L$	$q \leq 0.0025 \times L$	$q \leq 0.00125 \times L$

Twist

The permissible degree of twist is given as the following:

Length	Standard	Special 1
All	0.5°/m	0.35°/m

Twist can be difficult to measure and is easiest to measure converted into Torsion by measuring the Torsion **T** in mm and applying the following calculations:



Torsion, T (mm) = width (mm) x sin tol degree, x length (M)

Torsion: $T = b \times \sin 0.35^\circ \times L$ - Special steel 1

Torsion: $T = b \times \sin 0.5^\circ \times L$ - Standard steel

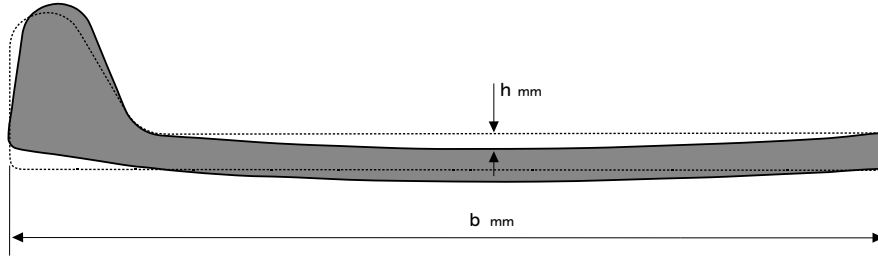
Length, L	6m		10m		12m		15m		18m	
Permitted twist	0.35°	0.5°	0.35°	0.5°	0.35°	0.5°	0.35°	0.5°	0.35°	0.5°
Width, b (mm)	Torsion, T (mm)									
160	5.86	8.38	9.77	13.96	11.73	16.75	14.66	20.94	17.59	25.13
180	6.60	9.42	11.00	15.71	13.19	18.85	16.49	23.56	19.79	28.27
200	7.33	10.47	12.22	17.45	14.66	20.94	18.33	26.18	21.99	31.42
220	8.06	11.52	13.44	19.20	16.13	23.04	20.16	28.80	24.19	34.56
240	8.80	12.57	14.66	20.94	17.59	25.13	21.99	31.42	26.39	37.70
260	9.53	13.61	15.88	22.69	19.06	27.23	23.82	34.03	28.59	40.84
280	10.26	14.66	17.10	24.43	20.52	29.32	25.66	36.65	30.79	43.98
300	11.00	15.71	18.33	26.18	21.99	31.42	27.49	39.27	32.99	47.12
320	11.73	16.75	19.55	27.92	23.46	33.51	29.32	41.89	35.19	50.26
340	12.46	17.80	20.77	29.67	24.92	35.60	31.15	44.51	37.38	53.41
370	13.56	19.37	22.60	32.29	27.12	38.75	33.90	48.43	40.68	58.12
400	14.66	20.94	24.43	34.91	29.32	41.89	36.65	52.36	43.98	62.83
430	15.76	22.51	26.27	37.52	31.52	45.03	39.40	56.29	47.28	67.54

1.1 BULB FLATS

Flatness

The plate flatness tolerance **h** is 0.3% of the bulb flat width **b** and is measured as shown below.

Plate flatness tolerance: $h \leq 0.003 \times b$

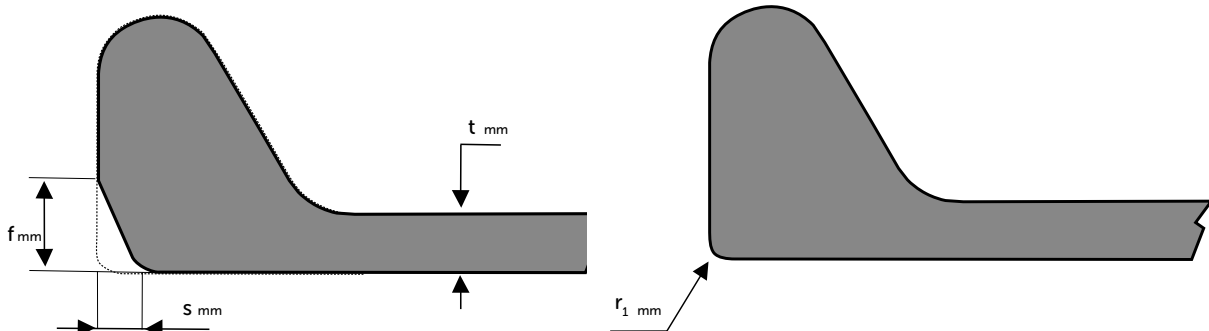


The bulb flatness tolerance of the heel is **n** measured as shown below with a 2mm maximum.

Bulb flatness tolerance: $n \leq 2.0 \text{ mm}$



Shape



The dimensions **s** and **f** are measured as illustrated above.

The dimension **r₁** is measured as illustrated above.

Bulb head corner tolerances **s**

Thickness	Tolerance
$t \leq 9 \text{ mm}$	$s \leq 2.0 \text{ mm}$
$9 < t \leq 13 \text{ mm}$	$s \leq 3.0 \text{ mm}$
$t > 13 \text{ mm}$	$s \leq 4.0 \text{ mm}$

Bulb head corner tolerances **f**

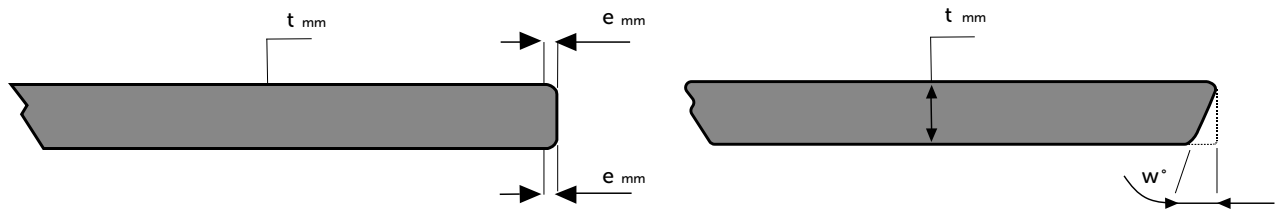
Thickness	Tolerance
$t > 7 \text{ mm}$	$f \leq 0.75 S$

Bulb head corner tolerances radius **r₁**

Radius of curvature of corners
r₁ for thickness

Thickness	$r_1 \leq$
$5 < t \leq 9$	2.0mm
$9 \leq t < 13$	3.0mm
$13 \leq t \leq 20$	4.0mm

1.1 BULB FLATS



The dimension **e** is measured as illustrated above.

The dimension **w** is measured as illustrated above.

Web edge tolerances **e**

Thickness	EN10067 - Standard
$t \leq 9 \text{ mm}$	$e \leq 2.0 \text{ mm}$
$9 < t \leq 13 \text{ mm}$	$e \leq 3.0 \text{ mm}$
$t > 13 \text{ mm}$	$e \leq 4.0 \text{ mm}$

Tighter tolerances may be available on request through grinding of the web edge.

Web edge tolerances angle **w**

Thickness	Tolerance
$t \leq 9 \text{ mm}$	$w \leq 4^\circ$
$9 < t \leq 13 \text{ mm}$	$w \leq 4^\circ$
$t > 13 \text{ mm}$	$w \leq 4^\circ$

Tighter tolerance on web edge tolerance **e** and angle **w** may be available on request through offline grinding of the web edge.

Surface condition

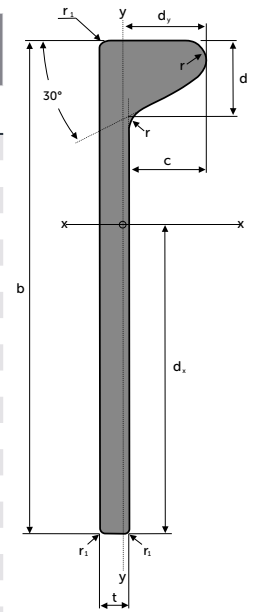
The surface requirements and repair conditions for shipbuilding profiles are in accordance with EN10163-3:2004, subclass 3, class C. Maximum permissible depth of discontinuities and grinding allowance below minimum specified thickness are given in the table below:

Nominal thickness of the Product, t	Maximum permissible depth of discontinuities (mm)
$3 \leq t < 6$	20% of t
$6 \leq t < 20$	1.2
$20 \leq t < 40$	1.7

1.1 BULB FLATS

Dimensions and properties

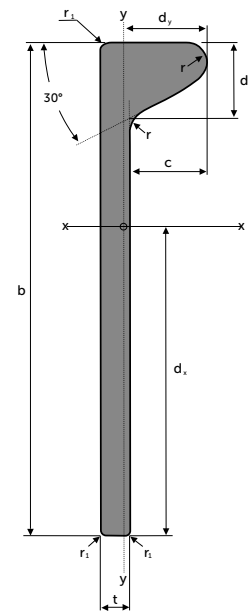
Section description						Mass per metre	Area of section	Surface area per metre	Distance to centre of gravity	
	b mm	t mm	c mm	d mm	r mm	G Kg/m	A cm ²	U m ² /m	dx mm	dy mm
160x7	160	7.0	22.0	22.2	6.0	11.46	14.58	0.365	96.7	6.5
160x8	160	8.0	22.0	22.2	6.0	12.72	16.18	0.367	95.1	6.8
160x9	160	9.0	22.0	22.2	6.0	13.97	17.78	0.370	93.7	7.1
160x10	160	10.0	22.0	22.2	6.0	15.30	19.34	0.371	92.6	7.5
160x11	160	11.0	22.0	22.2	6.0	16.49	20.94	0.373	91.7	7.9
160x11.5	160	11.5	22.0	22.2	6.0	17.30	21.74	0.374	91.3	8.1
180x8	180	8.0	25.0	25.5	7.0	14.80	18.83	0.412	109.0	7.4
180x9	180	9.0	25.0	25.5	7.0	16.22	20.63	0.414	107.4	7.7
180x10	180	10.0	25.0	25.5	7.0	17.63	22.40	0.416	106.0	8.1
180x11	180	11.0	25.0	25.5	7.0	19.04	24.20	0.418	104.8	8.4
180x11.5	180	11.5	25.0	25.5	7.0	19.70	25.10	0.419	104.3	8.6
200x8.5	200	8.5	28.0	28.8	8.0	17.80	22.63	0.458	122.2	8.2
200x9	200	9.0	28.0	28.8	8.0	18.57	23.63	0.459	121.3	8.4
200x10	200	10.0	28.0	28.8	8.0	20.14	25.60	0.460	119.7	8.7
200x11	200	11.0	28.0	28.8	8.0	21.71	27.60	0.463	118.3	9.0
200x11.5	200	11.5	28.0	28.8	8.0	22.50	28.60	0.464	117.6	9.2
200x12	200	12.0	28.0	28.8	8.0	23.28	29.60	0.465	117.0	9.4
220x9	220	9.0	31.0	32.1	9.0	21.00	26.78	0.504	135.5	9.1
220x10	220	10.0	31.0	32.1	9.0	22.77	28.94	0.505	133.7	9.3
220x11	220	11.0	31.0	32.1	9.0	24.50	31.14	0.507	132.0	9.7
220x11.5	220	11.5	31.0	32.1	9.0	25.30	32.24	0.509	131.2	9.8
220x12	220	12.0	31.0	32.1	9.0	26.22	33.34	0.510	130.5	10.0
230x11	230	11.0	32.5	33.75	9.5	25.06	32.97	0.530	138.9	10.0
240x9.5	240	9.5	34.0	35.4	10.0	24.40	31.23	0.549	148.9	9.9
240x10	240	10.0	34.0	35.4	10.0	25.50	32.43	0.550	147.9	10.0
240x10.5	240	10.5	34.0	35.4	10.0	26.40	33.63	0.551	146.9	10.2
240x11	240	11.0	34.0	35.4	10.0	27.39	34.83	0.552	145.9	10.3
240x11.5	240	11.5	34.0	35.4	10.0	28.30	36.03	0.554	145.1	10.5
240x12	240	12.0	34.0	35.4	10.0	29.27	37.23	0.555	144.3	10.6
260x10	260	10.0	37.0	38.7	11.0	28.35	36.05	0.595	162.3	10.7
260x11	260	11.0	37.0	38.7	11.0	30.39	38.65	0.597	160.1	11.0
260x12	260	12.0	37.0	38.7	11.0	32.43	41.25	0.600	158.2	11.3
260x13	260	13.0	37.0	38.7	11.0	34.40	43.85	0.602	156.5	11.6
280x10.5	280	10.5	40.0	42.0	12.0	32.40	41.22	0.641	175.7	11.6
280x11	280	11.0	40.0	42.0	12.0	33.50	42.62	0.642	174.5	11.7
280x12	280	12.0	40.0	42.0	12.0	35.70	45.42	0.645	172.4	11.9
280x13	280	13.0	40.0	42.0	12.0	37.90	48.22	0.647	170.5	12.2
300x11	300	11.0	43.0	45.3	13.0	36.70	46.73	0.687	189.1	12.4
300x12	300	12.0	43.0	45.3	13.0	39.09	49.73	0.690	186.7	12.7
300x13	300	13.0	43.0	45.3	13.0	41.44	52.73	0.692	184.6	12.9
320x11.5	320	11.5	46.0	48.6	14.0	41.20	52.59	0.733	202.5	13.3
320x12	320	12.0	46.0	48.6	14.0	42.60	54.19	0.735	201.3	13.4
320x12.5	320	12.5	46.0	48.6	14.0	43.80	55.79	0.736	200.1	13.5
320x13	320	13.0	46.0	48.6	14.0	45.09	57.39	0.737	199.0	13.6
320x13.5	320	13.5	46.0	48.6	14.0	46.30	58.94	0.737	198.0	13.7
320x14	320	14.0	46.0	48.6	14.0	47.60	60.54	0.738	197.0	13.9
340x12	340	12.0	49.0	52.0	15.0	46.20	58.78	0.780	216.0	14.1
340x12.5	340	12.5	49.0	52.0	15.0	47.50	60.48	0.781	214.7	14.2
340x13	340	13.0	49.0	52.0	15.0	48.86	62.18	0.782	213.5	14.3
340x14	340	14.0	49.0	52.0	15.0	51.50	65.54	0.784	211.3	14.6
340x15	340	15.0	49.0	52.0	15.0	54.20	68.94	0.786	209.2	14.8
370x12.5	370	12.5	53.5	56.9	16.5	53.10	67.79	0.848	236.9	15.4
370x13	370	13.0	53.5	56.9	16.5	54.70	69.64	0.850	235.5	15.5
370x14	370	14.0	53.5	56.9	16.5	57.60	73.30	0.851	233.0	15.7
370x15	370	15.0	53.5	56.9	16.5	60.50	77.00	0.854	230.7	15.9
370x16	370	16.0	53.5	56.9	16.5	63.50	80.70	0.857	228.6	16.1
400x13	400	13.0	58.0	61.9	18.0	60.80	77.43	0.918	257.9	16.6
400x14	400	14.0	58.0	61.9	18.0	63.96	81.38	0.919	255.1	16.8
400x15	400	15.0	58.0	61.9	18.0	67.10	85.38	0.922	252.5	17.0
400x16	400	16.0	58.0	61.9	18.0	70.20	89.38	0.925	250.2	17.2
430x14	430	14.0	62.5	66.8	19.5	70.60	89.78	0.987	277.5	18.0
430x15	430	15.0	62.5	66.8	19.5	73.90	94.08	0.990	274.6	18.1
430x17	430	17.0	62.5	66.8	19.5	80.70	102.68	0.995	269.6	18.5
430x18	430	18.0	62.5	66.8	19.5	83.90	106.98	0.998	267.4	18.8
430x19	430	19.0	62.5	66.8	19.5	87.40	111.28	1.001	265.4	19.0
430x20	430	20.0	62.5	66.8	19.5	90.80	115.58	1.004	263.5	19.3



1.1 BULB FLATS

Dimensions and properties (continued)

Section description	Second moment of inertia		Elastic modulus		Radius of gyration		Warping constant	Torsional constant
	I_x cm ⁴	I_y cm ⁴	Z_x cm ³	Z_y cm ³	r_x cm	r_y cm	Z_y cm ⁶ /10 ³	J cm ⁴
160x7	371.10	5.85	38.4	9.0	5.05	0.63	1.11	3.65
160x8	409.27	6.54	43.0	9.7	5.03	0.64	1.15	4.57
160x9	446.70	7.31	47.7	10.3	5.01	0.64	1.19	5.73
160x10	481.31	8.15	52.0	10.9	4.99	0.65	1.22	7.12
160x11	517.81	9.09	56.5	11.5	4.97	0.66	1.26	8.86
160x11.5	535.93	9.60	58.7	11.9	4.96	0.66	1.29	9.85
180x8	606.55	9.89	55.6	13.3	5.67	0.72	2.41	6.24
180x9	661.09	10.92	61.6	14.1	5.66	0.73	2.47	7.57
180x10	711.72	12.03	67.1	14.9	5.64	0.73	2.52	9.15
180x11	764.60	13.25	72.9	15.7	5.62	0.74	2.60	11.13
180x11.5	790.81	13.90	75.8	16.1	5.61	0.74	2.64	12.26
200x8.5	901.07	15.06	73.7	18.3	6.31	0.82	4.71	9.20
200x9	939.14	15.75	77.4	18.8	6.30	0.82	4.76	10.00
200x10	1010.47	17.18	84.4	19.8	6.28	0.82	4.83	11.78
200x11	1084.33	18.75	91.7	20.8	6.27	0.82	4.95	14.01
200x11.5	1120.89	19.57	95.3	21.3	6.26	0.83	5.02	15.28
200x12	1157.23	20.43	98.9	21.8	6.25	0.83	5.09	16.65
220x9	1290.48	22.01	95.2	24.3	6.94	0.91	8.61	13.17
220x10	1387.89	23.86	103.8	25.5	6.92	0.91	8.72	15.16
220x11	1488.07	25.83	112.7	26.8	6.91	0.91	8.90	17.65
220x11.5	1537.57	26.87	117.2	27.4	6.91	0.91	8.99	19.06
220x12	1586.73	27.94	121.6	28.0	6.90	0.92	9.10	20.60
230x11	1724.98	30.05	124.2	30.1	7.23	0.95	11.69	19.81
240x9.5	1787.40	31.12	120.0	31.4	7.57	1.00	14.83	18.25
240x10	1854.67	32.30	125.4	32.2	7.56	1.00	14.94	19.46
240x10.5	1921.25	33.52	130.8	33.0	7.56	1.00	15.06	20.78
240x11	1987.20	34.78	136.2	33.8	7.55	1.00	15.19	22.22
240x11.5	2052.60	36.06	141.5	34.5	7.55	1.00	15.33	23.79
240x12	2117.50	37.39	146.8	35.2	7.54	1.00	15.48	25.49
260x10	2421.72	42.80	149.2	39.9	8.20	1.09	24.54	24.85
260x11	2593.45	45.86	162.0	41.8	8.19	1.09	24.87	27.91
260x12	2762.00	49.07	174.6	43.6	8.18	1.09	25.25	31.50
260x13	2927.94	52.45	187.0	45.3	8.17	1.09	25.69	35.69
280x10.5	3210.10	57.50	182.7	49.7	8.82	1.18	39.05	33.16
280x11	3318.79	59.39	190.2	50.8	8.82	1.18	39.27	34.90
280x12	3532.99	63.29	205.0	53.0	8.82	1.18	39.77	38.84
280x13	3743.56	67.37	219.6	55.1	8.81	1.18	40.34	43.42
300x11	4175.43	75.68	220.8	60.9	9.45	1.27	60.10	43.42
300x12	4443.49	80.39	238.0	63.5	9.45	1.27	60.72	47.73
300x13	4706.64	85.27	254.9	66.1	9.45	1.27	61.45	52.71
320x11.5	5342.16	97.86	263.8	73.7	10.08	1.36	89.86	55.95
320x12	5506.76	100.69	273.6	75.3	10.08	1.36	90.25	58.38
320x12.5	5669.75	103.58	283.4	76.8	10.08	1.36	90.68	60.99
320x13	5831.26	106.51	293.1	78.3	10.08	1.36	91.15	63.79
320x13.5	5977.59	109.44	301.9	79.7	10.07	1.36	91.35	66.51
320x14	6136.58	112.48	311.5	81.1	10.07	1.36	91.89	69.71
340x12	6736.30	124.57	311.9	88.2	10.70	1.46	131.02	71.06
340x12.5	6934.97	127.98	323.1	89.9	10.71	1.45	131.53	73.88
340x13	7131.73	131.44	334.1	91.7	10.71	1.45	132.09	76.91
340x14	7504.42	138.47	355.2	95.0	10.70	1.45	132.97	83.29
340x15	7886.99	145.80	377.0	98.3	10.70	1.45	134.41	90.88
370x12.5	9184.55	172.23	387.8	112.1	11.64	1.59	221.07	97.62
370x13	9444.05	176.62	401.0	114.2	11.64	1.59	221.76	101.01
370x14	9936.79	185.49	426.5	118.5	11.64	1.59	222.83	108.11
370x15	10440.07	194.68	452.5	122.6	11.64	1.59	224.72	116.55
370x16	10935.90	204.14	478.4	126.6	11.64	1.59	226.88	126.04
400x13	12234.74	232.34	474.5	139.7	12.57	1.73	357.80	131.25
400x14	12872.91	243.41	504.7	145.0	12.58	1.73	358.96	139.13
400x15	13521.89	254.79	535.5	150.1	12.58	1.73	361.32	148.48
400x16	14160.53	266.45	566.1	154.9	12.59	1.73	364.08	158.97
430x14	16366.61	313.68	589.9	174.7	13.50	1.87	559.02	177.41
430x15	17189.22	327.65	626.0	180.8	13.52	1.87	561.76	187.72
430x17	18794.22	356.44	697.1	192.5	13.53	1.86	569.01	212.09
430x18	19579.84	371.35	732.2	197.9	13.53	1.86	573.41	226.30
430x19	20355.95	386.65	767.0	203.4	13.52	1.86	578.26	241.98
430x20	21123.62	402.40	801.6	208.6	13.52	1.87	583.53	259.20



1.2 CONDUMAX® CATHODE BARS



1.2 CONDUMAX® CATHODE BARS

Helping our customers improve their energy performance

We work with primary aluminium smelters to offer high quality cathode collector bars for use in aluminium production.

Condumax cathode bars have a unique chemical composition of 0.01% carbon, significantly lower than the 0.04-0.06% carbon content present in other commercially available cathode collector bars.

Our quality steelmaking practices ensure tight control of chemistry giving consistency of carbon and other trace elements between bars for predictable performance

Our unique chemistry offers significant benefits:

- Up to 40% lower resistivity than mild steel cathode bars
- 10% lower measured electrical resistivity in production trial vs. competitors' ultra-low resistivity cathode bars
- Longer service life and lower energy use in service
- 60 tonne reduction of CO₂ emissions per pot over the lifetime of the pot

Certification is in accordance with EN 10204 Type 3.1 analysis only.

Condumax steel grade

The tables below indicate the chemical analysis units and mechanical properties for British Steel's Condumax grade.

Chemical composition

Maximum	C (%)	Si (%)	Mn (%)	S (%)	P (%)	Cr (%)	Mo (%)	Nb (%)	V (%)	Ni (%)	B (%)	Al (%)
Condumax	0.01	0.01	0.20	0.015	0.02	0.05	0.02	0.01	0.015	0.07	0.0008	0.02

1.2 CONDUMAX CATHODE BARS

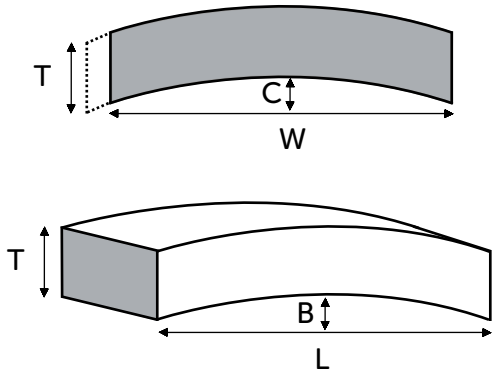
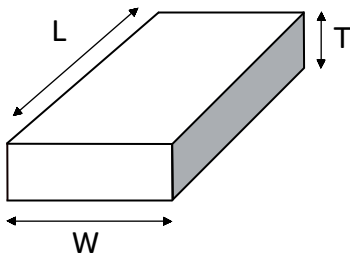
Dimensions and properties

Size range and production tolerances

Our standard product sizes are in the following range:

Width (W)	122 to 279mm
Thickness (T)	90 to 160mm
Length (L)	1.5 to 10m

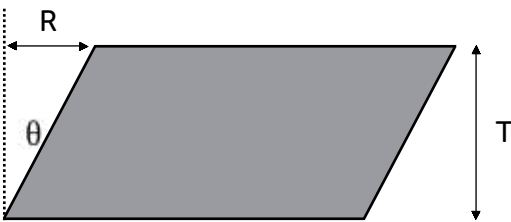
Bow (B)	2mm/m max
Camber (C)	2mm/m max
Twist	1mm/m max



Production tolerances

Surface:	EN10163-3: 2004, Class C, Subclass 3
Quantity tolerance:	±10% based on the quantity of bars
Length tolerance:	-0 / +10 mm
Width tolerance:	+3 / -2 mm
Thickness tolerance:	+3 / -2 mm

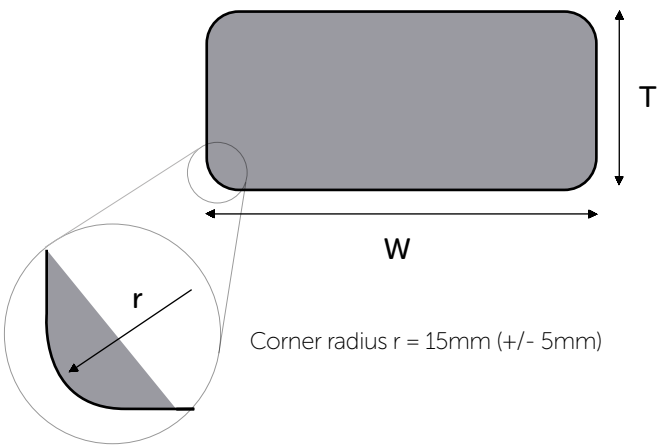
Rhomboidity



Squareness angle $\theta = 1.5^\circ$ maximum
Rhomboidity $R = T \times \tan \theta$

T (mm)	Maximum R (mm)
<100	3
100 <150	4
150 <200	5
200 <250	6
250 <300	7

Corner radius



Corner radius $r = 15\text{mm} (+/- 5\text{mm})$

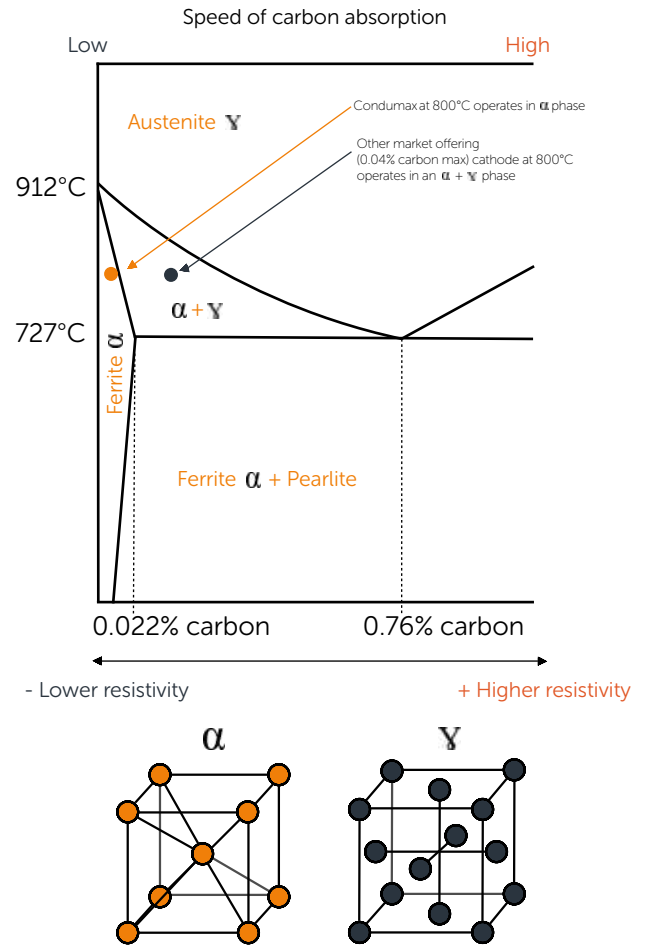
Alternative tolerances available upon request

1.2 CONDUMAX CATHODE BARS

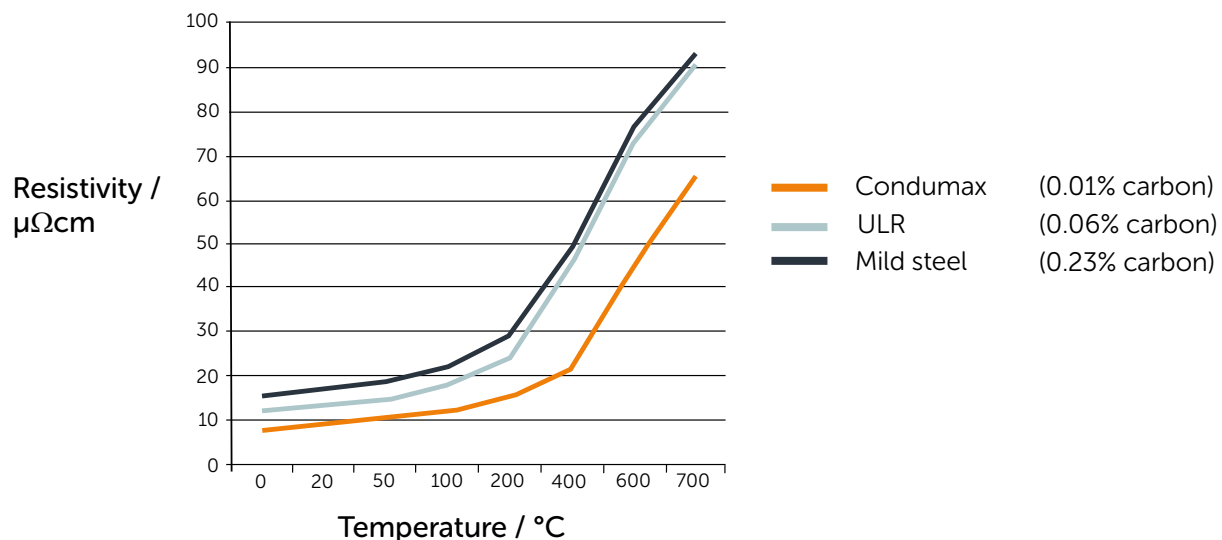
Metallurgy

- British Steel's world-leading Basic Oxygen Steelmaking facilities are capable of controlling carbon and other trace elements to unrivalled levels
- Condumax (0.01% carbon cathode) operates in the ferrite α phase of the iron-carbon phase at typical operating temperatures $\sim 800^\circ\text{C}$
- Standard 0.04-0.06% low carbon cathodes operate in the ferrite / austenite 2 phase region
- Ferrite is more resistant to carbon diffusion from the graphite
- Austenite can readily hold up to 2% more carbon in the lattice than ferrite

Our Condumax will remain at the optimum ferrite phase for longer at higher temperatures, reducing carbon intake and ensuring lower resistivity for longer life.



Electrical resistivity for different carbon levels



1.3 CRANE RAIL



1.3 CRANE RAIL

For use in overhead gantry and floor-mounted crane applications

Our crane rails are available in diverse strengths and sizes; we have a strong track record of supplying major projects worldwide, working alongside leading crane rail installers

What makes us different is our approach to business. The key benefits of choosing our crane rail products are:

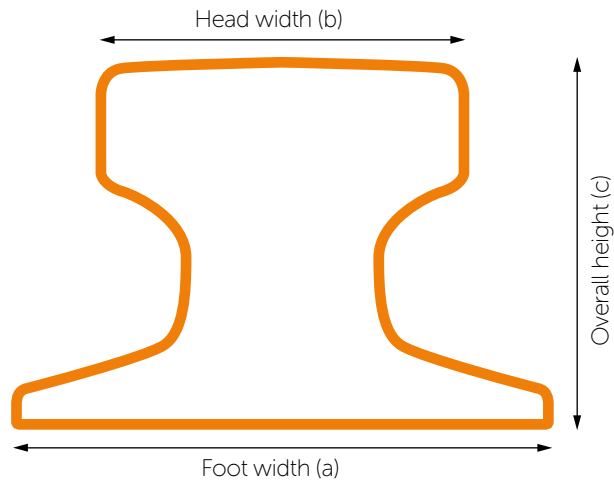
- We build collaborative relationships - offering guidance and solutions to our customers to the benefit of their business and products
- Our steel making expertise provides the capability to offer products that can increase the crane rail's load-bearing capability and extend its life span through improved wear performance
- With a regular rolling programme of each rail size coupled with our dedicated crane rail stockholding facilities, we offer customers all over the world just-in-time delivery

As well as a full range of European crane rails, we can also produce American and special crane rails with inspection certificates issued in full accordance with EN 10204 type 3.1



1.3 CRANE RAIL

Crane rail cross section



Product range

The following crane rail profiles are available and can be supplied from stock or rolled to order.

Section	Standard	Mass per metre (kg/m)	Area of cross section (cm ²)	Foot width (a) mm	Head width (b) mm	Overall height (c) mm
A65	DIN 536-1	43.1	54.9	175	65	75
A75	DIN 536-1	56.2	71.6	200	75	85
A100	DIN 536-1	74.3	94.7	200	100	95
A120	DIN 536-1	100.33	127.4	220	120	105
A150	DIN 536-1	150.3	191.4	220	150	150
CR87*	British Steel spec	86.8	110.5	152.4	101.6	152.4
CR89	British Steel spec	89.8	114.4	178	102	114
CR125	British Steel spec	125.15	159.6	140	140	152

*Also referred to as MRS87a

We also have scope to produce the American range rails including CR104, CR105, CR135, CR171 and CR175 and special rails MRS73, MRS86, MRS125, MRS192, MRS221, AS86, CR73, CR100, CRS140, JKL55, SP100 & SP120. Please contact us to discuss your requirements.

1.3 CRANE RAIL

Grade capability by size

	DIN 536-1		BS	
	690	880	90V	1100V
A65				
A75				
A100				
A120				
A150				
Crane rail 87				
Crane rail 89				
Crane rail 125				

Ladle analysis

Grade	Standard		C	Si	Mn	P	S	V	Cr
690	DIN 536-1	Min	0.40	-	0.80	-	-	-	-
		Max	0.60	0.35	1.20	0.045	0.045	-	-
880	DIN 536-1	Min	0.60	-	0.80	-	-	-	-
		Max	0.80	0.50	1.30	0.045	0.045	-	-
90V	British Steel spec	Min	0.50	-	0.80	-	-	0.06	-
		Max	0.70	0.50	1.40	0.030	0.030	0.20	-
110CrV	British Steel spec	Min	0.65	0.15	0.90	-	-	0.05	0.20
		Max	0.85	0.30	1.30	0.030	0.030	0.15	0.80

Mechanical testing

Tensile properties are determined in accordance with EN 10002-1. The minimum strength requirements are as follows:

Grade	Minimum yield (MPa)	Minimum UTS (MPa)	Hardness (HBN)
690	355	690	204
880	440	880	260
90V	540	880	260
110CrV	600	1100	320

1.4 CUTTING EDGE



1.4 CUTTING EDGE

For wear part applications

We produce a range of high-quality cutting edge profiles providing additional wear resistance and extended life for excavator bucket applications.

Customers can choose from an extensive range of 'open roll' profiles, or specify unique designs, where rolls and tooling will be reserved for individual customer use. We can produce many profile sizes and designs, including single bevels.

Our broad range of standard dimensions is produced on a dependable rolling schedule meaning all sizes are regularly available.

Our standard boron steel range:

- Offers high strength and toughness after heat treatment
- Can be used for 'weld in' applications

Our standard high carbon range:

- Offers lower tensile strength and toughness compared with the boron range
- Particularly suitable for motor grader applications



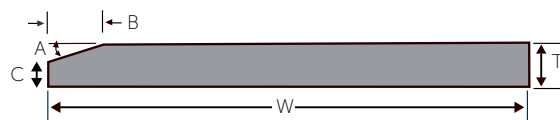
1.4 CUTTING EDGE

Product range

We offer a wide variety of single and double bevel flats as well as arrowhead and grader bar profiles suitable for a broad range of bucket edge/blade applications.

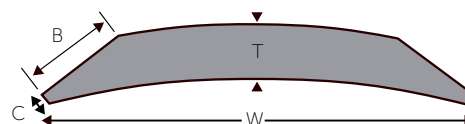
Single bevel flats

Profile	Width mm (W)	Gauge mm (T)	Weight Kg/m	Bevel angle (A)	Bevel width mm (B)	Tip height mm (C)
SB244-25	244	25	44.46	22.6	45.60	6
SB244-30	244	30	54.07	22.6	45.60	11
SB244-32	244	32	57.91	22.6	45.60	13
SB281	281	32	65.00	22.6	57.60	8
SB299	299	40	85.25	22.6	72.00	10
SB304	304	44.45	97.40	22.6	69.10	15.7



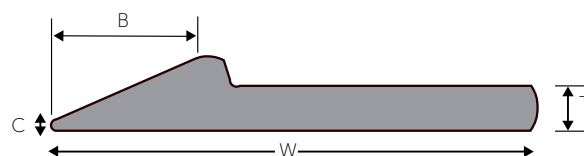
Grader bars (carbon and boron steel)

Profile	Width mm (W)	Gauge mm (T)	Weight Kg/m	Bevel width mm (B)	Tip height mm (C)
GB152-12	152.4	12.7	13.26	33.3	2.5
GB152-13	152.4	13.3	13.98	33.3	3.1
GB152-15	152.4	15.9	17.09	33.3	5.6
GB152-19	152.4	19.1	20.91	33.3	8.8
GB203-15	203.2	15.88	23.17	33.3	2.39
GB203-16	203.2	16.5	24.14	33.3	3.01
GB203-19	203.2	19.05	28.13	33.3	5.56
GB203-25	203.2	25.4	38.05	33.3	11.91



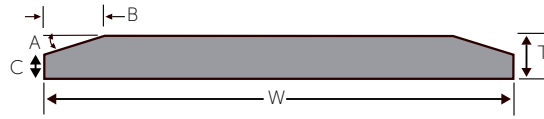
Arrowheads

Profile	Width mm (W)	Gauge mm (T)	Weight Kg/m	Bevel angle (A)	Bevel width mm (B)	Tip height mm (C)
AH203-19	203.2	19.1	31.40	24.3	60.3	4.6
AH203-22	203.2	22.2	36.50	24.3	60.3	7.7
AH203-25	203.2	25.4	41.62	24.3	60.3	10.9
AH203-28	203.2	28.6	46.73	24.3	60.3	14
AH203-31	203.2	31.8	51.84	24.3	60.3	17.2
AH255-28	255	28.5	65.65	25	98.7	11.2
AH255-40	255	40	88.66	25	98.7	22.7



1.4 CUTTING EDGE

Double bevel flats



Profile	Width mm (W)	Gauge mm (T)	Weight Kg/m	Bevel angle (A)	Bevel width mm (B)	Tip height mm (C)
DB203-16	203.2	16	23.79	25	23.60	5
DB203-19	203.2	19	28.53	25	23.60	8
DB203-22	203.2	22	33.28	25	23.60	11
DB203-25	203.2	25	38.02	25	23.60	14
DB203-28	203.2	28.5	43.55	25	23.60	17.5
DB254-19	254	19	35.37	25	27.90	6
DB254-25	254	25	47.25	25	27.90	12
DB254-29	254	29	55.16	25	27.90	16
DB254-32	254	32	61.10	25	27.90	19
DB254-35	254	35	67.04	25	27.90	22
DB254-38	254	38	72.97	25	27.90	25
DB254-41	254	41	78.91	25	27.90	28
DB254-45	254	45	86.83	25	27.90	32
DB279-25	279	25	48.08	22.5	45.90	6
DB279-35	279	35	70.02	22.5	45.90	16
DB305-22	305	22	48.63	22.5	37.40	6.5
DB305-25	305	25	55.76	22.5	37.40	9.5
DB305-28	305	28.5	64.09	22.5	37.40	13
DB305-30	305	30	67.66	22.5	37.40	14.5
DB305-32	305	32	72.42	22.5	37.40	16.5
DB305-35	305	35	79.56	22.5	37.40	19.5
DB305-38	305	38	86.69	22.5	37.40	22.5
DB305-41	305	41	93.83	22.5	37.40	25.5
DB305-44	305	44.5	102.15	22.5	37.40	29
DB330-19	330	19	45.73	22.5	32.60	5.5
DB330-22	330	22	53.45	22.5	32.60	8.5
DB330-25	330	25	61.18	22.5	32.60	11.5
DB330-28	330	28.5	70.19	22.5	32.60	15
DB330-30	330	30	74.06	22.5	32.60	16.5
DB330-32	330	32	79.02	22.5	32.60	18.5

Profile	Width mm (W)	Gauge mm (T)	Weight Kg/m	Bevel angle (A)	Bevel width mm (B)	Tip height mm (C)
DB330-35	330	35	86.93	22.5	32.60	21.5
DB330-38	330	38	94.65	22.5	32.60	24.5
DB330-40	330	40	99.80	22.5	32.60	26.5
DB330-41	330	41	102.38	22.5	32.60	27.5
DB330-45	330	45	112.68	22.5	32.60	31.5
DB330-50	330	50	125.55	22.5	32.60	36.5
DB330-60	330	60	151.30	22.5	32.60	46.5
DB359-30	359	30	74.94	22.5	55.50	7
DB359-32	359	32	80.56	22.5	55.50	9
DB359-35	359	35	88.99	22.5	55.50	12
DB359-40	359	40	103.04	22.5	55.50	17
DB359-45	359	45	117.10	22.5	55.50	22
DB359-50	359	50	131.20	22.5	55.50	27
DB406-20	406	20	58.71	22.5	39.80	3.5
DB406-22	406	22	65.05	22.5	39.80	5.5
DB406-25	406	25	74.56	22.5	39.80	8.5
DB406-28	406	28.5	85.66	22.5	39.80	12
DB406-30	406	30	90.40	22.5	39.80	13.5
DB406-32	406	32	96.75	22.5	39.80	15.5
DB406-35	406	35	106.26	22.5	39.80	18.5
DB406-38	406	38	115.77	22.5	39.80	21.5
DB406-40	406	40	122.12	22.5	39.80	23.5
DB406-41	406	41	125.29	22.5	39.80	24.5
DB406-44	406	44.45	136.38	22.5	39.80	27.95
DB406-45	406	45	137.97	22.5	39.80	28.5
DB406-50	406	50	153.82	22.5	39.80	33.5
DB406-60	406	60	185.52	22.5	39.80	43.5
DB480-35	480	35	125.76	22.5	42.70	17.3
DB480-40	480	40	144.62	22.5	42.70	22.3
DB480-45	480	45	163.48	22.5	42.70	27.3

Notes:

Please talk to us about the possibility of supplying alternative gauges and bevel angles to those shown. We can produce a range of thicknesses for the same bevel width.

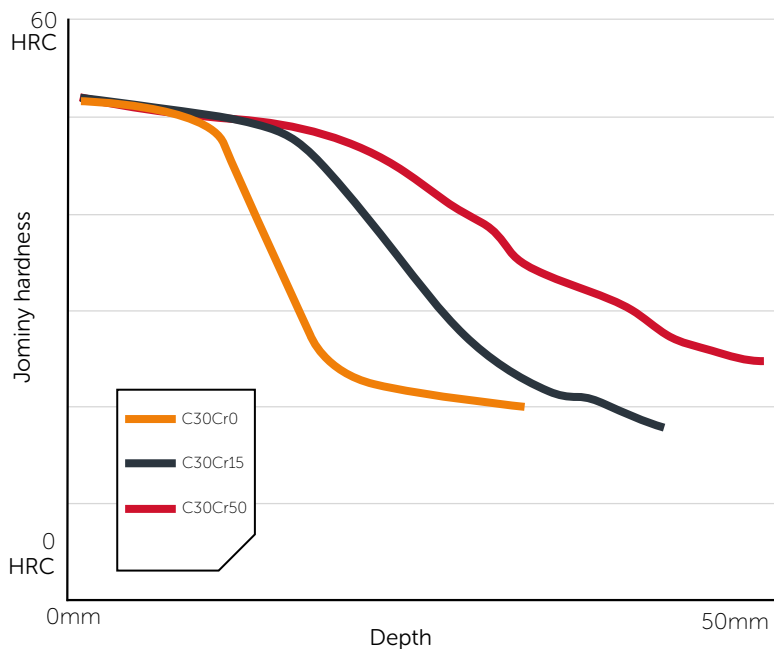
1.4 CUTTING EDGE

Boron steel

We offer 3 boron-treated steels with a nominal carbon content of 0.3%. Increasing levels of alloy content are available to allow customers to match section thickness and heat-treatment quench severity with hardenability. This ensures a suitable core hardness is achieved in the finished blade.

	Steel specification	Carbon (%)	Chrome (%)
Standard carbon	C30Cr0	0.30	-
	C30Cr15	0.30	0.15
	C30Cr50	0.30	0.50

Hardenability curves - Boron steel (standard carbon content)



Steel for arrowhead flats

We recommend use of the following steel grades. They are suitable for 'weld in' bucket edges as well as bolt-on applications (appropriate weld procedure required).

Section	Steel specification	Carbon (%)	Chrome (%)
AH203	C25Cr40	0.25	0.40
AH255	C20Cr50	0.20	0.50

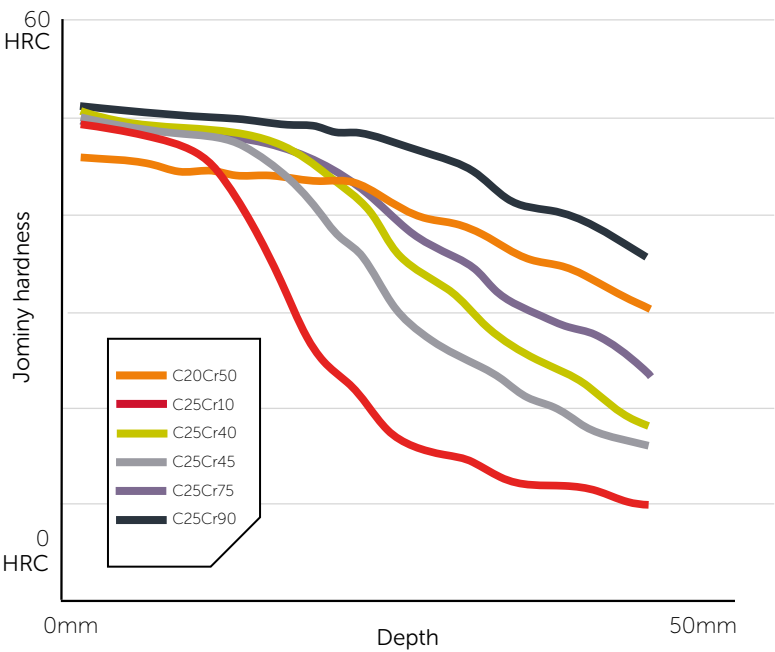
1.4 CUTTING EDGE

Boron steels with reduced carbon

A range of boron-treated steels is available with a lower nominal carbon content of between 0.20% and 0.25%. Heat-treatment of the blade improves toughness levels without significant loss of hardness. The optimum application of our standard and lower carbon range of boron steels depends both on the section thickness and on heat-treatment, particularly with respect to the quench severity.

	Steel specification	Carbon (%)	Chrome (%)
Low carbon	C20Cr50	0.20	0.50
	C25Cr10	0.25	0.10
	C25Cr40	0.25	0.40
	C25Cr45	0.25	0.45
	C25Cr75	0.25	0.75
	C25Cr90	0.25	0.90

Hardenability curves - Boron steel (reduced carbon content)



1.5 FORKLIFT PROFILES



1.5 FORKLIFT PROFILES

Mast sections and fork arm flats for material handling equipment

We are a world-leading supplier with over 40 years' experience in producing forklift truck components.

Our extensive range of products is used in everything from the smallest warehouse truck to the largest container handler and includes:

- Mast profiles – including U, I, J and offset J profiles
- Carriage (hanger) bar profiles
- Flats for manufacturing fork arms
- Our range includes 'open' roll profiles available to all customers and for mast and carriage bar profiles; unique 'bespoke' profile designs where rolls and tooling are reserved for exclusive customer use

We're focused on achieving exceptional surface quality; a £2m investment programme has enabled British Steel to continue delivering products that satisfy the ever-increasing demands of today's marketplace.



1.5 FORKLIFT PROFILES

Forklift mast profiles

We recognise the mast assembly as crucial to overall truck performance and work closely with our customers to develop the optimum mast shape and steel properties for every truck application.

World beating product capability

We manufacture a wide range of channel, beam, 'J' and 'offset J' and carriage bar sections for mast assembly.

Ongoing investment and continuous improvement in our processes are ensuring excellent shape, dimensional tolerances and surface quality.

Our range of low-carbon, high-strength, low-alloy steels is ideal for mast manufacture.

The open roll profile sizes below are illustrative of the wide range that we can produce (subject to tooling availability).

Channels

Size (mm)	Kg/m
121 x 41	20.9
135 x 53	28.6
157 x 61	35.9
166 x 65	19.8
175 x 66	42.9
201 x 71	52.3
252 x 90	78.5
145 x 48*	27.1



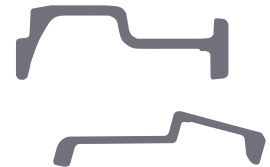
Beams

Size (mm)	Kg/m
98 x 65	19.4
114 x 66	25.3
130 x 81	34.1
140 x 76	33.1
149 x 67	26.7
152 x 83	40.5
175 x 90	51.4
216 x 89	59.1
229 x 127	87.2
101 x 60*	17.8
140 x 70*	30.9
175 x 76*	42.0



Special channels

Size (mm)	Kg/m
145 x 54 x 48	26.7
163 x 61 x 48	29.0
185 x 67 x 54	39.2
226 x 73 x 54	50.6



J & Offset J

Size (mm)	Kg/m
103 x 63 x 38	17.3
121 x 68 x 41	25.2
135 x 90 x 53	34.9
157 x 105 x 61	43.9



Please contact us to discuss your specific requirements

1.5 FORKLIFT PROFILES

Fork arm flats

Standard steel grades

Two standard steel specifications are available. They have different Jominy hardenability in order to ensure, after quenching and tempering, that mechanical properties can be achieved across the full range of thicknesses. Other steel specifications may be available on request.

Fork arm flats dimensional capability

Thickness (mm)	Width (mm)									
	100	120	122	123	150	180	200	230	250	
35	●	●	●	●						
40	●	●	●	●	●					
45	●	●	●	●	●	●	●			
50	●	●	●	●	●	●	●			
55	●	●	●	●	●	●	●			
60	●	●	●	●	●	●	●			
65					●	●	●			
70					●	●	●			
75					●	●	●	●	●	
80						●	●	●	●	
85						●	●	●	●	
90						●	●	●	●	
95							●	●	●	
100							●	●	●	
105								●	●	
110								●	●	
115								●	●	
120								●	●	
125								●	●	
130								●	●	
135								●	●	
140								●	●	
145								●	●	
150										

Key

- Typically supplied in C33Mo5
- Typically supplied in C30Mo17

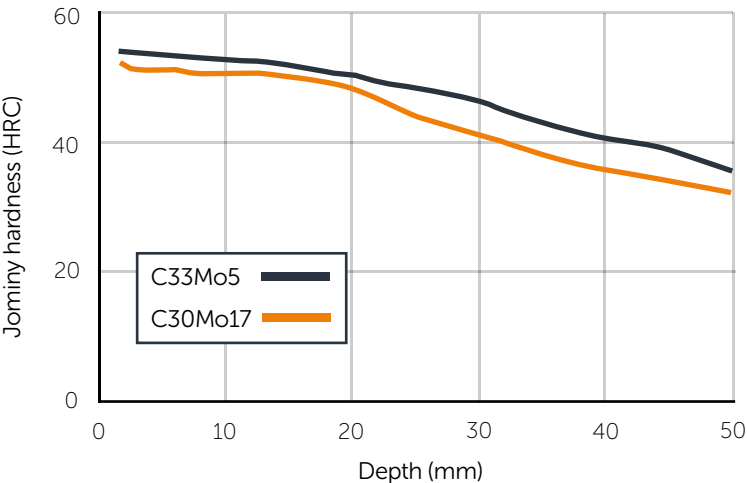
Standard chemistries

	C	Cr	Mn	Mo	B
C33Mo5	0.33	0.5	1.5	0.05	0.002
C30Mo17	0.30	0.5	1.2	0.17	0.002

Typical mechanical properties post quench and temper

Steel Specification	Yield strength	Tensile strength	Charpy at 20°C	Charpy at -20°C
C33Mo5	890	970	>47	>27
C30Mo17	950	1050	>47	>27

Hardenability curves



1.6 TOPHAT



1.6 TOPHAT

Shaft guides for mining applications

Our tophat shaft guides offer a high-quality, cost-effective hoisting system for use in vertical mineshafts. They're designed to give maximum productivity and service life in modern deep mine operations.

We have been working with the manufacturers of mining equipment for many years and understand equipment must be carefully designed and built to meet exacting demands.

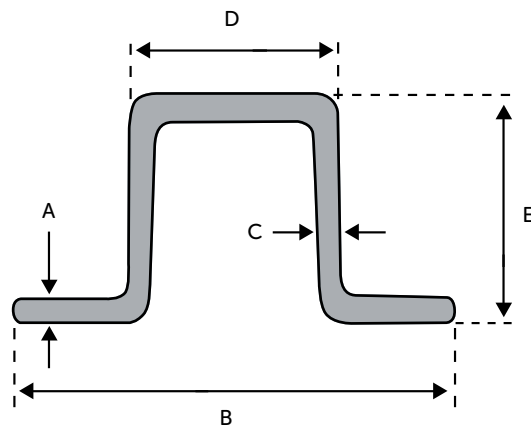
Our unique open section tophat guides offer many benefits including:

- Faster installation and replacement
- Pre-installation of butt strap connections
- Cost-effective installation
- Easier inspection and detection of defects
- 3 x longer life than alternative solutions
- Close-dimensional control and straightness, meaning less swing in the shaft and a smoother lift
- Faster hoisting speeds due to their stiffness and higher resistance to slamming forces



1.6 TOPHAT

Standard dimensions



Size	Weight	Modulus I _{xx} (cm ⁴)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
232 x 98mm*	45.27kg/m	671	16	232	13.4	152	98
305 x 102mm	55.07kg/m	997	12.7	305	15.9	152	102
320 x 150mm	71.39kg/m	2815	13.5	320	18	150	150
340 x 175mm	85.94kg/m	4392	15	340	20	175	175

*Available under licence from Robor, contact us for more information

All 4 sizes are offered with dimensions as follows:

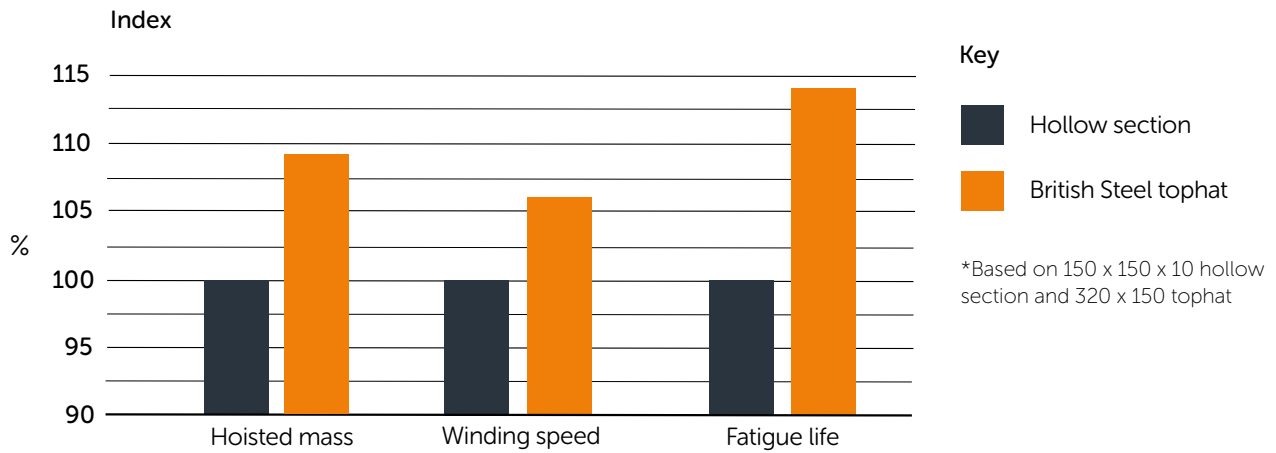
- Straightness 5mm max over 12m length
- Twist 3mm max (typical < 1mm)
- Shaft guides are available in lengths from 6-17m, with a cutting tolerance of +100/-0mm
- Cold sawn lengths are also available to suit individual requirements, with a +0/-2mm cutting tolerance

Standard steel grades:

- EN 10025-2: 2004, S355JR+AR, S355J2+AR
- SANS 50025-2: 2009, S355JR+AR, S355J2+AR
- CSA G40.21-04: 2004, 300W, 350W, 350WT
- AS/NZS 3679.1: Grade 350

1.6 TOPHAT

Relative performance



- The chart shows the superior performance of tophat shaft guides relative to other guide rail sections on 3 different factors
- The analysis is based on the dynamic forces applied to the shaft steelwork in the plane of the guides only
- Graph assumes all guide sections are used with the same bunton spacing (i.e. shaft pocket spacing is already fixed)

1.6 TOPHAT

Technical data

232x98mm (45.27kg/m) – SANS 50025:2 S355JR+AR

		Centroid	Centre of mass
Perimeter	771.917	X:116.165	X:116.165
Surface area	5773.66	Y:54.6141	Y:54.6141
Mass	45.2805	Z:-1.0599e-019	Z:-1.0599e-019

	Moments of inertia	Products of inertia
Centre of mass	X:55768.9	XY:-30.0664
	Y:212574	XZ:1.40654e-020
	Z:4268343	YZ:-5.64846e-018

Principal moments	Principal directions		
X:55768.9	1.000000	0.000912	0.000000
Y:212574	0.000912	1.000000	-0.000000
Z:268343	-0.000000	0.000000	1.000000

Radii of gyration	X	35.0946
	Y	68.5172
	Z	76.892

305x102mm (55.1kg/m) – SANS 50025:2 S355JR+AR

		Centroid	Centre of mass
Perimeter	941.042	X:152.36	X:152.36
Surface Area	7016.53	Y:50.7022	Y:50.7022
Mass	55.0278	Z:-1.62353e-014	Z:-1.62353e-014

	Moments of inertia	Products of inertia
Centre of mass	X:78195.5	XY:82.3751
	Y:343178	XZ:9.9699e-014
	Z:421374	YZ:1.43119e-012

Principal moments	Principal directions		
X:78195.5	1.000000	0.000311	0.000000
Y:343178	-0.000311	1.000000	0.000000
Z:421374	-0.000000	-0.000000	1.000000

Radii of gyration	X	37.6964
	Y	78.9712
	Z	87.507

1.6 TOPHAT

Technical data

320x150mm (71.39kg/m) – SANS 50025:2 S355JR+AR

		Centroid	Centre of mass
Perimeter	1140.91	X:159.968	X:159.968
Surface Area	9046.97	Y:74.9227	Y:74.9227
Mass	70.9517	Z:-4.78417e-014	Z:-4.78417e-014

	Moments of inertia	Products of inertia
Centre of mass	X:220763	XY:136.929
	Y:448707	XZ:-4.44512e-013
	Z:669470	YZ:4.48865e-011

Principal moments	Principal directions		
X:220763	1.000000	0.000601	-0.000000
Y:448707	-0.000601	1.000000	0.000000
Z:669470	0.000000	-0.000000	1.000000

Radii of gyration	X	55.7804
	Y	79.5243
	Z	97.1369

340x175mm (85.94kg/m) – SANS 50025:2 S355JR+AR

		Centroid	Centre of mass
Perimeter	1273.97	X:170.000	X:170.000
Surface Area	1107.68	Y:-89.1562	Y:-89.1562
Mass	85.94	-	-

	Moments of inertia	Products of inertia
Centre of mass	X:46099753.6	XY:0.0000
	Y:83962559.1	-
	-	-

Principal moments	Principal directions		
X:46099753.6	1.000000	0.000000	-
Y:83962559.1	0.000000	1.000000	-
-	-	-	-

Radii of gyration	X	64.4225
	Y	86.9423
	-	-

1.7 TRACKSHOE PROFILES



1.7 TRACKSHOE PROFILES

For enhanced crack-resistance and prolonged shoe life

We supply an extensive range of special profiles for the manufacture of earthmoving equipment components. Our range of 'long bar' profiles for track shoes is the most comprehensive in the world.

We work closely with our customers in the earth moving equipment industry, optimising both steel and design for these demanding applications. Our proven track shoe sections deliver benefits for heavy equipment performance and customer processes.

Major benefits of our track shoe sections and related services include:

- Prolonged shoe life – our low carbon and sulphur steels deliver improved crack resistance – even in harsh operating conditions
- Reliable quality – our ongoing investment in plant – including superior straightening capability – delivers products of reliable quality for fast and efficient processing
- Improved process efficiency – our green track shoe offers excellent pre-heat treatment mechanical properties – so you can be confident of optimising your process efficiency
- Fast response – short lead times and small batch sizes (from as little as 130 tonnes) mean we can respond swiftly to your needs
- Global support – we have vast experience in exporting track shoes. Our well-established logistics chains coupled with our international sales support network, mean you can rely on us to deliver – wherever you are



1.7 TRACKSHOE PROFILES

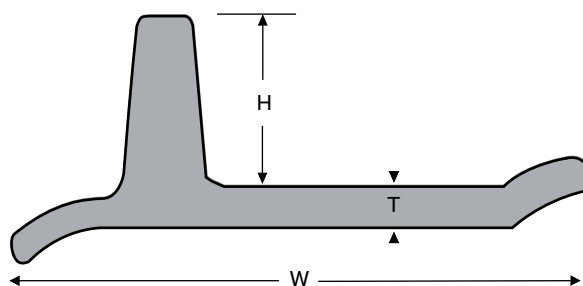
Product range

The track shoe profiles we produce are supplied in customer lengths from 6m to 12m – lengths outside of this range may be available on request. We also offer a variety of different bundling configurations to suit your needs. Profile widths range from 173mm to 369mm. Alternative gauges may be available – please contact us to discuss your requirements.

Single grousers

- Superior ground penetration for bulldozers
- General soil/rocky ground - depending on thickness of profile
- Longer spike = improved traction

Section	W (mm)	H (mm)	T (mm)	Kg/m	Link pitch (mm)
SG179	179	62.7	9.10	19.37	165.9
SG180	180	47.0	9.00	18.06	156.0
SG181	181	49.0	9.50	19.31	159.8
SG193	193	52.3	11.20	22.01	159.0
SG197-23	197	57.2	11.50	23.72	170.0
SG197-25	197	57.2	12.70	25.60	170.0
SG199	199	55.0	12.00	25.19	170.5
SG200	200	47.0	11.00	21.49	171.5
SG232	232	65.0	12.00	31.04	203.2
SG237	237	58.7	13.80	32.50	196.2
SG245	245	71.5	14.70	38.76	203.2
SG248-44	248	71.4	15.00	44.67	210.3
SG248-48	248	71.4	16.67	48.47	210.3
SG249-37	249	66.5	13.50	37.29	215.9
SG249-41	249	66.5	16.00	41.84	215.9
SG250	250	65.0	14.30	40.88	216.0
SG263-57	263	77.8	19.10	57.29	228.6
SG263-70	263	93.0	23.00	70.58	228.6
SG268-50	268	80.0	17.00	50.26	228.6
SG268-59	268	80.0	19.00	59.25	228.6
SG276	276	76.5	17.50	48.30	228.6
SG285-62	285	84.0	19.00	62.60	240.0
SG285-64	285	84.0	20.00	64.59	240.0
SG289	289	79.0	19.00	64.31	250.5
SG292	292	76.0	17.00	54.80	250.5
SG299	299	100.0	23.00	83.71	260.4
SG303	303	89.7	20.60	74.93	260.4
SG304	304	88.0	22.00	77.51	260.4
SG322	322	93.0	23.00	83.81	280.0
SG369	369	102.0	25.00	103.00	317.5

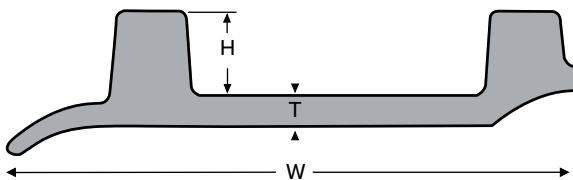


1.7 TRACKSHOE PROFILES

Double grousers

- Good traction for loaders with less damage to ground surface
- Shorter spikes = greater manoeuvrability

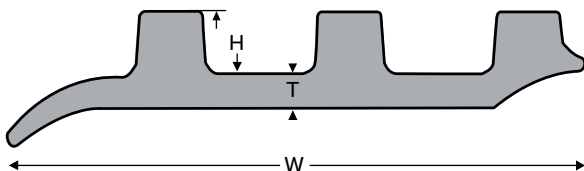
Section	W (mm)	H (mm)	T (mm)	Kg/m	Link pitch (mm)
DG202-26	202	31.0	11.5	26.17	172.5
DG202-28	202	31.0	13.0	28.39	172.5
DG217	217	35.0	13.0	33.04	190.5
DG250	250	37.0	16.5	48.12	216.0
DG252	252	49.0	15.5	50.17	216.0
DG308-71	308	49.5	21.0	71.90	258.5
DG308-80	308	49.5	25.0	80.17	258.5



Triple grousers

- Stable operating platform/improved manoeuvrability for excavators
- Hard and soft ground applications

Section	W (mm)	H (mm)	T (mm)	Kg/m	Link pitch (mm)
TG173	173	19.0	7.9	19.02	150.7
TG187	187	21.4	9.5	22.77	159.0
TG199-24	199	25.0	9.5	24.44	170.0
TG199-25	199	25.0	9.5	24.88	170.7
TG203-30	203	25.3	12.7	30.00	168.0
TG203-35	203	25.3	16.0	35.41	168.0
TG218	218	26.0	10.0	28.91	187.9
TG220-25	220	25.5	8.5	25.67	189.0
TG220-27	220	25.5	9.5	27.37	189.0
TG228-37	228	32.0	12.0	37.81	206.1
TG228-41	228	32.0	14.0	41.36	206.1
TG245-50	245	26.5	20.0	50.75	215.9
TG245-56	245	26.5	22.5	56.37	215.9
TG247	247	36.0	11.0	40.09	216.0
TG248	248	36.0	11.0	40.10	216.0
TG266	266	30.0	30.0	70.18	228.6

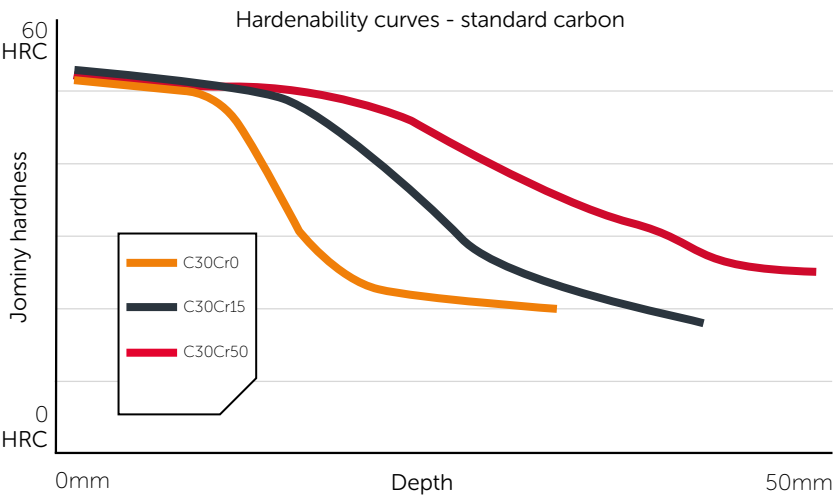


1.7 TRACKSHOE PROFILES

Standard steels

We offer a range of boron-treated steels with a nominal carbon content of 0.3%. Increased levels of alloy content are available to allow customers to match hardenability, section size and heat treatment quench severity. This ensures the most suitable core hardness in the finished track shoe.

	Steel specification	Carbon (%)	Chrome (%)
Standard carbon	C30Cr0	0.30	-
	C30Cr15	0.30	0.15
	C30Cr50	0.30	0.50

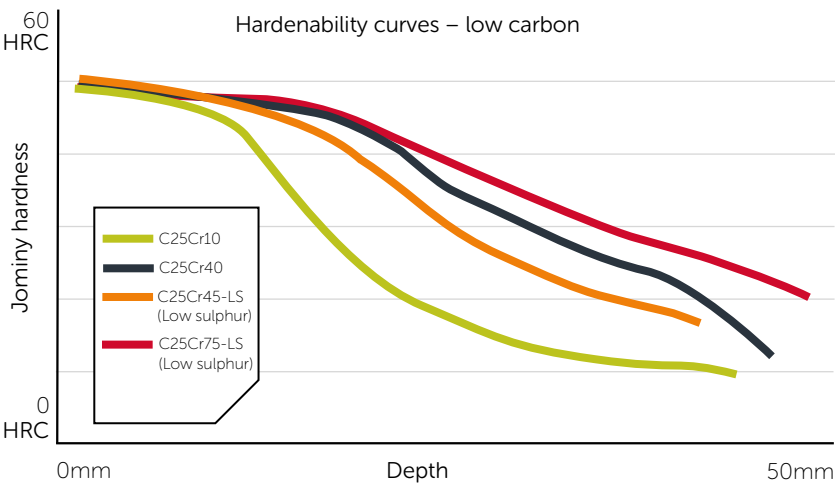


1.7 TRACKSHOE PROFILES

Lower carbon steels

A range of boron-treated steels is available with low sulphur and/or a lower carbon content of 0.25%. This improves crack resistance – prolonging shoe life and enhancing field performance.

	Steel specification	Carbon (%)	Chrome (%)
Low carbon	C25Cr10	0.25	0.10
	C25Cr40	0.25	0.40
	C25Cr45-LS	0.25	0.45
	C25Cr75-LS	0.25	0.75



1.8 MELTING BASE IRON (MBI)



1.8 MELTING BASE IRON (MBI)

For vacuum melted super alloys requirements

Our world-class steelmaking expertise provides the capability to produce MBI (Melting Base Iron) products to meet the exacting chemistry required by demanding sectors such as Aerospace, Automotive and Oil & Gas.

With a long history of supply into the industry, we understand the importance of delivering consistent chemistry.

We produce MBI in 250 casts which are then rolled into 75mm square billets in lengths from 6 to 12m. Excellent dimensional control and straightness gives improved stackability and our global reach means our products reach our customers just when you need them.

Product range

	Product	Steel code		C	Si	Mn	P	S	Al
A iron	Low manganese	9531	Min						
		5906	Max	0.004	0.006	0.05	0.004	0.004	0.005
B iron	High manganese	9533	Min			0.12			
		5907	Max	0.008	0.004	0.18	0.008	0.008	0.008

2 WIRE ROD



ABOUT WIRE ROD

We produce a wide range of wire rod products for markets including automotive, construction, engineering and consumer goods. Our high-performance wire rod and drawn wire meet the strict demands of a huge range of applications, including fasteners, automotive springs, tyre reinforcement, rail clips and bearings.

Our mills, based in Scunthorpe (UK) and Alblasserdam (the Netherlands), have both received IATF 16949 certification – the internationally-adopted quality management system standard for the automotive industry.

We offer a flexible, responsive service, with dedicated technical teams, customer support and local sales network. Our technical team is always on hand to provide advice on steel selection and processing, and our dedicated R&D experts work in partnership with customers, universities and research institutions to develop new and more advanced grades of steel for increasingly demanding applications.

Thanks to our short-cycle rolling programmes and flexible stock solutions, we can deliver precisely the steel you need – just when you need it.

In addition to our mills manufacturing wire rod, our Alblasserdam site also has a state-of-the-art wire processing centre that produces annealed and pickled wire rod and drawn wire for the global automotive, construction and general engineering industries.



Rod Mill, Scunthorpe, UK



Rod Mill and Wire Processing Centre, Alblasserdam, The Netherlands

2.1 COLD HEADING



2.1 COLD HEADING

High-performance wire and wire rod for fasteners and fixings

British Steel cold heading grades offer:

- Excellent hardenability and perform consistently in cold forming and subsequent heat treatments, allowing steel to be used to produce larger /higher strength components (boron steels)
- Improved levels of ductility, formability and strength for use in multiple applications (low carbon aluminium killed steels)

We also offer:

- A dedicated short cycle rolling programme for a comprehensive range of grades and sizes
- Technical expertise to support effective product selection
- Processing via our Wire Processing Centre, Albasserdam

Wire rod dimensions

Rod diameter	5.5 - 30.0mm in 0.5mm increments
Coil weight	1,800 - 2,200kg
Coil length	1,000 - 1,700mm
Coil dimensions	Outside diameter: 1,300mm max Inside diameter: 800mm min

Note:

Coil weight and length are dependent on rod diameter and grade combination. Specific coil package dimensions to be agreed at time of order placement/enquiry.

The following tables indicate the typical chemical analysis for British Steel's cold heading grades. Other grades e.g. silicon-killed can be considered and are available upon request.

Boron grades

Standard	Grade	Typical supplied chemical analysis (ladle) & tensile strength										UTS (MPa)
		C	Si	Mn	P	S	Al	Cr	N	Ti	B	
EN 10263-3	18B2	0.17-0.18	<0.10	0.75-0.80	<0.015	<0.015	0.025-0.040	<0.05	<0.009	0.020-0.040	0.002-0.004	440-500
	22MnB4	0.21-0.22	<0.10	0.93-0.98	<0.015	<0.015	0.025-0.040	<0.05	<0.009	0.020-0.040	0.002-0.004	490-540
	22MnB4+Cr	0.22-0.23	<0.10	0.92-0.97	<0.015	<0.015	0.025-0.040	0.25-0.30	<0.009	0.020-0.040	0.002-0.004	520-580
EN 10263-4	17B2	0.17-0.18	<0.10	0.80-0.85	<0.015	<0.015	0.025-0.040	<0.05	<0.009	0.020-0.040	0.002-0.004	440-500
	23B2	0.21-0.22	<0.10	0.83-0.88	<0.015	<0.015	0.025-0.040	0.08-0.13	<0.009	0.020-0.040	0.002-0.004	500-550
	28B2	0.25-0.26	<0.10	0.85-0.90	<0.015	<0.015	0.025-0.040	0.13-0.18	<0.009	0.020-0.040	0.002-0.004	540-600
	33B2	0.34-0.35	<0.10	0.60-0.65	<0.015	<0.015	0.025-0.040	<0.05	<0.009	0.020-0.040	0.002-0.004	520-580
	38B2+Cr	0.37-0.38	<0.10	0.76-0.80	<0.015	<0.015	0.025-0.040	0.20-0.30	<0.009	0.020-0.040	0.002-0.004	620-670
	20MnB4*	0.21-0.22	<0.10	0.90-1.00	<0.015	<0.015	0.025-0.040	<0.05	<0.009	0.020-0.040	0.002-0.004	490-540
	23MnB4*	0.21-0.22	<0.10	0.90-1.00	<0.015	<0.015	0.025-0.040	<0.05	<0.009	0.020-0.040	0.002-0.004	490-540
	30MnB4+Cr	0.29-0.31	<0.10	0.85-0.90	<0.015	<0.015	0.025-0.040	0.15-0.20	<0.009	0.020-0.040	0.002-0.004	560-620

*Grades also available with chromium addition up to 0.3% max to meet customer requirements.

Aluminium killed grades

Standard	Grade	Typical supplied chemical analysis (ladle) & tensile strength								
		C	Si	Mn	P	S	Al	Cr	N	UTS (MPa)
EN 10263-2	C4C	0.04-0.05	<0.05	0.33-0.38	<0.015	<0.015	0.030-0.050	<0.05	<0.006	350-390
	C8C	0.06-0.07	<0.05	0.33-0.38	<0.015	<0.015	0.030-0.050	<0.05	<0.006	360-400
	C10C	0.10-0.11	<0.05	0.37-0.42	<0.015	<0.015	0.030-0.050	<0.05	<0.006	380-420
	C15C	0.15-0.16	<0.05	0.50-0.55	<0.015	<0.015	0.030-0.050	<0.05	<0.006	430-470
	C17C	0.18-0.19	<0.05	0.70-0.80	<0.015	<0.015	0.030-0.050	<0.05	<0.006	470-520
	C20C	0.19-0.21	<0.05	0.75-0.85	<0.015	<0.015	0.030-0.050	<0.05	<0.006	485-535
EN 10263-3	C10E2C	0.10-0.11	<0.05	0.37-0.42	<0.015	<0.015	0.030-0.050	<0.05	<0.006	380-420
	C15E2C	0.15-0.16	<0.05	0.50-0.55	<0.015	<0.015	0.030-0.050	<0.05	<0.006	430-470
	C17E2C	0.18-0.19	<0.05	0.70-0.80	<0.015	<0.015	0.030-0.050	<0.05	<0.006	470-520

Alloyed grades

Standard	Grade	Typical supplied chemical analysis (ladle) & tensile strength								
		C	Si	Mn	P	S	Al	Cr	Mo	B
EN 10263-4	37Cr4	0.34-0.41	<0.10	0.60-0.90	<0.025	<0.025	0.020-0.060	0.90-1.20	—	—
	41Cr4	0.38-0.45	<0.10	0.60-0.90	<0.025	<0.025	0.020-0.060	0.90-1.20	—	—
	34CrMo4	0.30-0.37	<0.10	0.60-0.90	<0.025	<0.025	0.020-0.060	0.90-1.20	0.15-0.30	—
	30MoB1	0.28-0.32	<0.30	0.80-1.00	<0.025	<0.025	0.020-0.060	0.20-0.30	0.08-0.12	0.002-0.005



2.2 FREECUTTING



2.1 FREECUTTING STEEL GRADES

Leaded and non-leaded freecutting wire rod for precision components

For the automotive and office equipment markets, our leaded freecutting steels offer an advantage in reduction of processing costs compared to non-leaded products.

These grades are developed for the efficient, accurate and high-speed machining of large volume engineering components. In addition to access to R&D to support development activities, we offer freecutting grades that:

- Are designed to withstand high speed manufacturing processes
- Enhance machinability enabling a reduction in machining times (leaded freecutting grades)
- Offer high performance where a combination of machinability and strength is required
- Promote long tool life
- Are supplied in a comprehensive range of sizes offered via a flexible rolling programme

Wire rod dimensions

Rod diameter	5.5 - 30.0mm in 0.5mm increments
Coil weight	1,800 - 2,200kg
Coil length	1,000 - 1,700mm
Coil dimensions	Outside diameter: 1,300mm max Inside diameter: 800mm min

Note:

Coil weight and length are dependent on rod diameter and grade combination. Specific coil package dimensions to be agreed at time of order placement/enquiry.



2.1 FREECUTTING STEEL GRADES

The following tables indicate the typical chemical analysis for British Steel's freecutting grades. Other grades can be considered and are available upon request.

Leaded freecutting grades

Standard	Grade	Typical supplied chemical analysis (ladle)						
		C	Si	Mn	P	S	Pb	N
EN ISO 683-4	11SMnPb30	0.07-0.09	<0.01	1.00-1.05	0.05-0.07	0.28-0.32	0.26-0.29	-
	11SMnPb30 (High Pb + N)	0.07-0.09	<0.01	1.05-1.10	0.05-0.07	0.28-0.32	0.29-0.33	0.009-0.012
	11SMnPb37	0.07-0.09	<0.01	1.20-1.30	0.06-0.08	0.35-0.39	0.28-0.33	0.007-0.012
	36SMnPb14	0.33-0.36	0.15-0.19	1.45-1.55	0.025 max	0.10-0.14	0.20-0.25	-
EN ISO 683-3	C15Pb	0.13-0.15	0.20-0.25	0.40-0.50	0.025 max	0.020-0.030	0.20-0.25	-
EN ISO 683-1	C45Pb	0.44-0.48	0.20-0.25	0.60-0.70	0.020 max	0.020-0.040	0.20-0.25	0.012 max
AISI/SAE	12L14	0.07-0.09	<0.01	1.00-1.05	0.05-0.07	0.28-0.32	0.26-0.29	-

Non-leaded freecutting grades

Standard	Grade	Typical supplied chemical analysis (ladle)						
		C	Si	Mn	P	S	N	Cr
EN ISO 683-4	11SMn30	0.07-0.09	<0.01	0.98-1.02	0.05-0.07	0.27-0.31	-	-
	11SMn37	0.07-0.09	<0.01	1.20-1.30	0.06-0.08	0.35-0.39	0.007-0.012	-
	38SMn28	0.36-0.38	0.15-0.20	1.30-1.40	0.025 max	0.27-0.30	-	0.07-0.10
	44SMn28	0.42-0.43	0.20-0.25	1.55-1.60	0.025 max	0.27-0.30	-	-
	46S20	0.44-0.47	0.15-0.20	1.00-1.05	0.025 max	0.18-0.22	-	0.12-0.17
AISI/SAE	1144	0.42-0.43	0.20-0.25	1.55-1.60	0.025 max	0.27-0.30	-	-
	1215	0.07-0.09	<0.01	0.98-1.02	0.05-0.07	0.27-0.31	-	-

2.3 TYRE --- REINFORCEMENT



2.3 TYRE REINFORCEMENT STEEL GRADES

Steel products for tyre reinforcement

For the automotive market, our tyre cord wire rod provides a tyre with strength, shape and durability, as well as improving performance and longevity. We produce high-strength steel for the production of tyre cord that can be tailored to individual customer specifications:

- Tensile strength can be altered by adapting the steel microstructure
- Scale characteristics can be tailored to meet the customers' preferred method of descaling

For tyre cord and tyre bead customers, we offer:

- Technical expertise and responsiveness
- A non-integrated supply chain allowing our customers to plan their workload and collaborate with us to develop bespoke tailored solutions

Wire rod dimensions

Rod diameter	5.5 mm
Coil weight	1,800 - 2,200kg
Coil length	1,350 - 1,700mm
Coil dimensions	Outside diameter: 1,250mm max Inside diameter: 850mm min

Note:

Standard tyre reinforcement wire rod dimensional tolerances: Gauge +/-0.20mm, ovality 0.30mm max

Steel grade

The table below indicates the typical chemical analysis limits for our tyre reinforcement grades. Other grades and analysis limits can be considered upon request. Typical tensile strengths and reduction of area are displayed, however these can be tailored through process route optimisation.

Grade	C	Si	Mn	P	S	N	Cr	Tensile (MPa)	Reduction of area (%)
62C	0.62 – 0.65	0.19 – 0.22	0.48 – 0.53	≤0.011	≤0.011	≤0.006	–	920	≥46
72C	0.71 – 0.75	0.19 – 0.22	0.48 – 0.52	≤0.014	≤0.009	≤0.006	–	1030	≥40
84C	0.81 – 0.84	0.19 – 0.22	0.48 – 0.51	≤0.013	≤0.012	≤0.006	–	1120	≥37
95C+Cr	0.90 – 0.95	0.19 – 0.22	0.33 – 0.37	≤0.014	≤0.009	≤0.006	0.20 – 0.24	1260	≥37

2.4 AUTOMOTIVE --- SPRING STEEL



2.4 AUTOMOTIVE SPRING STEEL

Carbon alloy wire rod for oil-tempered automotive springs

The production of suspension springs requires super clean consistent quality steel. These springs are in constant motion when in use in safety-critical applications.

For our Automotive customers, our spring steel products offer 2 main advantages: reliability and short delivery lead time. This is in addition to:

- Rigorous testing to meet customers stringent requirements
- A comprehensive size range to satisfy automotive requirements
- Access to dedicated technical expertise

Wire rod dimensions

Rod diameter	5.5 - 30.0mm in 0.5mm increments
Coil weight	1,800 - 2,200kg
Coil length	1,000 - 1,700mm
Coil dimensions	Outside diameter: 1,300mm max Inside diameter: 800mm min

Note:

Coil weight and length are dependent on rod diameter and grade combination. Specific coil package dimensions to be agreed at time of order placement/enquiry.

The table below indicates the typical chemical analysis levels for our automotive spring steel grades.

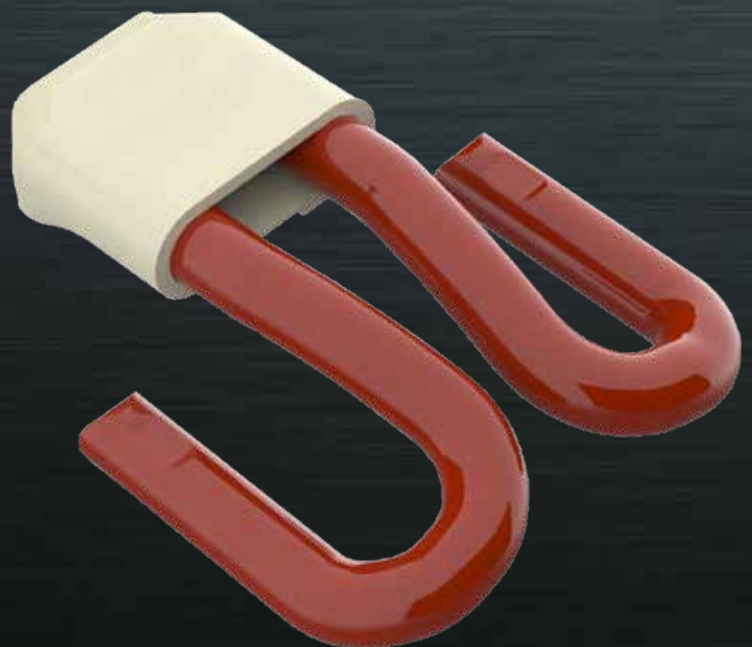
Standard	Grade	C	Si	Mn	P	S	Cr	V
EN 10089	54SiCr6	0.52 – 0.56	1.40 – 1.50	0.60 – 0.70	< 0.015	< 0.010	0.60 – 0.70	-
	54SiCrV6	0.53 – 0.57	1.35 – 1.45	0.60 – 0.70	< 0.015	< 0.010	0.52 – 0.62	0.10/0.15

Note:

Sizes available subject to technical referral



2.5 RAIL CLIP



2.5 RAIL CLIP

High-performance wire rod for rail clip applications

For the rail industry our dedicated technical team and responsive global sales team offer support to meet the exacting requirements of rail clip applications.

Our 38SiCr7 offers:

- Uniform microstructure to facilitate downstream processing
- Dimensional accuracy and surface quality
- Can also be supplied in annealed and/or drawn condition

Wire rod dimensions

Rod diameter	5.5 – 16mm
Coil weight	1,800 – 2,200kg
Coil length	Max 1,400mm
Coil dimensions	Outside diameter: 1,300mm max Inside diameter: 800mm min

The table below indicates the typical chemical analysis levels for British Steel's spring steel grades for rail clip applications.

Standard	Grade	C	Si	Mn	P	S	Cr	V
Wsn 1.5023 Acc. EN 10089	38Si7	0.35-0.42	1.50-1.80	0.50-0.80	Max 0.025	Max 0.025	Max 0.30	Max 0.10

As-rolled properties:

- Material has a uniform ferrite/pearlite structure
- Tensile Strength: Rm = 700-850 MPa
- Reduction of Area: Z = min 50%

2.6 BEARING STEEL



2.6 BEARING STEEL GRADES

Bearing wire rod and wire grades for processing into balls, rollers, needles and axles

Bearings demand clean, fatigue-resistant wire rod and wire with consistent properties to ensure reliable long life. Our bearing grades are:

- Manufactured and tested to ensure steel cleanliness, hardenability, dimensional stability and enhanced formability
- Manufactured using a range of steel making routes to ensure we meet the requirements of demanding applications

Wire rod dimensions

Rod diameter	5.5 - 30.0mm in 0.5mm increments
Coil weight	1,800kg
Coil length	1,000 - 1,300mm
Coil dimensions	Outside diameter: 1,300mm max Inside diameter: 800mm min

Drawn wire dimensions

Wire diameter	1.8 - 29.0mm
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Note:

Coil size, weight and length are dependent on final size and execution and are available on request. See our Wire Processing Centre datasheet for further information.

2.6 BEARING STEEL GRADES

The table below indicates the chemical composition for the principal grade for bearing applications 100Cr6 (material number 1.3505, SAE 52100, JIS SUJ2, DIN EN ISO 683-17, ASTM A295). Other specific element requirements can be provided, subject to a minimum order quantity.

100Cr6 grade

Grade	Typical supplied chemical analysis (ladle) & tensile strength (when spheroidise annealed)												
	C	Si	Mn	P	S*	Al	Cr	Mo	Ti	Ni	Cu	O	UTS (MPa)
100Cr6	0.93 - 1.05	0.15 - 0.35	0.25 - 0.45	<0.025	<0.008	<0.050	1.35 - 1.60	<0.010	<0.0030	<0.25	<0.30	<0.0009	<680

*Resulphurised analyses (S range 0.015 - 0.030%) can also be provided.

Hardening grades

In addition to 100Cr6, we also supply through hardening and case hardening steel grades for bearing applications.

Through hardening grades

Grade	Material number	C	Si	Mn	Cr	Ni	Mo	O
100CrMn6	1.3520	0.93-1.05	0.40-0.70	1.00-1.20	1.40-1.65	<0.30	<0.10	<15 ppm
100CrMo7	1.3537	0.93-1.05	0.20-0.40	0.25-0.45	1.65-1.95	<0.30	0.15-0.25	<15 ppm

Case hardening grades

Grade	Material number	C	Si	Mn	Cr	Ni	Mo	O
20NiCrMo7		0.17-0.22	0.20-0.40	0.45-0.65	0.40-0.60	1.60-2.00	0.20-0.30	<15 ppm
17MnCr5		0.15-0.20	0.15-0.40	1.00-1.40	0.40-0.80	0.20-0.50	0.10-0.20	<15 ppm
20NiCrMo2	1.6522	0.17-0.23	0.15-0.30	0.70-0.90	0.40-0.60	0.40-0.70	0.15-0.30	<15 ppm

2.7 WELDING STEEL



2.7 WELDING STEEL

Welding wire rod for processing into welding electrodes, MIG / MAG (gas-shielded metal arc) electrodes and submerged arc welding wires

We specialise in wire rod for low and medium alloyed special welding consumables.

- Steel can be further processed by both pickling and mechanical descaling for the optimum surface finish
- More alloyed grades can be delivered in the annealed condition to ensure good drawability

Wire rod dimensions

Rod diameter	5.5 - 10.0mm in 0.5mm increments
Coil weight	1,800 - 2,000kg (steel base dependent)
Coil length	1,000 - 1,400mm
Coil dimensions	Outside diameter: 1,300mm max Inside diameter: 850mm min

Note:

Alternative coil weights and dimensions are available on request.

The table below indicates our representative welding wire grades. Other grades can be considered and are available upon request.

Type	Standard	Grade	Material number
MIG / MAG			
SG 1	EN ISO 14341 - 2Si	10MnSi5	1.5112
SG 2	EN ISO 14341 - 3Si1	11MnSi6	1.5125
SG 3	EN ISO 14341 - 4Si1	10MnSi7	1.5130
Electrodes			
E	EN ISO 2560	RSD 7	1.0324
Sub-merged arc welding			
S1	EN ISO 14171 - S1	RRSD 10	1.0351
S2Si	EN ISO 14171 - S2Si	11Mn4Si	1.0492
S3	EN ISO 14171 - S3	12Mn6	1.0496
S2Mo	EN ISO 14171 - S2Mo	11MnMo4 5	1.5425
Low and medium alloyed*			
MnSi + Ti		13Mn12	1.5089
CrMo	AWS ER 80S-B2	11CrMo5	1.7339
MnCrMo	AWS ER S-D2	13MnMo	1.5428
NiMnMo	AWS ER 80S-Ni2	11NiMnMo4-5	1.6312
	AWS ER 100S-G	5NiMnMo8	
CrMoSi	AWS ER 90S-B3	9CrMoSi10	

*Wire rod for low and medium alloyed welding consumables can be supplied in custom made batches of 30 tonnes min.

2.7 WELDING STEEL

Additional alloys

We can also offer steels with additional alloys up to the maximum content limits in the table below. Please contact us to discuss your requirements.

	Cr	Ni	Mo	Si	Mn
Max w-%	6	4	1	2	2

Additions in titanium, zirconium, copper and vanadium may be available upon request.

Maximum possible residual element limits in ladle analysis ^{1),2),3)}

	P	S	Cr	Mo	Ni	V	Ti	Cu	Pb	Sn	As
Max w-%	0.012	0.015	0.10	0.04	0.10	0.01	0.002	0.15	0.01	0.008	0.008

	Nb	Ca	Co	Zr	Sb	W	Al	B	Ta	N	O
Max w-%	0.005	0.001	0.010	0.005	0.005	0.005	0.010	0.0003	0.015	0.007	0.0025

¹⁾ Tighter limits possible, to be checked upon request

²⁾ With reservation, depending on alloy content certain residual elements can be different

³⁾ Product analysis limits upon request

2.8 HIGH TENSILE



2.8 HIGH TENSILE

High strength-to-weight ratio wire rod for bridge and deepwater cables

High-tensile bridge and deepwater cables require consistent quality wire rod with high strength to weight ratio. The enhanced strength-to-weight ratio of our high tensile wire rod enables cable cross-sections to be reduced and delivers:

- Reduced cable and superstructure weight (including cable bands, clamps, hanger cables and saddles)
- Reduced cable installation and spinning time
- Reduced construction programme
- Overall project cost savings

We offer:

- Flexible rolling programme
- Support of a dedicated technical team and experienced global sales network
- Technical expertise and R&D facilities to support collaborative development projects

Wire rod dimensions

Rod diameter	5.5 - 15.0mm in 0.5mm increments
Coil weight	1,800 - 2,200kg
Coil length	1,350 - 1,700mm
Coil dimensions	Outside diameter: 1,250mm max Inside diameter: 850mm min

The table below indicates typical as-rolled tensiles, other grades can be considered upon request.

Steel grades

Grade	Typical carbon %	Significant alloys	Typical tensile strength in 12mm as-rolled rod (N/mm ²)	Typical reduction of area (%)
M83B	0.8	V	1180	≥30
M85B	0.83	V	1220	≥30
M90B	0.88	V	1260	≥25
X95Cr	0.93	Cr	1220	≥25
M94Si	0.92	Si, Cr	1370	≥25

Note:

Sizes available subject to technical referral



2.9 PC STRAND



2.9 PC STRAND

High carbon wire rod for prestressed wire and prestressed concrete strand

We offer high carbon wire rod for prestressed concrete (PC) strand for the reinforcement of concrete structures in bridge, railway, civil and residential construction. Wire rod for PC strand requires high tensile strength to withstand the highest mechanical stresses.

We offer:

- Short-cycle rolling programme to meet the demands of downstream construction production schedules
- Integrated production process facilitating rigorous inspection at all stages
- Support of a dedicated technical team from point of enquiry and an experienced global sales network

Wire rod dimensions

Rod diameter	8.5 - 13.0mm in 0.5mm increments
Coil weight	1,800 - 2,200kg
Coil length	1,400 - 1,650mm
Coil dimensions	Outside diameter: 1,250mm max Inside diameter: 850mm min
Presentation	Secured with 4 metal straps/bands and 2 material tallies with grade/supplier info

Note:

Alternative diameters may be available, subject to technical referral.

The table below indicates the typical chemical composition for our PC strand grade X85CR, other grades may be considered upon request.

Grade	C	Si	Mn	P	S	Cr	Cu	Mo	Ni	N	Al	V
X85CR	0.80-0.85	0.15-0.30	0.65-0.85	0.020 max	0.025 max	0.20-0.30	0.10 max	0.02 max	0.10 max	0.007 max	0.010 max	0.01 max
Typical	0.82-0.84	0.20-0.25	0.78-0.83	< 0.015	< 0.020	0.25-0.29	< 0.05	< 0.010	< 0.05	< 0.006	< 0.005	< 0.005

Mechanical properties

The as-rolled ultimate tensile strength (UTS) and reduction of area (RoA) will be measured and reported (based on batch average testing). Selected UTS ranges are as follows:

Diameter (mm)	UTS (MPa)	RoA (%)
11.0	1150 - 1250	25 min
13.0	1130 - 1230	25 min

Note: Decarburisation, cleanliness, core segregation and microstructure are not routinely measured but are expected to be compliant with the minimum requirements of EN 16120-4. Enquiries for enhanced limits should be referred to our technical team.

Certification

Our PC strand grade is supplied in accordance with EN 10204 3.1, with dimensional tolerances in accordance with EN 16124 class T2 (ie +/- 0.25mm, 0.40mm max ovality) and maximum surface imperfection depth in accordance with EN 16120-4 clause 5.4 table 3.

2.10 WIRE PROCESSING CENTRE



2.10 WIRE PROCESSING CENTRE

Drawing, pickling and annealing to enhance your wire rod and wire products

Our Alblasserdam site produces annealed and pickled wire rod and drawn wire for the global automotive, construction and general engineering industries.

Annealing

To make wire rod more workable, we offer spheroidised annealing, recrystallisation annealing and stress-relief annealing. Our annealing programmes are specifically designed for our different grades.

Pickling

Where surface quality is critical, scale can be removed by hydrochloric acid. We also offer a variety of coatings to further optimise processing e.g. lime, salt carrier, phosphate and soap for drawing and flat-rolling or phosphate and soap or polymer for cold forming and cold extrusion.

Drawing

For downstream processes that require smaller diameters and/or tighter size tolerances, our drawing plant produces drawn wire in a wide variety of grades.

Wire rod dimensions

The table below indicates the typical specifications for our wire rod range, inclusive of material treated via annealing and/or pickling.

Coil properties

Rod diameter	5.5 - 30.0mm in 0.5mm increments
Coil weight	1,800 - 2,200kg
Coil length	1,000 - 1,700mm
Coil dimensions	Outside diameter: 1,300mm Inside diameter: 800mm
Tolerance	In accordance with EN 10108 A or B

Notes:

Can be delivered in as rolled, annealed and/or pickled, coated. Coil weight and length are dependent on rod diameter and grade combination. Specific coil package dimensions to be agreed at time of order placement/enquiry.



2.10 WIRE PROCESSING CENTRE

Coil handling

Strapping	4 band straps
Labels / tags (as rolled)	1 plastic with barcode & plain text and 1 metal tag with text
Labels / tags (treated wire rod)	1 plastic with barcode as standard (second label available on request)

Drawn wire dimensions

Diameter	1.8 - 28.0mm
Tolerance	In accordance with EN 10278:1999 (h9, h10 or h11 possible)

Notes:

Available in coils, spooled coils, and on spiders/carriers in a variety of weights and make up - options are dependent on final execution and size). Can be delivered in as drawn, annealed (or combination), coated with phosphate or soap

Treatment conditions

EN	DIN	Description
+U+C	K	Drawn
+AC+C	GKZ+K	Annealed-drawn
+U+C+AC	K+GKZ	Drawn-annealed
+U+C+AC+LC	K+GKZ+K	Drawn-annealed-drawn
+AC+C+AC+LC	GKZ+K+GKZ+K	Annealed-drawn-annealed-drawn

3 CONSTRUCTION



ABOUT CONSTRUCTION

We supply a wide range of structural sections to the construction industry. Our sections have constructed some of the most iconic buildings and bridges around the world.

Produced in the UK, our products are CE marked and tested to the highest standards, providing quality and reassurance to the global construction market.

As the only UK manufacturer of heavy sections, we have 2 mills, as well as further processing facilities, which enable us to offer a comprehensive product range. This includes bespoke sections, which are rolled frequently.

Standard dimensions are supplied in the as-rolled condition from our mills in Scunthorpe and Teesside, and can be shot-blasted and primed.

Supported by our sales offices around the world, we take pride in offering high levels of customer service and quality products that are manufactured and delivered to customers' exact requirements.

In line with Construction Products Regulations (CPR), material used in construction must have a test certificate showing results at the appropriate test temperature, supplied by a CPR-registered manufacturer such as British Steel.

Our full section range is tested in accordance with the requirements of BS EN10025-2 and is legally compliant with CPR.



3.1 UK SECTIONS



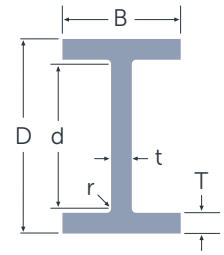
3.1 UK SECTIONS

Universal Beams

Material to EN 10025-2

Nominal dimensions to EN 10365:2017 (where applicable)

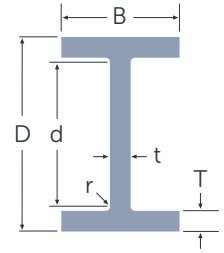
Tolerance EN 10034:1993



Designation Serial size	Mass per metre kg/m	Depth of section D mm	Width of section B mm	Thickness		Root radius r mm	Depth between fillets d mm
				of web t mm	of flange T mm		
127 x 76 x 13	13.0	127.0	76.0	4.0	7.6	7.6	96.6
152 x 89 x 16	16.0	152.4	88.7	4.5	7.7	7.6	121.8
178 x 102 x 19	19.0	177.8	101.2	4.8	7.9	7.6	146.8
203 x 102 x 23	23.1	203.2	101.8	5.4	9.3	7.6	169.4
203 x 133 x 25	25.1	203.2	133.2	5.7	7.8	7.6	172.4
203 x 133 x 30	30.0	206.8	133.9	6.4	9.6	7.6	172.4
254 x 102 x 22	22.0	254.0	101.6	5.7	6.8	7.6	225.2
254 x 102 x 25	25.2	257.2	101.9	6.0	8.4	7.6	225.2
254 x 102 x 28	28.3	260.4	102.2	6.3	10.0	7.6	225.2
254 x 146 x 31	31.1	251.4	146.1	6.0	8.6	7.6	219.0
254 x 146 x 37	37.0	256.0	146.4	6.3	10.9	7.6	219.0
254 x 146 x 43	43.0	259.6	147.3	7.2	12.7	7.6	219.0
305 x 102 x 25	24.8	305.1	101.6	5.8	7.0	7.6	275.9
305 x 102 x 28	28.2	308.7	101.8	6.0	8.8	7.6	275.9
305 x 102 x 33	32.8	312.7	102.4	6.6	10.8	7.6	275.9
305 x 127 x 37	37.0	304.4	123.4	7.1	10.7	8.9	265.2
305 x 127 x 42	41.9	307.2	124.3	8.0	12.1	8.9	265.2
305 x 127 x 48	48.1	311.0	125.3	9.0	14.0	8.9	265.2
305 x 165 x 40	40.3	303.4	165.0	6.0	10.2	8.9	265.2
305 x 165 x 46	46.1	306.6	165.7	6.7	11.8	8.9	265.2
305 x 165 x 54	54.0	310.4	166.9	7.9	13.7	8.9	265.2
356 x 171 x 45	45.0	351.4	171.1	7.0	9.7	12.7	306.6
356 x 171 x 51	51.0	355.0	171.5	7.4	11.5	12.7	306.6
356 x 171 x 57	57.0	358.0	172.2	8.1	13.0	12.7	306.6
356 x 171 x 67	67.1	363.4	173.2	9.1	15.7	12.7	306.6
406 x 140 x 39	39.0	398.0	141.8	6.4	8.6	12.7	355.4
406 x 140 x 46	46.0	403.2	142.2	6.8	11.2	12.7	355.4
406 x 140 x 53	53.3	406.6	143.3	7.9	12.9	12.7	355.4
406 x 178 x 54	54.1	402.6	177.7	7.7	10.9	12.7	355.4
406 x 178 x 60	60.1	406.4	177.9	7.9	12.8	12.7	355.4
406 x 178 x 67	67.1	409.4	178.8	8.8	14.3	12.7	355.4
406 x 178 x 74	74.2	412.8	179.5	9.5	16.0	12.7	355.4
406 x 178 x 85	85.3	417.2	181.9	10.9	18.2	12.7	355.4
457 x 152 x 52	52.3	449.8	152.4	7.6	10.9	12.7	402.6
457 x 152 x 60	59.8	454.6	152.9	8.1	13.3	12.7	402.6
457 x 152 x 67	67.2	458.0	153.8	9.0	15.0	12.7	402.6
457 x 152 x 74	74.2	462.0	154.4	9.6	17.0	12.7	402.6
457 x 152 x 82	82.1	465.8	155.3	10.5	18.9	12.7	402.6
457 x 191 x 67	67.1	453.4	189.9	8.5	12.7	12.7	402.6
457 x 191 x 74	74.3	457.0	190.4	9.0	14.5	12.7	402.6
457 x 191 x 82	82.0	460.0	191.3	9.9	16.0	12.7	402.6
457 x 191 x 89	89.3	463.4	191.9	10.5	17.7	12.7	402.6

3.1 UK SECTIONS

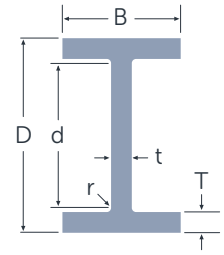
Universal Beams (continued)



Designation Serial size	Mass per metre kg/m	Depth of section D mm	Width of section B mm	Thickness		Root radius r mm	Depth between fillets d mm
				of web t mm	of flange T mm		
457 x 191 x 98	98.3	467.2	192.8	11.4	19.6	12.7	402.6
457 x 191 x 106	105.8	469.2	194.0	12.6	20.6	12.7	402.6
457 x 191 x 133	133.3	480.6	196.7	15.3	26.3	12.7	402.6
457 x 191 x 161	161.4	492.0	199.4	18.0	32.0	12.7	402.6
533 x 165 x 66	65.7	524.7	165.1	8.9	11.4	12.7	476.5
533 x 165 x 74	74.7	529.1	165.9	9.7	13.6	12.7	476.5
533 x 165 x 85	84.8	534.9	166.5	10.3	16.5	12.7	476.5
533 x 210 x 82	82.2	528.3	208.8	9.6	13.2	12.7	476.5
533 x 210 x 92	92.1	533.1	209.3	10.1	15.6	12.7	476.5
533 x 210 x 101	101.0	536.7	210.0	10.8	17.4	12.7	476.5
533 x 210 x 109	109.0	539.5	210.8	11.6	18.8	12.7	476.5
533 x 210 x 122	122.0	544.5	211.9	12.7	21.3	12.7	476.5
533 x 210 x 138	138.3	549.1	213.9	14.7	23.6	12.7	476.5
533 x 312 x 150	150.6	542.5	312.0	12.7	20.3	12.7	476.5
533 x 312 x 182	181.5	550.7	314.5	15.2	24.4	12.7	476.5
533 x 312 x 219	218.7	560.3	317.4	18.3	29.2	12.7	476.5
533 x 312 x 272	273.2	577.1	320.2	21.1	37.6	12.7	476.5
610 x 178 x 82	81.8	598.6	177.9	10.0	12.8	20.0	533.0
610 x 178 x 92	92.2	603.0	178.8	10.9	15.0	20.0	533.0
610 x 178 x 100	100.3	607.4	179.2	11.3	17.2	20.0	533.0
610 x 229 x 101	101.2	602.6	227.6	10.5	14.8	20.0	533.0
610 x 229 x 113	113.0	607.6	228.2	11.1	17.3	20.0	533.0
610 x 229 x 125	125.1	612.2	229.0	11.9	19.6	20.0	533.0
610 x 229 x 140	139.9	617.2	230.2	13.1	22.1	20.0	533.0
610 x 305 x 149	149.2	612.4	304.8	11.8	19.7	20.0	533.0
610 x 305 x 179	179.0	620.2	307.1	14.1	23.6	20.0	533.0
610 x 305 x 238	238.1	635.8	311.4	18.4	31.4	20.0	533.0
686 x 254 x 125	125.2	677.9	253.0	11.7	16.2	20.0	605.5
686 x 254 x 140	140.1	683.5	253.7	12.4	19.0	20.0	605.5
686 x 254 x 152	152.4	687.5	254.5	13.2	21.0	20.0	605.5
686 x 254 x 170	170.2	692.9	255.8	14.5	23.7	20.0	605.5
762 x 267 x 134	133.9	750.0	264.4	12.0	15.5	20.0	679.0
762 x 267 x 147	146.9	754.0	265.2	12.8	17.5	20.0	679.0
762 x 267 x 173	173.0	762.2	266.7	14.3	21.6	20.0	679.0
762 x 267 x 197	196.8	769.8	268.0	15.6	25.4	20.0	679.0
838 x 292 x 176	175.9	834.9	291.7	14.0	18.8	20.0	757.3
838 x 292 x 194	193.8	840.7	292.4	14.7	21.7	20.0	757.3
838 x 292 x 226	226.5	850.9	293.8	16.1	26.8	20.0	757.3
914 x 305 x 201	200.9	903.0	303.3	15.1	20.2	19.1	824.4
914 x 305 x 224	224.2	910.4	304.1	15.9	23.9	19.1	824.4
914 x 305 x 253	253.4	918.4	305.5	17.3	27.9	19.1	824.4
914 x 305 x 289	289.1	926.6	307.7	19.5	32.0	19.1	824.4

3.1 UK SECTIONS

Universal Beams (continued)



Designation	Mass per metre	Depth of section	Width of section	Thickness		Root radius	Depth between fillets
				of web	of flange		
Serial size	kg/m	D	B	t	T	r	d
		mm	mm	mm	mm	mm	mm
914 x 419 x 343	343.3	911.8	418.5	19.4	32.0	24.1	799.6
914 x 419 x 388	388.0	921.0	420.5	21.4	36.6	24.1	799.6
1016 x 305 x 222	222.0	970.3	300.0	16.0	21.1	30.0	868.1
1016 x 305 x 249	248.7	980.1	300.0	16.5	26.0	30.0	868.1
1016 x 305 x 272	272.3	990.1	300.0	16.5	31.0	30.0	868.1
1016 x 305 x 314	314.3	999.9	300.0	19.1	35.9	30.0	868.1
1016 x 305 x 349	349.4	1008.1	302.0	21.1	40.0	30.0	868.1
1016 x 305 x 393	392.7	1015.9	303.0	24.4	43.9	30.0	868.1
1016 x 305 x 437	437.0	1026.1	305.4	26.9	49.0	30.0	868.1
1016 x 305 x 487	486.7	1036.3	308.5	30.0	54.1	30.0	868.1

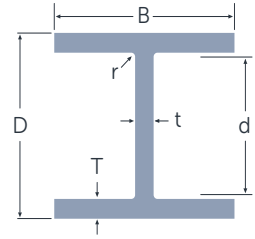
3.1 UK SECTIONS

Universal Columns

Material to EN 10025-2

Nominal dimensions to EN 10365:2017 (where applicable)

Tolerance EN 10034:1993



Designation Serial size	Mass per metre kg/m	Depth of section D mm	Width of section B mm	Thickness		Root radius r mm	Depth between fillets d mm
				of web t mm	of flange T mm		
152 x 152 x 23	23.0	152.4	152.2	5.8	6.8	7.6	123.6
152 x 152 x 30	30.0	157.6	152.9	6.5	9.4	7.6	123.6
152 x 152 x 37	37.0	161.8	154.4	8.0	11.5	7.6	123.6
152 x 152 x 44	44.0	166.0	155.9	9.5	13.6	7.6	123.6
152 x 152 x 51	51.2	170.2	157.4	11.0	15.7	7.6	123.6
203 x 203 x 46	46.1	203.2	203.6	7.2	11.0	12.7	155.8
203 x 203 x 52	52.0	206.2	204.3	7.9	12.5	12.7	155.8
203 x 203 x 60	60.0	209.6	205.8	9.4	14.2	12.7	155.8
203 x 203 x 71	71.0	215.8	206.4	10.0	17.3	12.7	155.8
203 x 203 x 86	86.1	222.2	209.1	12.7	20.5	12.7	155.8
203 x 203 x 100	99.6	228.6	210.3	14.5	23.7	12.7	155.8
203 x 203 x 113	113.5	235.0	212.1	16.3	26.9	12.7	155.8
203 x 203 x 127	127.5	241.4	213.9	18.1	30.1	12.7	155.8
254 x 254 x 73	73.1	254.1	254.6	8.6	14.2	20.0	185.7
254 x 254 x 89	88.9	260.3	256.3	10.3	17.3	20.0	185.7
254 x 254 x 107	107.1	266.7	258.8	12.8	20.5	20.0	185.7
254 x 254 x 132	132.0	276.3	261.3	15.3	25.3	20.0	185.7
254 x 254 x 167	167.1	289.1	265.2	19.2	31.7	20.0	185.7
305 x 305 x 97	96.9	307.9	305.3	9.9	15.4	20.0	237.1
305 x 305 x 118	117.9	314.5	307.4	12.0	18.7	20.0	237.1
305 x 305 x 137	136.9	320.5	309.2	13.8	21.7	20.0	237.1
305 x 305 x 158	158.1	327.1	311.2	15.8	25.0	20.0	237.1
305 x 305 x 198	198.1	339.9	314.5	19.1	31.4	20.0	237.1
305 x 305 x 240	240.0	352.5	318.4	23.0	37.7	20.0	237.1
305 x 305 x 283	282.9	365.3	322.2	26.8	44.1	20.0	237.1
356 x 368 x 129	129.0	355.6	368.6	10.4	17.5	20.0	280.6
356 x 368 x 153	152.9	362.0	370.5	12.3	20.7	20.0	280.6
356 x 368 x 177	177.0	368.2	372.6	14.4	23.8	20.0	280.6
356 x 368 x 202	201.9	374.6	374.7	16.5	27.0	20.0	280.6
356 x 406 x 235	235.1	381.0	394.8	18.4	30.2	20.0	280.6
356 x 406 x 287	287.1	393.6	399.0	22.6	36.5	20.0	280.6
356 x 406 x 340	339.9	406.4	403.0	26.6	42.9	20.0	280.6
356 x 406 x 393	393.0	419.0	407.0	30.6	49.2	20.0	280.6
356 x 406 x 467	467.0	436.6	412.2	35.8	58.0	20.0	280.6
356 x 406 x 551	551.0	455.6	418.5	42.1	67.5	20.0	280.6
356 x 406 x 634	633.9	474.6	424.0	47.6	77.0	20.0	280.6

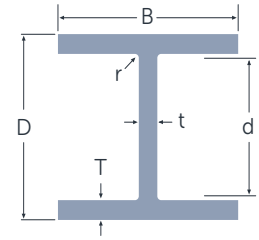
3.1 UK SECTIONS

Universal Bearing Piles

Material to EN 10025-2

Nominal dimensions to EN 10365:2017 (where applicable)

Tolerance EN 10034:1993



Designation	Mass per metre	Depth of section	Width of section	Thickness		Root radius	Depth between fillets
				of web	of flange		
				D	B		
Serial size	kg/m	mm	mm	mm	mm	mm	mm
203 x 203 x 45	44.9	200.2	205.9	9.5	9.5	10.2	160.8
203 x 203 x 54	53.9	204.0	207.7	11.3	11.4	10.2	160.8
254 x 254 x 63	63.0	247.1	256.6	10.6	10.7	20.0	185.7
254 x 254 x 71	71.0	249.7	258.0	12.0	12.0	20.0	185.7
254 x 254 x 85	85.1	254.3	260.4	14.4	14.3	20.0	185.7
305 x 305 x 79	78.9	299.3	306.4	11.0	11.1	20.0	237.1
305 x 305 x 88	88.0	301.7	307.8	12.4	12.3	20.0	237.1
305 x 305 x 95	94.9	303.7	308.7	13.3	13.3	20.0	237.1
305 x 305 x 110	110.0	307.9	310.7	15.3	15.4	20.0	237.1
305 x 305 x 126	126.1	312.3	312.9	17.5	17.6	20.0	237.1
305 x 305 x 149	149.1	318.5	316.0	20.6	20.7	20.0	237.1
305 x 305 x 186	186.0	328.3	320.9	25.5	25.6	2.0	273.1
305 x 305 x 223	222.9	337.9	325.7	30.3	30.4	20.0	237.1
356 x 368 x 109	108.9	346.4	371.0	12.8	12.9	20.0	280.6
356 x 368 x 133	133.0	352.0	373.8	15.6	15.7	20.0	280.6
356 x 368 x 152	152.0	356.4	376.0	17.8	17.9	20.0	280.6
356 x 368 x 174	173.9	361.4	378.5	20.3	20.4	20.0	280.6

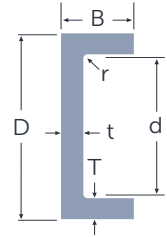
3.1 UK SECTIONS

Parallel Flange Channels

Material to EN 10025-2

Nominal dimensions to EN 10365:2017 (where applicable)

Tolerance EN 10279:2000

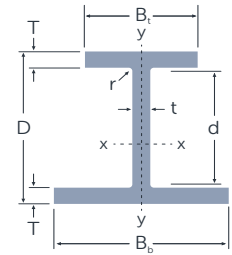


Designation Serial size	Mass per metre kg/m	Depth of section D	Width of section B	Thickness		Root radius r	Depth between fillets d
				of web t	of flange T		
		mm	mm	mm	mm	mm	mm
100 x 50 x 10	10.2	100	50	5.0	8.5	9	65
125 x 65 x 15	14.8	125	65	5.5	9.5	12	82
150 x 75 x 18	17.9	150	75	5.5	10.0	12	106
150 x 90 x 24	23.9	150	90	6.5	12.0	12	102
180 x 75 x 20	20.3	180	75	6.0	10.5	12	135
180 x 90 x 26	26.1	180	90	6.5	12.5	12	131
200 x 75 x 23	23.4	200	75	6.0	12.5	12	151
200 x 90 x 30	29.7	200	90	7.0	14.0	12	148
230 x 75 x 26	25.7	230	75	6.5	12.5	12	181
230 x 90 x 32	32.2	230	90	7.5	14.0	12	178
260 x 75 x 28	27.6	260	75	7.0	12.0	12	212
260 x 90 x 35	34.8	260	90	8.0	14.0	12	208
300 x 90 x 41	41.4	300	90	9.0	15.5	12	245
300 x 100 x 46	45.5	300	100	9.0	16.5	15	237
380 x 100 x 54	54.0	380	100	9.5	17.5	15	315
430 x 100 x 64	64.4	430	100	11.0	19.0	15	362

3.1 UK SECTIONS

Asymmetric Beams

Material to EN 10025-2
Nominal dimensions as per table
Tolerance EN 10034:1993



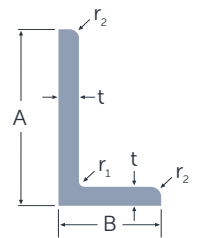
Designation Serial size	Mass per metre kg/m	Depth of section D mm	Width of top flange B _t mm	Width of bottom flange B _b mm	Thickness		Root radius r mm	Depth between fillets d mm
					of web	of flange		
					t mm	T mm		
280 ASB 74	73.6	272	175	285	10	14	27	190
280 ASB 100*	100.3	276	184	294	19	16	27	190
280 ASB 105	104.7	288	176	286	11	22	27	190
280 ASB 124	123.9	296	178	288	13	26	27	190
280 ASB 136*	136.4	288	190	300	25	22	27	190
300 ASB 153*	152.8	310	190	300	27	24	27	208
300 ASB 155	155.4	326	179	289	16	32	27	208
300 ASB 185*	184.6	320	195	305	32	29	27	208
300 ASB 196	195.5	342	183	293	20	40	27	208
300 ASB 249*	249.2	342	203	313	40	40	27	208

The elastic and plastic neutral axis position is measured from the upper surface of the beam

* These sections have been specifically developed with thicker webs for improved performance in fire

Unequal angles

Material to EN 10025-2
Nominal dimensions to EN 10056-1:2017 (where applicable)
Tolerance EN 10056-2:1993



Designation Serial size	Mass per metre	Depth of section	Width of section	Thickness of web	Root radius	Toe radius	Area of section
A x B x t		h	b	s	r ₁	r ₂	
mm x mm x mm	kg/m	mm	mm	mm	mm	mm	cm ₂
200 x 100 x 10	23.0	200	100	10	15	7.5	29.2
200 x 100 x 12	27.3	200	100	12	15	7.5	34.8
200 x 100 x 15	33.7	200	100	15	15	7.5	43.0
200 x 150 x 12	32.0	200	150	12	15	7.5	40.8
200 x 150 x 15	39.6	200	150	15	15	7.5	50.5
200 x 150 x 18	47.1	200	150	18	15	7.5	60.0

The following sizes are rolled at our mill in Skinningrove:

200 x 100 x 10	23.0	200	100	10
200 x 100 x 12	27.3	200	100	12
200 x 100 x 13	29.5	200	100	13
200 x 100 x 14	31.7	200	100	14
200 x 100 x 15	33.81	200	100	15
200 x 100 x 16	35.93	200	100	16
200 x 150 x 12	32.0	200	150	12
200 x 150 x 13	34.59	200	150	13
200 x 150 x 15	39.59	200	150	15
200 x 150 x 18	47.09	200	150	18

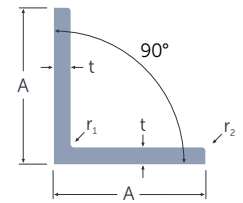
3.1 UK SECTIONS

Equal angles

Material to EN 10025-2

Nominal dimensions to EN 10056-1:2017 (where applicable)

Tolerance EN 10056-2:1993



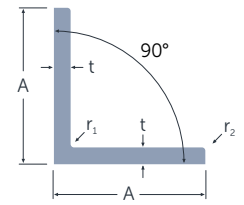
Designation	Mass per metre	Depth of section	Width of section	Thickness	Root radius	Toe radius	Area of section
Serial size							
A x A x t		h	b	s	r ₁	r ₂	
mm x mm x mm	kg/m	mm	mm	mm	mm	mm	cm ²
120 x 120 x 8	14.7	120	120	8	13	6.5	18.7
120 x 120 x 10	18.2	120	120	10	13	6.5	23.2
120 x 120 x 12	21.6	120	120	12	13	6.5	27.5
120 x 120 x 15	26.6	120	120	15	13	6.5	33.9
150 x 150 x 10	23.0	150	150	10	16	8.0	29.3
150 x 150 x 12	27.3	150	150	12	16	8.0	34.8
150 x 150 x 15	33.8	150	150	15	16	8.0	43.0
150 x 150 x 18	40.1	150	150	18	16	8.0	51.0
200 x 200 x 16	48.5	200	200	16	18	9.0	61.8
200 x 200 x 18	54.2	200	200	18	18	9.0	69.1
200 x 200 x 20	59.9	200	200	20	18	9.0	76.3
200 x 200 x 24	71.1	200	200	24	18	9.0	90.6

The following sizes are rolled at our mill in Skinningrove:

200 x 200 x 14	42.7	200	200	14
200 x 200 x 15	45.7	200	200	15
200 x 200 x 16	48.5	200	200	16
200 x 200 x 17	51.4	200	200	17
200 x 200 x 18	54.2	200	200	18
200 x 200 x 19	57.1	200	200	19
200 x 200 x 20	59.9	200	200	20
200 x 200 x 22	65.6	200	200	22
200 x 200 x 23	68.4	200	200	23
200 x 200 x 24	71.1	200	200	24
200 x 200 x 25	73.9	200	200	25
200 x 200 x 26	76.6	200	200	26
200 x 200 x 28	82.0	200	200	28
200 x 200 x 28.6		200	200	28.6
200 x 200 x 30	87.4	200	200	30
200 x 200 x 32		200	200	32
200 x 200 x 34	98.0	200	200	34
250 x 250 x 24	90.0	250	250	24
250 x 250 x 25	93.5	250	250	25
250 x 250 x 26	97.6	250	250	26
250 x 250 x 27	100.5	250	250	27
250 x 250 x 28	104.0	250	250	28
250 x 250 x 32	118.0	250	250	32
250 x 250 x 35	128.0	250	250	35

3.1 UK SECTIONS

Equal angles (continued)



Imperial range (rolled at Skinningrove)

Designation	Mass per metre	Depth of section	Width of section	Thickness of web	Root radius	Toe radius	Area of section
Serial size							
A x B x t		h	b	s	r ₁	r ₂	
mm x mm x mm	kg/m	mm	mm	mm inches	mm	mm	cm ₂
203 x 203 x 12.7	39.3	203	203	12.7 1/2			
203 x 203 x 14.3		203	203	14.3 9/16			
203 x 203 x 15.9	48.7	203	203	15.9 5/8			
203 x 203 x 19	57.9	203	203	19 3/4			
203 x 203 x 22.2	67.0	203	203	22.2 7/8			
203 x 203 x 25.4	75.9	203	203	25.4 1			
203 x 203 x 28.6	84.94	203	203	28.6 1 1/8			

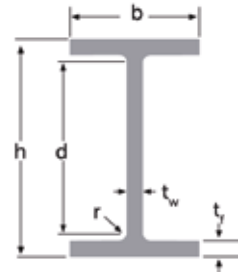
3.2 AMERICAN SECTIONS



3.2 AMERICAN SECTIONS

American wide flange beams (W)

Material to ASTM A572 Grade 50 and ASTM A992
Nominal dimensions to ASTM A6 (where applicable)
Tolerance ASTM A6

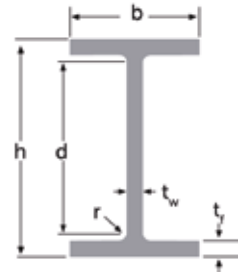


Designation serial size	Mass per foot	ASTM metric equivalent	Depth of section	Width of section	Thickness		Root radius	Depth between fillets
					of web	of flange		
					t_w	t_f		
in	lb/ft		h mm	b mm	mm	mm	r mm	d mm
W 6 x 6	15	W 150 x 150 x 22.5	152	152	5.8	6.6	10.0	118.8
W 6 x 6	20	W 150 x 150 x 29.8	157	153	6.6	9.3	10.0	118.4
W 6 x 6	25	W 150 x 150 x 37.1	162	154	8.1	11.6	10.0	118.8
W 8 x 5.25	18	W 200 x 135 x 26.6	207	133	5.8	8.4	10.0	170.2
W 8 x 5.25	21	W 200 x 135 x 31.3	210	134	6.4	10.2	10.0	169.6
W 8 x 8	31	W 200 x 200 x 46.1	203	203	7.2	11.0	10.4	160.2
W 8 x 8	35	W 200 x 200 x 52	206	204	7.9	12.6	10.4	160.0
W 8 x 8	40	W 200 x 200 x 59	210	205	9.1	14.2	10.4	160.8
W 8 x 8	48	W 200 x 200 x 71	216	206	10.2	17.4	10.4	160.4
W 8 x 8	58	W 200 x 200 x 86	222	209	13.0	20.6	10.4	160.0
W 8 x 8	67	W 200 x 200 x 100	229	210	14.5	23.7	10.4	160.8
W 8 x 8	76*	W 200 x 200 x 113	235	212.1	16.3	26.9	10.4	160.4
W 8 x 8	86*	W 200 x 200 x 128	241.4	213.9	18.1	30.1	10.4	160.4
W 10 x 4	15	W 250 x 100 x 22.3	254	102	5.8	6.9	10.0	220.2
W 10 x 4	17	W 250 x 100 x 25.3	257	102	6.1	8.4	10.0	220.4
W 10 x 4	19	W 250 x 100 x 28.4	260	102	6.4	10.0	10.0	220.4
W 10 x 5.75	22	W 250 x 145 x 32.7	258	146	6.1	9.1	10.0	220.1
W 10 x 5.75	26	W 250 x 145 x 38.5	262	147	6.6	11.2	10.0	220.0
W 10 x 5.75	30	W 250 x 145 x 44.8	266	148	7.6	13.0	10.0	219.9
W 10 x 10	49	W 250 x 250 x 73	253	254	8.6	14.2	20.0	184.6
W 10 x 10	54	W 250 x 250 x 80	256	255	9.4	15.6	20.0	184.8
W 10 x 10	60	W 250 x 250 x 89	260	256	10.7	17.3	20.0	185.4
W 10 x 10	68	W 250 x 250 x 101	264	257	11.9	19.6	20.0	184.8
W 10 x 10	72*	W 250 x 250 x 107	266.7	258.8	12.8	20.5	20.0	185.7
W 10 x 10	77	W 250 x 250 x 115	269	259	13.5	22.1	20.0	184.8
W 10 x 10	88	W 250 x 250 x 131	275	261	15.4	25.1	20.0	184.8
W 10 x 10	100	W 250 x 250 x 149	282	263	17.3	28.4	20.0	185.2
W 10 x 10	112	W 250 x 250 x 167	289	265	19.2	31.8	20.0	185.4
W 12 x 4	16	W 310 x 100 x 23.8	305	101	5.6	6.7	10.0	271.6
W 12 x 4	19	W 310 x 100 x 28.3	309	102	6.0	8.9	10.0	271.2
W 12 x 4	22	W 310 x 100 x 32.7	313	102	6.6	10.8	10.0	271.4
W 12 x 12	65	W 310 x 310 x 97	308	305	9.9	15.4	20.0	237.2
W 12 x 12	72	W 310 x 310 x 107	311	306	10.9	17.0	20.0	237.0
W 12 x 12	79	W 310 x 310 x 117	314	307	11.9	18.7	20.0	236.6
W 12 x 12	87	W 310 x 310 x 129	318	308	13.1	20.6	20.0	236.8
W 12 x 12	92*	W 310 x 310 x 137	320.5	309.2	13.8	21.7	20.0	237.1
W 12 x 12	96	W 310 x 310 x 143	323	309	14.0	22.9	20.0	237.2
W 12 x 12	106	W 310 x 310 x 158	327	310	15.5	25.1	20.0	236.8
W 12 x 12	120	W 310 x 310 x 179	333	313	18.0	28.1	20.0	236.8
W 12 x 12	133*	W 310 x 310 x 198	339.9	314.5	19.1	31.4	20.0	237.1
W 12 x 12	136	W 310 x 310 x 202	341	315	20.1	31.8	20.0	237.4
W 12 x 12	152	W 310 x 310 x 226	348	317	22.1	35.6	20.0	236.8

*Non-ASTM weight, but still offered by British Steel.

3.2 AMERICAN SECTIONS

American wide flange beams (W) (continued)

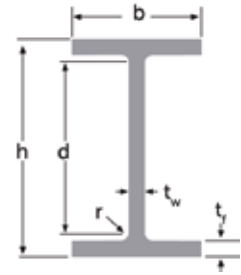


Designation serial size	Mass per foot	ASTM metric equivalent	Depth of section	Width of section	Thickness		Root radius	Depth between fillets
					of web	of flange		
					t_w	t_f		
in	lb/ft		h mm	b mm	mm	mm	r mm	d mm
W 12 x 12	161*	W 310 x 310 x 240	352.5	318.4	23.0	37.7	20.0	237.1
W 12 x 12	170	W 310 x 310 x 253	356	319	24.4	39.6	20.0	236.8
W 12 x 12	190	W 310 x 310 x 283	365	322	26.9	44.1	20.0	236.8
W 14 x 6.75	30	W 360 x 170 x 44.6	352	171	6.9	9.8	12.7	307.0
W 14 x 6.75	34	W 360 x 170 x 51	355	171	7.2	11.6	12.7	306.4
W 14 x 6.75	38	W 360 x 170 x 58	358	172	7.9	13.1	12.7	306.4
W 14 x 6.75	45*	W 360 x 170 x 67	363.4	173.2	9.1	15.7	12.7	306.6
W 14 x 14.5	87*	W 360 x 370 x 129	355.6	368.6	10.4	17.5	20.0	280.6
W 14 x 14.5	90	W 360 x 370 x 134	356	369	11.2	18.0	20.0	280.0
W 14 x 14.5	99	W 360 x 370 x 147	360	370	12.3	19.8	20.0	280.4
W 14 x 14.5	103*	W 360 x 370 x 153	362	370.5	12.3	20.7	20.0	280.6
W 14 x 14.5	109	W 360 x 370 x 162	364	371	13.3	21.8	20.0	280.4
W 14 x 14.5	119*	W 360 x 370 x 177	368.2	372.6	14.4	23.8	20.0	280.6
W 14 x 14.5	120	W 360 x 370 x 179	368	374	15.0	23.9	20.0	280.2
W 14 x 14.5	132	W 360 x 370 x 196	372	374	16.4	26.2	20.0	279.6
W 14 x 14.5	136*	W 360 x 370 x 202	374.6	374.7	16.5	27.0	20.0	280.6
W 14 x 16	145	W 360 x 410 x 216	375	394	17.3	27.7	20.0	279.6
W 14 x 16	158*	W 360 x 410 x 235	381	394.8	18.4	30.2	20.0	280.6
W 14 x 16	159	W 360 x 410 x 237	380	395	18.9	30.2	20.0	279.6
W 14 x 16	176	W 360 x 410 x 262	387	398	21.1	33.3	20.0	280.4
W 14 x 16	193	W 360 x 410 x 287	393	399	22.6	36.6	20.0	279.8
W 14 x 16	211	W 360 x 410 x 314	399	401	24.9	39.6	20.0	279.8
W 14 x 16	228*	W 360 x 410 x 340	406.4	403	26.6	42.9	20.0	280.6
W 14 x 16	233	W 360 x 410 x 347	407	404	27.2	43.7	20.0	279.6
W 14 x 16	257	W 360 x 410 x 382	416	406	29.8	48.0	20.0	280.0
W 14 x 16	264*	W 360 x 410 x 393	419	407	30.6	49.2	20.0	280.6
W 14 x 16	283	W 360 x 410 x 421	425	409	32.8	52.6	20.0	279.8
W 14 x 16	311	W 360 x 410 x 463	435	412	35.8	57.4	20.0	280.2
W 14 x 16	314*	W 360 x 410 x 467	436.6	412.2	35.8	58.0	20.0	280.6
W 14 x 16	320*	W 360 x 410 x 477	427	424.4	48.0	53.6	20.0	279.8
W 14 x 16	342	W 360 x 410 x 509	446	416	39.1	62.7	20.0	280.6
W 14 x 16	370	W 360 x 410 x 551	455	418	42.0	67.6	20.0	279.8
W 14 x 16	398	W 360 x 410 x 592	465	421	45.0	72.3	20.0	280.4
W 14 x 16	426	W 360 x 410 x 634	474	424	47.6	77.1	20.0	279.8
W 14 x 16	455	W 360 x 410 x 677	483	428	51.2	81.5	20.0	280.0
W 14 x 16	500	W 360 x 410 x 744	498	432	55.6	88.9	20.0	280.2
W 14 x 16	550	W 360 x 410 x 818	514	437	60.5	97.0	20.0	280.0
W 14 x 16	605	W 360 x 410 x 900	531	442	65.9	106.0	20.0	279.0
W 14 x 16	665	W 360 x 410 x 990	550	448	71.9	115.0	20.0	280.0
W 14 x 16	730	W 360 x 410 x 1086	569	454	78.0	125.0	20.0	279.0
W 16 x 5.5	26	W 410 x 140 x 38.8	403	140	6.4	8.8	12.7	360.0
W 16 x 5.5	31	W 410 x 140 x 46.1	403	140	7.0	11.2	12.7	355.2

*Non-ASTM weight, but still offered by British Steel

3.2 AMERICAN SECTIONS

American wide flange beams (W) (continued)

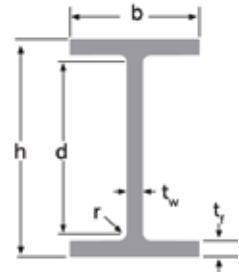


Designation serial size	Mass per foot	ASTM metric equivalent	Depth of section	Width of section	Thickness		Root radius	Depth between fillets
					of web	of flange		
					t_w	t_f		
in	lb/ft		h mm	b mm	mm	mm	r mm	d mm
W 16 x 5.5	35*	W 410 x 140 x 53	406.6	143.3	7.9	12.9	12.7	355.4
W 16 x 7	36	W 410 x 180 x 53	403	177	7.5	10.9	12.7	355.8
W 16 x 7	40	W 410 x 180 x 60	407	178	7.7	12.8	12.7	356.0
W 16 x 7	45	W 410 x 180 x 67	410	179	8.8	14.4	12.7	355.8
W 16 x 7	50	W 410 x 180 x 75	413	180	9.7	16.0	12.7	355.6
W 16 x 7	57	W 410 x 180 x 85	417.0	181.0	10.9	18.2	12.7	355.2
W 18 x 6	35	W 460 x 150 x 52	450	152	7.6	10.8	12.7	403.0
W 18 x 6	40	W 460 x 150 x 60	455	153	8.0	13.3	12.7	403.0
W 18 x 6	46	W 460 x 150 x 68	459	154	9.1	15.4	12.7	402.8
W 18 x 6	50*	W 460 x 150 x 74	462	154.4	9.6	17.0	12.7	402.6
W 18 x 6	55*	W 460 x 150 x 82	465.8	155.3	10.5	18.9	12.7	402.6
W 18 x 7.5	45*	W 460 x 190 x 67	453.4	189.9	8.5	12.7	12.7	402.6
W 18 x 7.5	50	W 460 x 190 x 74	457	190	9.0	14.5	12.7	402.6
W 18 x 7.5	55	W 460 x 190 x 82	460	191	9.9	16.0	12.7	402.6
W 18 x 7.5	60	W 460 x 190 x 89	463	192	10.5	17.7	12.7	402.2
W 18 x 7.5	65	W 460 x 190 x 97	466	193	11.4	19.0	12.7	402.6
W 18 x 7.5	71	W 460 x 190 x 106	469	194	12.6	20.6	12.7	402.4
W 18 x 7.5	89*	W 460 x 190 x 133	480.6	196.7	15.3	26.3	12.7	402.6
W 18 x 7.5	108*	W 460 x 190 x 161	492	199.4	18.0	32.0	12.7	402.6
W 18 x 11	76	W 460 x 280 x 113	463	280	10.8	17.3	20.0	388.4
W 18 x 11	86	W 460 x 280 x 128	467	282	12.2	19.6	20.0	387.8
W 18 x 11	97	W 460 x 280 x 144	472	283	13.6	22.1	20.0	387.8
W 18 x 11	106	W 460 x 280 x 158	476	284	15.0	23.9	20.0	388.2
W 18 x 11	119	W 460 x 280 x 177	482	286	16.6	26.9	20.0	388.2
W 18 x 11	130	W 460 x 280 x 193	489	283	17.0	30.5	20.0	388.0
W 18 x 11	143	W 460 x 280 x 213	495	285	18.5	33.5	20.0	388.0
W 18 x 11	158	W 460 x 280 x 235	501	287	20.6	36.6	20.0	387.8
W 18 x 11	175	W 460 x 280 x 260	509	289	22.6	40.4	20.0	388.2
W 18 x 11	192	W 460 x 280 x 286	517	291	24.4	44.4	20.0	388.2
W 18 x 11	211	W 460 x 280 x 315	525	293	26.9	48.5	20.0	388.0
W 21 x 6.5	44	W 530 x 165 x 66	525	165	8.9	11.4	12.7	476.8
W 21 x 6.5	50	W 530 x 165 x 74	529	166	9.7	13.6	12.7	476.4
W 21 x 6.5	57	W 530 x 165 x 85	535	166	10.3	16.5	12.7	476.6
W 21 x 8.25	55	W 530 x 210 x 82	528	209	9.5	13.3	12.7	476.0
W 21 x 8.25	62	W 530 x 210 x 92	533	209	10.2	15.6	12.7	476.4
W 21 x 8.25	68	W 530 x 210 x 101	537	210	10.9	17.4	12.7	476.8
W 21 x 8.25	73	W 530 x 210 x 109	539	211	11.6	18.8	12.7	476.0
W 21 x 8.25	83	W 530 x 210 x 123	544	212	13.1	21.2	12.7	476.2
W 21 x 8.25	93	W 530 x 210 x 138	549	214	14.7	23.6	12.7	476.4
W 21 x 12.25	101	W 530 x 310 x 150	543	312	12.7	20.3	12.7	477.0
W 21 x 12.25	111	W 530 x 310 x 165	546	313	14.0	22.2	12.7	476.2
W 21 x 12.25	122	W 530 x 310 x 182	551	315	15.2	24.4	12.7	476.8

*Non-ASTM weight, but still offered by British Steel

3.2 AMERICAN SECTIONS

American wide flange beams (W) (continued)

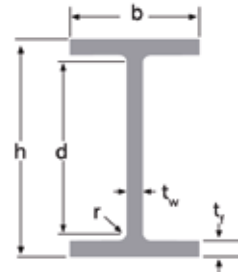


Designation serial size	Mass per foot	ASTM metric equivalent	Depth of section	Width of section	Thickness		Root radius	Depth between fillets
					of web	of flange		
					t_w	t_f		
in	lb/ft		h mm	b mm	mm	mm	r mm	d mm
W 21 x 12.25	132	W 530 x 310 x 196	554	316	16.5	26.3	12.7	476.0
W 21 x 12.25	147	W 530 x 310 x 219	560	318	18.3	29.2	12.7	476.2
W 21 x 12.25	166	W 530 x 310 x 248	571	315	19.0	34.5	12.7	476.6
W 21 x 12.25	182	W 530 x 310 x 272	577	317	21.1	37.6	12.7	476.4
W 24 x 7	55	W 610 x 182 x 82	599	178	10.0	12.8	20.0	533.4
W 24 x 7	62	W 610 x 182 x 92	603	179	10.9	15.0	20.0	533.0
W 24 x 7	67*	W 610 x 182 x 100	607	179.2	11.3	17.2	20.0	532.6
W 24 x 9	68	W 610 x 230 x 101	603	228	10.5	14.9	20.0	533.2
W 24 x 9	76	W 610 x 230 x 113	608	228	11.2	17.3	20.0	533.4
W 24 x 9	84	W 610 x 230 x 125	612	229	11.9	19.6	20.0	532.8
W 24 x 9	94	W 610 x 230 x 140	617	230	13.1	22.2	20.0	532.6
W 24 x 12	100*	W 610 x 300 x 149	612.4	304.8	11.8	19.7	20.0	533.0
W 24 x 12	120*	W 610 x 300 x 179	620.2	307.1	14.4	23.6	20.0	533.0
W 24 x 12	160*	W 610 x 300 x 238	635.8	311.4	18.4	31.4	20.0	533.0
W 24 x 12.75	104	W 610 x 325 x 155	611	324	12.7	19.0	20.0	533.0
W 24 x 12.75	117	W 610 x 325 x 174	616	325	14.0	21.6	20.0	532.8
W 24 x 12.75	131	W 610 x 325 x 195	622	327	15.4	24.4	20.0	533.2
W 24 x 12.75	146	W 610 x 325 x 217	628	328	16.5	27.7	20.0	532.6
W 24 x 12.75	162	W 610 x 325 x 241	635	329	17.9	31.0	20.0	533.0
W 24 x 12.75	176	W 610 x 325 x 262	641	327	19.0	34.0	20.0	533.0
W 24 x 12.75	192	W 610 x 325 x 285	647	329	20.6	37.1	20.0	532.8
W 24 x 12.75	207	W 610 x 325 x 307	653	330	22.1	39.9	20.0	533.2
W 24 x 12.75	229	W 610 x 325 x 341	661	333	24.4	43.9	20.0	533.2
W 24 x 12.75	250	W 610 x 325 x 372	669	335	26.4	48.0	20.0	533.0
W 27 x 10	84	W 690 x 250 x 125	678	253	11.7	16.3	20.0	605.4
W 27 x 10	94	W 690 x 250 x 140	684	254	21.4	18.9	20.0	606.2
W 27 x 10	102	W 690 x 250 x 152	688	254	13.1	21.1	20.0	605.8
W 27 x 10	114	W 690 x 250 x 170	693	256	14.5	23.6	20.0	605.8
W 30 x 10.5	90	W 760 x 265 x 134	750	264	11.9	15.5	20.0	679.0
W 30 x 10.5	99	W 760 x 265 x 147	753	265	13.2	17.0	20.0	679.0
W 30 x 10.5	108	W 760 x 265 x 161	758	266	13.8	19.3	20.0	679.4
W 30 x 10.5	116	W 760 x 265 x 173	762	267	14.4	21.6	20.0	678.8
W 30 x 10.5	124	W 760 x 265 x 185	766	267	14.9	23.6	20.0	678.8
W 30 x 10.5	132	W 760 x 265 x 196	770	268	15.6	25.4	20.0	679.2
W 33 x 11.5	118	W 840 x 295 x 176	835	292	14.0	18.8	20.0	757.4
W 33 x 11.5	130	W 840 x 295 x 193	840	292	14.7	21.7	20.0	756.6
W 33 x 11.5	141	W 840 x 295 x 210	846	293	15.4	24.4	20.0	757.2
W 33 x 11.5	152	W 840 x 295 x 226	851	294	16.1	26.8	20.0	757.4
W 36 x 12	135	W 920 x 310 x 201	903	304	15.2	20.1	19.1	824.6
W 36 x 12	150	W 920 x 310 x 223	911	304	15.9	23.9	19.1	825.0
W 36 x 12	160	W 920 x 310 x 238	915	305	16.5	25.9	19.1	825.0
W 36 x 12	170	W 920 x 310 x 253	919	306	17.3	27.9	19.1	825.0

*Non-ASTM weight, but still offered by British Steel

3.2 AMERICAN SECTIONS

American wide flange beams (W) (continued)



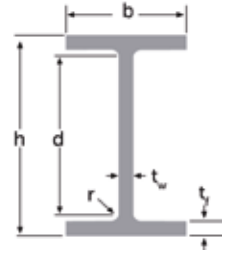
Designation serial size	Mass per foot	ASTM metric equivalent	Depth of section	Width of section	Thickness		Root radius	Depth between fillets
			h	b	of web	of flange		
					t_w	t_f		
in	lb/ft		mm	mm	mm	mm	mm	mm
W 36 x 12	182	W 920 x 310 x 271	923	307	18.4	30.0	19.1	824.8
W 36 x 12	194	W 920 x 310 x 289	927	308	19.4	32.0	19.1	824.8
W 36 x 12	210	W 920 x 310 x 313	932	309	21.1	34.5	19.1	824.8
W 36 x 16.5	231	W 920 x 420 x 344	927	418	19.3	32.0	19.1	824.8
W 36 x 16.5	247	W 920 x 420 x 368	931	419	20.3	34.3	19.1	824.2
W 36 x 16.5	262	W 920 x 420 x 390	936	420	21.3	36.6	19.1	824.6
W 40 x 12	149	W 1000 x 300 x 222	970	300	16.0	21.1	30.0	867.8
W 40 x 12	167	W 1000 x 300 x 249	980	300	16.5	26.0	30.0	868.0
W 40 x 12	183	W 1000 x 300 x 272	990	300	16.5	31.0	30.0	868.0
W 40 x 12	211	W 1000 x 300 x 314	1000	300	19.1	35.9	30.0	868.2
W 40 x 12	235	W 1000 x 300 x 350	1008	302	21.1	40.0	30.0	868.0
W 40 x 12	264	W 1000 x 300 x 393	1016	303	24.4	43.9	30.0	868.2
W 40 x 12	294	W 1000 x 300 x 438	1026	305	26.9	49.0	30.0	868.0
W 40 x 12	327	W 1000 x 300 x 486	1036	308	30.0	54.1	30.0	867.8

*Non-ASTM weight, but still offered by British Steel

3.2 AMERICAN SECTIONS

American wide flange bearing piles (HP)

Material to ASTM A572 Grade 50 and ASTM A992
Nominal dimensions to ASTM A6 (where applicable)
Tolerance ASTM A6



Designation serial size	Mass per foot	ASTM metric equivalent	Depth of section	Width of section	Thickness		Root radius	Depth between fillets
					of web	of flange		
					t_w	t_f		
in	lb/ft		h mm	b mm	mm	mm	r mm	d mm
HP 8 x 8	36	HP 200 x 200 x 53	204	207.7	11.3	11.4	10.4	160.4
HP 10 x 10	42	HP 250 x 250 x 62	246	256	10.7	10.5	20	185.0
HP 10 x 10	57	HP 250 x 250 x 85	254	260	14.4	14.4	20	185.2
HP 12 x 12	53	HP 310 x 310 x 79	299	306	11.0	11.0	20	237.0
HP 12 x 12	63	HP 310 x 310 x 93	303	308	13.1	13.1	20	236.8
HP 12 x 12	74	HP 310 x 310 x 110	308	310	15.5	15.4	20	237.2
HP 12 x 12	84	HP 310 x 310 x 125	312	312	17.4	17.4	20	237.2
HP 14 x 14.5	73	HP 360 x 370 x 108	346	370	12.8	12.8	20	280.4
HP 14 x 14.5	89	HP 360 x 370 x 132	351	373	15.6	15.6	20	279.8
HP 14 x 14.5	102	HP 360 x 370 x 152	356	376	17.9	17.9	20	280.2
HP 14 x 14.5	117	HP 360 x 370 x 174	361	378	20.4	20.4	20	280.2

3.3 EUROPEAN SECTIONS



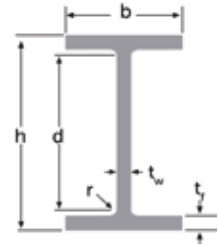
3.3 EUROPEAN SECTIONS

European I beams (IPE)

Material to EN 10025-2

Nominal dimensions to EN 10365:2017 (where applicable)

Tolerance EN 10034:1993



Designation	Serial size	Mass per metre	Depth of section	Width of section	Thickness		Root radius	Depth between fillets
					of web	of flange		
			h	b	t _w	t _f	r	d
	in	kg/m	mm	mm	mm	mm	mm	mm
IPE 100	100 x 55 x 8	8.1	100.0	55.0	4.1	5.7	7.0	74.6
IPE 120	120 x 65 x 10	10.4	120.0	64.0	4.4	6.3	7.0	93.4
IPE 140	140 x 73 x 13	12.9	140.0	73.0	4.7	6.9	7.0	112.2
IPE 160	160 x 82 x 16	15.8	160.0	82.0	5.0	7.4	9.0	127.2
IPE 180	180 x 91 x 19	18.8	180.0	91.0	5.3	8.0	9.0	146.0
IPE 200	200 x 100 x 22	22.4	200.0	100.0	5.6	8.5	12.0	159.0
IPE 220	220 x 110 x 26	26.2	220.0	110.0	5.9	9.2	12.0	177.6
IPE 240	240 x 120 x 31	30.7	240.0	120.0	6.2	9.8	15.0	190.4
IPE 270	270 x 135 x 36	36.1	270.0	135.0	6.6	10.2	15.0	219.6
IPE 300	300 x 150 x 42	42.2	300.0	150.0	7.1	10.7	15.0	248.6
IPE 330	330 x 160 x 49	49.1	330.0	160.0	7.5	11.5	20.0	267.0
IPE 360	360 x 170 x 57	57.1	360.0	170.0	8.0	12.7	16.0	302.6
IPE 400	400 x 180 x 66	66.3	400.0	180.0	8.6	13.5	20.0	333.0
IPE 450	450 x 190 x 78	77.6	450.0	190.0	9.4	14.6	20.0	380.8
IPE 500	500 x 200 x 91	90.7	500.0	200.0	10.2	16.0	20.0	428.0
IPE 550	550 x 210 x 106	106.0	550.0	210.0	11.1	17.2	27.0	461.6
IPE 600	600 x 220 x 122	122.0	600.0	220.0	12.0	19.0	20.0	522.0
IPE 750 x 134	762 x 267 x 134	133.9	750.0	264.0	12.0	15.5	20.0	679.0
IPE 750 x 147	762 x 267 x 147	147.2	753.0	265.0	13.2	17.0	20.0	679.0
IPE 750 x 173	762 x 267 x 173	173.7	762.0	267.0	14.4	21.6	20.0	678.8
IPE 750 x 196	762 x 267 x 196	196.9	770.0	268.0	15.6	25.4	20.0	679.2

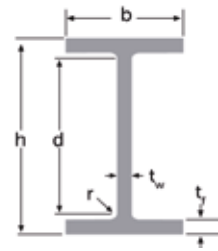
3.3 EUROPEAN SECTIONS

European wide flange beams (HE)

Material to EN 10025-2

Nominal dimensions to EN 10365:2017 (where applicable)

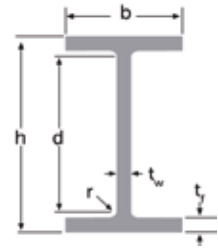
Tolerance EN 10034:1993



Designation	Serial size	Mass per metre	Depth of section	Width of section	Thickness		Root radius	Depth between fillets
					of web	of flange		
			h	b	t _w	t _f	r	d
	in	kg/m	mm	mm	mm	mm	mm	mm
HE 100 A	100 x 100 x 16.7	16.7	96.0	100.0	5.0	8.0	12.0	56.0
HE 100 B	100 x 100 x 20.4	20.4	100.0	100.0	6.0	10.0	12.0	56.0
HE 100 M	100 x 100 x 41.8	41.8	120.0	106.0	12.0	20.0	12.0	56.0
HE 120 A	120 x 120 x 19.9	19.9	114.0	120.0	5.0	8.0	12.0	74.0
HE 120 B	120 x 120 x 26.7	26.7	120.0	120.0	6.5	11.0	12.0	74.0
HE 120 M	120 x 120 x 52.1	52.1	140.0	126.0	12.5	21.0	12.0	74.0
HE 140 A	140 x 140 x 24.7	24.7	133.0	140.0	5.5	8.5	12.0	92.0
HE 140 B	140 x 140 x 33.7	33.7	140.0	140.0	7.0	12.0	12.0	92.0
HE 140 M	140 x 140 x 63.2	63.2	160.0	146.0	13.0	22.0	12.0	92.0
HE 160 A	160 x 160 x 30.4	30.4	152.0	160.0	6.0	9.0	15.0	104.0
HE 160 B	160 x 160 x 42.6	42.6	160.0	160.0	8.0	13.0	15.0	104.0
HE 160 M	160 x 160 x 76.2	76.2	180.0	166.0	14.0	23.0	15.0	104.0
HE 180 A	180 x 180 x 36	35.5	171.0	180.0	6.0	9.5	16.0	120.0
HE 180 B	180 x 180 x 51	51.2	180.0	180.0	8.5	14.0	16.0	120.0
HE 180 M	180 x 180 x 89	88.9	200.0	186.0	14.5	24.0	16.0	120.0
HE 200 A	200 x 200 x 42	42.3	190.0	200.0	6.5	10.0	20.0	130.0
HE 200 B	200 x 200 x 61	61.3	200.0	200.0	9.0	15.0	20.0	130.0
HE 200 M	200 x 200 x 103	103.0	220.0	206.0	15.0	25.0	20.0	130.0
HE 220 A	220 x 220 x 51	50.5	210.0	220.0	7.0	11.0	20.0	148.0
HE 220 B	220 x 220 x 72	71.5	220.0	220.0	9.5	16.0	20.0	148.0
HE 220 M	220 x 220 x 117	117.0	240.0	226.0	15.5	26.0	20.0	148.0
HE 240 A	240 x 240 x 60	60.3	230.0	240.0	7.5	12.0	20.0	166.0
HE 240 B	240 x 240 x 83	83.2	240.0	240.0	10.0	17.0	20.0	166.0
HE 240 M	240 x 240 x 157	157.0	270.0	248.0	18.0	32.0	20.0	166.0
HE 260 A	260 x 260 x 68	68.2	250.0	260.0	7.5	12.5	20.0	185.0
HE 260 B	260 x 260 x 93	93.0	260.0	260.0	10.0	17.5	20.0	185.0
HE 260 M	260 x 260 x 172	172.0	290.0	268.0	18.0	32.5	20.0	185.0
HE 280 A	280 x 280 x 76	76.4	270.0	280.0	8.0	13.0	27.0	190.0
HE 280 B	280 x 280 x 103	103.0	280.0	280.0	10.5	18.0	27.0	190.0
HE 280 M	280 x 280 x 189	189.0	310.0	288.0	18.5	33.0	27.0	190.0
HE 300 A	300 x 300 x 88	88.3	290.0	300.0	8.5	14.0	27.0	208.0
HE 300 B	300 x 300 x 117	117.0	300.0	300.0	11.0	19.0	27.0	208.0
HE 300 C	300 x 300 x 177	177.0	320.0	305.0	16.0	29.0	27.0	208.0
HE 300 M	300 x 300 x 238	238.0	340.0	310.0	21.0	39.0	27.0	208.0
HE 320 A	320 x 300 x 98	97.6	310.0	300.0	9.0	15.5	27.0	225.0
HE 320 B	320 x 300 x 127	127.0	320.0	300.0	11.5	20.5	27.0	225.0
HE 320 M	320 x 300 x 245	245.0	359.0	309.0	12.0	40.0	27.0	225.0
HE 340 A	340 x 300 x 105	105.0	330.0	300.0	9.5	16.5	27.0	243.0
HE 340 B	340 x 300 x 134	134.0	340.0	300.0	12.0	21.5	27.0	243.0
HE 340 M	340 x 300 x 248	248.0	377.0	309.0	21.0	40.0	27.0	243.0
HE 360 A	360 x 300 x 112	112.0	350.0	300.0	10.0	17.5	27.0	261.0
HE 360 B	360 x 300 x 142	142.0	360.0	300.0	12.5	22.5	27.0	261.0

3.3 EUROPEAN SECTIONS

European wide flange beams (HE) (continued)



Designation	Serial size	Mass per metre	Depth of section	Width of section	Thickness		Root radius	Depth between fillets
					of web	of flange		
			h	b	t_w	t_f	r	d
	in	kg/m	mm	mm	mm	mm	mm	mm
HE 360 M	360 x 300 x 250	250.0	395.0	308.0	21.0	40.0	27.0	261.0
HE 400 A	400 x 300 x 125	125.0	390.0	300.0	11.0	19.0	27.0	298.0
HE 400 B	400 x 300 x 155	155.0	400.0	300.0	13.5	24.0	27.0	298.0
HE 400 M	400 x 300 x 256	256.0	432.0	307.0	21.0	40.0	27.0	298.0
HE 450 A	450 x 300 x 123	140.0	440.0	300.0	11.5	21.0	27.0	344.0
HE 450 B	450 x 300 x 171	171.0	450.0	300.0	14.0	26.0	27.0	344.0
HE 450 M	450 x 300 x 263	263.0	478.0	307.0	21.0	40.0	27.0	344.0
HE 500 A	500 x 300 x 155	155.0	490.0	300.0	12.0	23.0	27.0	390.0
HE 500 B	500 x 300 x 187	187.0	500.0	300.0	14.5	28.0	27.0	390.0
HE 500 M	500 x 300 x 270	270.0	524.0	306.0	21.0	40.0	27.0	390.0
HE 550 A	550 x 300 x 166	166.0	540.0	300.0	12.5	24.0	27.0	438.0
HE 550 B	550 x 300 x 199	199.0	550.0	300.0	15.0	29.0	27.0	438.0
HE 550 M	550 x 300 x 278	278.0	572.0	306.0	21.0	40.0	27.0	438.0
HE 600 A	600 x 300 x 178	178.0	590.0	300.0	13.0	25.0	27.0	486.0
HE 600 B	600 x 300 x 212	212.0	600.0	300.0	15.5	30.0	27.0	486.0
HE 600 M	600 x 300 x 285	285.0	620.0	305.0	21.0	40.0	27.0	486.0
HE 650 A	650 x 300 x 190	190.0	640.0	300.0	13.5	26.0	27.0	534.0
HE 650 B	650 x 300 x 225	225.0	650.0	300.0	16.0	31.0	27.0	534.0
HE 650 M	650 x 300 x 293	293.0	668.0	305.0	21.0	40.0	27.0	534.0
HE 700 A	700 x 300 x 204	204.0	690.0	300.0	14.5	27.0	27.0	582.0
HE 700 B	700 x 300 x 241	241.0	700.0	300.0	17.0	32.0	27.0	582.0
HE 700 M	700 x 300 x 301	301.0	716.0	304.0	21.0	40.0	27.0	582.0
HE 800 A	800 x 300 x 224	224.0	790.0	300.0	15.0	28.0	27.0	680.0
HE 800 B	800 x 300 x 262	262.0	800.0	300.0	17.5	33.0	27.0	680.0
HE 800 M	800 x 300 x 317	317.0	814.0	303.0	21.0	40.0	27.0	680.0
HE 900 A	900 x 300 x 252	252.0	890.0	300.0	16.0	30.0	30.0	770.0
HE 900 B	900 x 300 x 291	291.0	900.0	300.0	18.5	35.0	30.0	770.0
HE 900 M	900 x 300 x 333	333.0	910.0	305.0	21.0	40.0	30.0	770.0
HE 1000 A	1000 x 300 x 272	272.0	990.0	300.0	16.5	31.0	30.0	868.0
HE 1000 B	1000 x 300 x 314	314.0	1000.0	300.0	19.0	36.0	30.0	868.0
HE 1000 M	1000 x 300 x 349	349.0	1008.0	302.0	21.0	40.0	30.0	868.0

3.4 SERVICE CENTRES AND DISTRIBUTION FACILITIES



3.4 OUR SERVICE CENTRES AND DISTRIBUTION FACILITIES

We're committed to supplying customers with unrivalled service and innovative material solutions that are of real value.

Our service centres provide processing, service, distribution and sales support, whilst stocking a comprehensive range of key construction products, alongside our British Steel manufactured material.

Our Teesside Service Centre is a national hub for the processing and distribution of structural steel. Having benefited from significant investment, it is a truly unique facility, which is linked directly to our Teesside Beam Mill. Together, they offer superior co-ordination of production schedules and stock visibility, meaning improved product availability and shorter lead times.

Our Ireland Service Centre in Lisburn is equipped with large coil slitting and decoiling lines, together with saws and a shotblast/primer. This combination of local processing capability and an extensive range of stock ensures a flexible and responsive service.

Together, our best-in-class facilities offer an array of processing technologies:

- Cut-to-length
- Straight and mitre cutting
- Shotblasting
- Priming and painting



4 RAIL



ABOUT RAIL

Based in Scunthorpe since 2006, our rail manufacturing dates back to the mid-nineteenth century, when the first public railways were making a major impact on transport throughout the world.

Our innovations have included several world firsts including the Bessemer conversion method of steel production, continuous casting of rail steel and non-destructive testing technologies.

We work in partnership with rail customers to understand their demands and develop products that directly address their needs for more rail life with fewer maintenance requirements.

That means we play a central role in helping the rail industry rise to the challenges of higher traffic volumes, heavier axle loads and faster train speeds.

We provide a wide range of high performance rail products of up to 120m in length (or 216m in welded strings) to meet the needs of international high speed, heavy duty, mixed traffic, metro and tramway networks. These are supplied in accordance with directive 2008/57/EC for rail interoperability.

Our technical consultancy team is available to provide advice and support, helping customers to optimise their rail selections. Rail products and grades can be matched precisely to track conditions, track types, environmental conditions and a host of other variables to ensure that every rail we deliver provides optimum performance throughout its service life.



4.1 RAIL PROFILES --- AND GRADES

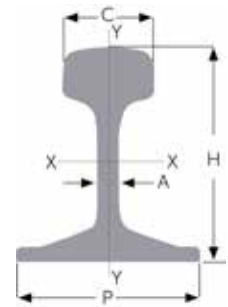


4.1 RAIL PROFILES AND GRADES

Dimensions, properties and compositions

The technical tables below show the range of rail profiles we manufacture in the UK.

These are available up to 120m long or 216m welded.



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 I_{xx} cm ⁴	Moment of inertia I_{yy} 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 I_{xx} cm ⁴	Moment of inertia I_{yy} cm ⁴
39E1	BS 80A	39.77	133.35	63.50	13.10	117.47	1204.9	219.6

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 I_{xx} cm ⁴	Moment of inertia I_{yy} cm ⁴
BS 95RBH	Bullhead	47.07	145.26	69.85	19.05	69.85	1458.00	171.00
Section 65*	Conductor	65.41	102.00	89.00	70.00	70.00	677.04	483.57
Section 75	Conductor	75.17	138.00	89.00	22.50	140.00	2163.93	891.66

*Available by agreement – please contact us to discuss your requirements.

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

4.1 RAIL PROFILES AND GRADES

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

Specification	Grade	Chemical composition % by mass									Mechanical properties		
		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: BLF320*	0.10-0.30	0.80-1.80	1.20-1.80	≤ 0.025	≤ 0.025	0.30-0.80	≤ 0.004	–	≤ 2.0	≥ 950	≥ 12	340-380
	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

*Available by agreement – please contact us to discuss your requirements.

Conductor rail grade

Specification	Grade	Chemical composition % by mass									Electrical properties	
		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	

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

4.2 HP RANGE



4.2 HP RANGE

Excellent wear and RCF resistance

Our High Performance non heat-treated rails are our most wear-resistant grades:

- Designed for curved track and other high duty areas
- Metallurgically engineered to offer improved resistance to wear and rolling contact fatigue (RCF) compared to standard grade rail, greatly reducing the need for rail grinding and track maintenance
- Uniform through-hardness for consistent performance throughout the life of the rail
- Delivering extended rail life and reduced rail life cycle costs
- Our HP range meets all the quality, production and dimensional requirements set out in the EN 13674-1 standard for rails – the next revision of EN 13674-1 is due to include HP335 as a new grade, with the CEN technical committee working draft including HP335 under the name R335V
- HP335 can be supplied, by agreement, as HP350 with an enhanced hardness equivalent to that usually only found in heat treated rails – suitable for heavy duty freight lines

Mechanical properties

Specification	Grade	Rm (MPa)	Elongation (%)	HBW running surface
British Steel	HP335	≥ 1,150	≥ 8	335-375
British Steel	HP350	≥ 1,175	≥ 8	350-390

Chemical composition

Specification	Grade	C	Si	Mn	P	S	Cr	Al	V	H2 (ppm)
British Steel	HP335/ 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



4.3 ZINOCO®



4.3 ZINOCO®

Unbeatable corrosion protection

Our Zinoco® coated rail offers superior protection against corrosion for longer rail life.

Ideal for corrosive conditions e.g. tunnels, level crossings, salt pans and areas of stray current.

Developed in partnership with UK customer Network Rail who required a durable coating to withstand corrosion.

Zinoco offers 2 lines of defence:

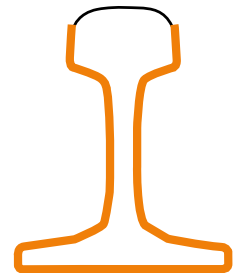
- Durable barrier to combat corrosion
- Provides sacrificial protection, so still works if the coating is damaged

Zinoco coated rail protects against corrosion in the orange areas highlighted in the diagram below, enabling the rail to resist pitting, gall and general loss of section due to corrosion.

Currently being used by Network Rail (UK) and RATP (France), and approved for use by Irish Rail (Ireland) and London Underground (UK).

Performance against current competition

Coating	Sacrificial protection	Stray current protection	Abrasion resistance	Impact resistance	Coating removal (for welding)
Zinoco®	Yes	Excellent	Excellent	Good	Moderate
Railcote®	Yes	Excellent	Moderate	Moderate	Easy
Aluminium metal spray	No	Poor	Very good	Good	Difficult/hazardous
Glass flake epoxy	No	Poor once damaged	Very poor	Very poor	Difficult/hazardous
Glass flake polyester	No	Poor once damaged	Poor	Poor	Difficult/hazardous



4.4 STEEL SLEEPERS



4.4 STEEL SLEEPERS

Lower lifetime costs with efficient logistics

Our steel sleepers are designed for use in all types of application, from metre gauge railways to mainline passenger and heavy haul routes.

They require less ballast than traditional concrete sleepers, leading to reduced track construction and renewal costs.

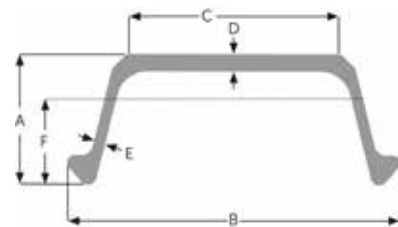
Once installed, steel sleepers don't rot or suffer from insect attacks. They also survive well in wet tropical climates where wood decays rapidly.

Being fully recyclable, our steel sleepers also benefit from a smaller carbon footprint, making it easier to hit your sustainability targets.

Steel sleepers are stackable and because they are lighter than concrete sleepers, can be moved in bundles by a forklift (or manually handled if regulations allow).

Often requiring only a third of the vehicle movements needed by concrete sleepers, using our steel sleepers helps to keep transportation costs to a minimum.

Our steel sleepers can be delivered with all fastening systems pre-installed, helping to keep your installation times to a minimum.



Steel sleeper dimensions

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 I _{xx} 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 broadgauge.

Steel sleeper grade

Specification	Grade	Chemical composition % by mass									Mechanical properties	
		C	Si	Mn	P	S	Cr	Al	V	H2 (ppm)	R _m (MPa)	Elongation (%)
EN 10025	S275	≤ 0.21	0.14-0.25	≤ 1.50	≤ 0.035	≤ 0.035	–	≤ 0.008	–	–	410-560	≥ 23



5 SEMI-FINISHED — PRODUCTS

ABOUT SEMI-FINISHED PRODUCTS

Our integrated steelmaking site at Scunthorpe produces a variety of semi-finished products to suit our customers' rolling requirements for long, structural or general engineering products.

Our steel is produced through the basic oxygen steelmaking (BOS) process, and can then be refined as appropriate in a ladle arc furnace and vacuum degasser facilities.

These processes control the steel temperatures and chemistries extremely tightly, ensuring our wide range of steel grades meet the most demanding customer requirements.

Our slabs, blooms and billets are continuously cast in sequences and the steel is fully shrouded between the ladle and the tundish and for slabs and blooms, between tundish and mould. Hood cooling may also be used for slabs and blooms to remove hydrogen, depending on the hydrogen content and specification required. On completion, our billets are identified to cast level, while blooms and slabs are uniquely-identified to ensure traceability.

British Steel is accredited to both ISO 9001:2015 for our quality management system and ISO 14001:2015 for our environmental management system. Our steelmaking and casting processes also hold ABS, BV, CCS, DNV, LRS and RINA shipbuilding accreditations.

In addition to verifying the chemical composition and segregation of our steel, we have well-equipped laboratories onsite where other tests can be conducted as required.



5.1 SLABS



5.1 SLABS

Our steel slabs are suitable for rolling to reversing mill plate, hot rolled coil and structural sections for a range of structural and general engineering applications.

Dimensions

	Thickness			
	mm		225	298
Width		in	9	12
	800	31 1/2		
	1,095	43 1/8		
	1,270	50		
	1,425	56 1/8		
	1,525	60		
	1,540	60 5/8		
	1,605	63 3/16		
	1,820	72 2/3		
	1,970	77 9/16		

Dimensions	Measurement
Length min	6,900mm
Length max	10,500mm
Piece weight max	34.5t

Documentation

Inspection certificates will be supplied for products being rolled in accordance with EN 10204, with the following elements being routinely analysed at cast level:

Element	No. of reported digits after decimal point
C, Si, Mn	2
P, S, Al(t), V, Ti, Nb, Sn, Mo, Co, Ca, Cu, Ni, Cr, N ₂	3
B	4

Bespoke slabs for your rolling needs

Our slabs can be tailored to best meet the attributes of your products and help you meet the appropriate national and international standards. Please contact us to discuss your requirements.

Application	Standard
Structural steel	Suitable for rolling to EN 10025 e.g. S235, S275, S355
Structural steel	Suitable for rolling to ASTM e.g. A36, A992, A572 gr 50
Low carbon hot rolled coil	Suitable for rolling to EN 10111

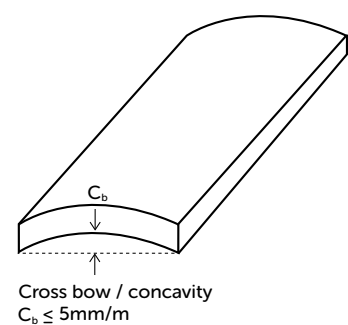
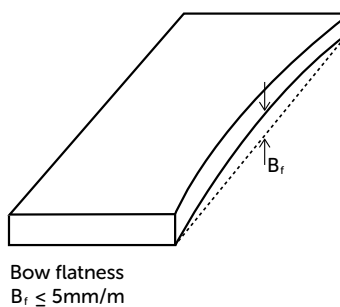
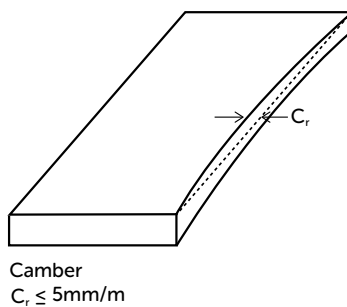
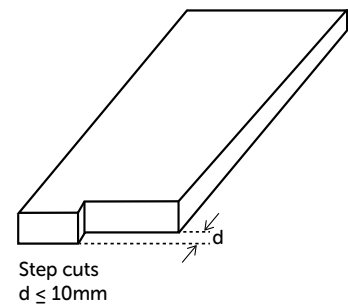
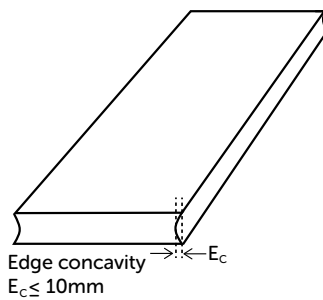
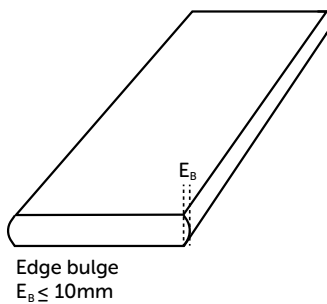
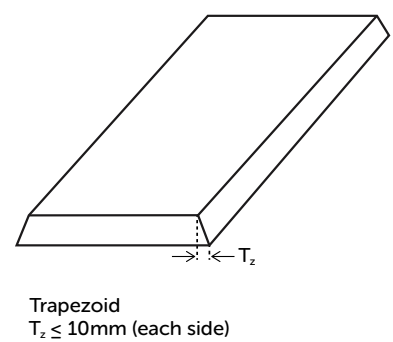
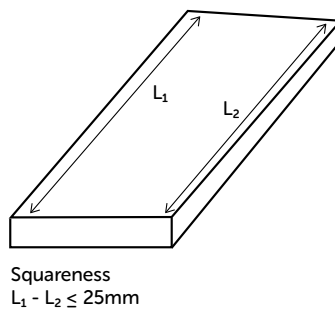
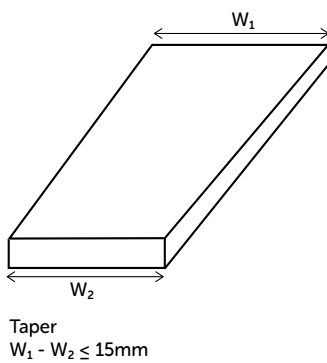
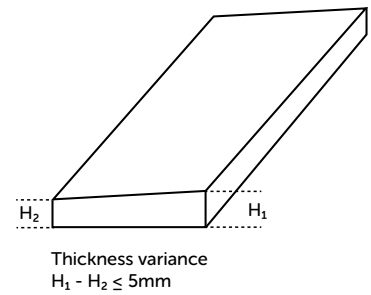
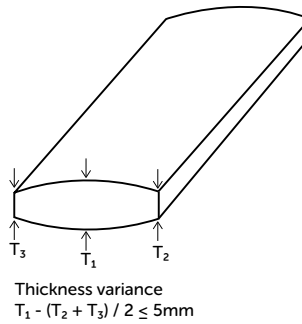
5.1 SLABS

Tolerances

Tolerance	Measurement (all section sizes)
Thickness	+ / - 5mm
Width	+ / - 20mm (last in sequence + 20mm / - 45mm)
Length*	+ / - 100mm

Notes:

*Shorts allowance up to 3 pieces per strand per sequence.



Quantity

Nominal order in 280 metric tonne multiples. Overall order quantity + / - 10%.

5.2 BLOOMS



5.2 BLOOMS

Our steel blooms have a rectangular cross-section and are suitable for structural, rail and wire rod applications.

Surface quality

Blooms are supplied in 'as-cast' condition with normal levels of scale. Superficial surface corrosion may occur during storage and shipping. The external surface will be free from longitudinal and transverse cracks, slivers, corrugation, gas cavities and slag inclusions.

Blooms are flame-cut to length.

Internal quality

Blooms will be free from excessive segregation, pipe, internal laminations, slag inclusions and blowholes.

Dimensions

Width (mm)	Thickness (mm)			
		231	254	309
	283			
	330			
	360			
	486			

Dimensions	Measurement (mm)
Length min	4,000
Length max	9,600

Notes:

Individual bloom weights are calculated from the declared dimensions.

Tolerances

Size

Tolerance	Measurement (all section sizes)
Thickness	+ / - 8mm
Width	+ / - 8mm
Length*	+ / - 120mm

Notes:

*Shorts allowance up to 5% of blooms down to customers' minimum length.

Shape

Tolerance	Measurement (all section sizes)
Bloom straightness	0.5% of length
Rhomboidity	10mm of nominal length diagonal
Twist	1° max per metre with max 4° per length
Concavity / convexity	+ / - 1.5% of thickness and width max
Cut straightness	3% of length of cut

Notes:

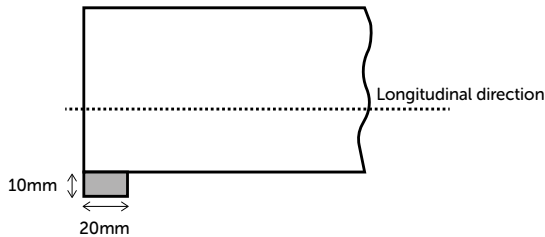
These features are not measured on a regular basis but standard caster output is within the above tolerances. Incidents which lead to a deterioration in quality of caster output would prompt investigation into suitability of cast product for intended orders.

5.2 BLOOMS

Bloom ends

Blooms will be supplied 'as-cut' with flame cut ends.

Cutting fin	mm
Width	≤ 20mm
Thickness	≤ 10mm



Quantity

Nominal order in 280 metric tonne multiples. Overall order quantity + / - 10%.

Documentation

Inspection certificates will be supplied for products being rolled in accordance with EN 10204, with the following elements being routinely analysed at cast level:

Element	No. of reported digits after decimal point
C, Si, Mn	2
P, S, Al(t), V, Ti, Nb, Sn, Mo, Co, Ca, Cu, Ni, Cr, N ₂	3
B	4

Bespoke blooms for your rolling needs

Our blooms can be tailored to best meet the attributes of your products and help you meet the appropriate national and international standards. Please contact us to discuss your requirements.

Application	Standard
Structural steel	Suitable for rolling to EN 10025 e.g. S235, S275, S355
Structural steel	Suitable for rolling to ASTM e.g. A36, A992, A572 gr 50



5.3 BILLETS



5.3 BILLETS

Our steel billets have a square cross-section and are suitable for steel-reinforcement, structural, low-carbon and drawing applications.

Dimensions

Dimension	Measurement (mm)
Width and thickness	140 x 140
Width and thickness	180 x 180

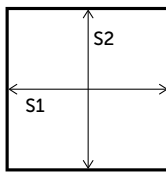
Dimension	Measurement (mm)
Length min	8,000
Length max	14,000

Tolerances

Section overall

Measure section mid-face S1 and S2 (preferred method)

Section	mm
140mm	- 3 / + 5
180mm	-2 / + 6

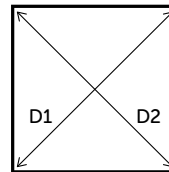


Rhomboidity

Measure diagonal D1 and D2

Diagonal difference D1 - D2

Section	Measurement
140mm	10mm max
180mm	14mm max
All	3° max

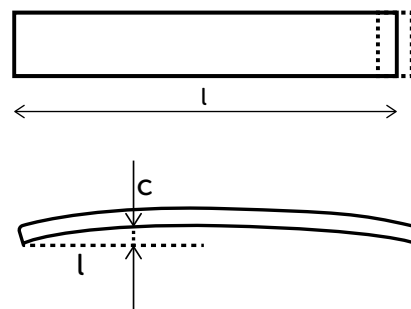


Tolerance	Measurement (all section sizes)
Length*	+ / - 100mm
Straightness**	10mm/m or 100mm max on overall length

Notes:

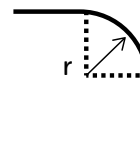
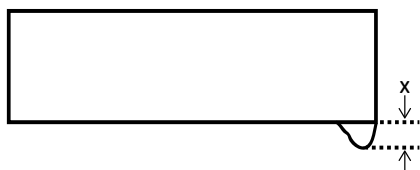
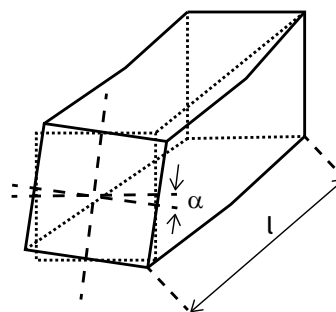
*Shorts allowance up to 5% of billets down to customers' minimum length.

**Measure gap from flat surface or wire stretched end-to-end.



5.3 BILLETS

Tolerance	Measurement (all section sizes)
Twist	3° max on overall length
Fash / flame cutting burr	x = 10mm max
Corner radius	r = 4mm
Quantity	Nominal order in 280 metric tonne multiples Overall order quantity + / - 10%



Documentation

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Element	No. of reported digits after decimal point
C, Si, Mn	2
P, S, Al(t), V, Ti, Nb, Sn, Mo, Co, Ca, Cu, Ni, Cr, N ₂	3
B	4

Bespoke billets for your rolling needs

Our billets can be tailored to best meet the attributes of your products and help you meet the appropriate national and international standards. Please contact us to discuss your requirements.

Application	Standard
Structural steel	Suitable for rolling to EN 10025 e.g. S235, S275, S355
Structural steel	Suitable for rolling to ASTM e.g. A36, A992, A572 gr 50
Plain and deformed reinforcement bar	Various
Low carbon wire rod	Various



6 CONTACTS

6 CONTACTS

If you want to find out more about our product range and how we can help you, please get in touch.

The contact details listed here are correct at the time of publication. For the latest details of your nearest location, please visit britishsteel.co.uk/locations.

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