

Bright mild steel cold finished round bar

Product range and theoretical weights								
Diameter		Weight (kg/m)	Diameter		Weight (kg/m)	Diameter		Weight (kg/m)
mm	inches		mm	inches		mm	inches	
3.18	0.125	0.06	25.00	0.984	3.85	76.20	3.000	35.80
4.76	0.187	0.14	25.40	1.000	3.98	80.00	3.150	39.46
6.00	0.236	0.22	26.00	1.024	4.17	82.55	3.250	42.01
6.35	0.250	0.25	27.00	1.063	4.49	88.90	3.500	48.72
7.00	0.276	0.30	28.57	1.125	5.03	90.00	3.543	49.94
7.94	0.313	0.39	30.00	1.181	5.55	95.00	3.740	55.64
8.00	0.315	0.39	31.75	1.250	6.21	95.25	3.750	56.01
9.00	0.354	0.50	32.00	1.260	6.31	100.00	3.937	61.65
9.52	0.375	0.56	33.00	1.300	6.72	101.60	4.000	63.64
10.00	0.394	0.62	34.92	1.375	7.52	110.00	4.331	74.60
11.11	0.437	0.76	35.00	1.378	7.55	114.30	4.500	80.54
12.00	0.472	0.89	36.00	1.417	7.99	120.00	4.724	88.78
12.70	0.500	0.99	38.10	1.500	8.95	127.00	5.000	99.44
13.00	0.512	1.04	39.00	1.535	9.38	130.00	5.118	104.19
14.00	0.551	1.21	40.00	1.575	9.86	139.70	5.500	120.32
14.29	0.563	1.26	41.27	1.625	10.50	152.40	6.000	143.19
14.55	0.572	1.30	42.42	1.670	11.09			
15.00	0.591	1.39	44.45	1.750	12.18			
15.87	0.625	1.55	45.00	1.772	12.48			
16.00	0.630	1.58	46.00	1.811	13.04			
17.00	0.669	1.78	47.62	1.875	13.98			
17.46	0.687	1.88	50.00	1.969	15.41			
18.00	0.709	2.00	52.07	2.050	16.71			
19.00	0.748	2.23	50.80	2.000	15.91			
19.05	0.750	2.24	53.67	2.113	17.76			
20.00	0.787	2.47	55.00	2.165	18.65			
20.64	0.812	2.63	57.15	2.250	20.14			
21.00	0.827	2.72	60.00	2.362	22.19			
22.00	0.866	2.98	63.50	2.500	24.86			
22.22	0.875	3.04	65.00	2.559	26.05			
23.81	0.937	3.49	70.00	2.756	30.21			
24.00	0.945	3.55	75.00	2.953	34.68			

Grades: M1020/M1030, 1045, 1214, 12L14



Carbon steel round bar 1045

Refer to the “Wakefield Specialty Metals – Technical Handbook of Bar Products”, for more detail on specifications, dimensions and technical data.

Related Specifications

AS 1442 - 1045
JIS G4051 – S45C
BS 970: En8D / 43B
1045C Available in some Hot Rolled Bar sizes

Chemical Composition (% by weight - nominal values)

Grade	C	Mn	Si	P	S
1045	0.45	0.7	0.2	0.02	0.02

Grade 1045 is a fully killed medium carbon steel supplied in the as-rolled condition or normalised (subject to the diameter). The tensile strength is not guaranteed, but is typically in the range of 550 – 700 MPa.

Applications

The steel machines readily and is ideal for applications including:

- Axles
- Bolts
- Hydraulic rams
- Pins
- Rolls
- Shafts
- Sprockets
- Machined parts requiring better strength than mild steel

The steel is also well suited to induction and flame hardening

Dimensional Tolerances

The following tolerances apply to bar supplied to AS 1442.
Similar but not identical tolerances apply for other related specifications.

Nominal Diameter (mm)	Diameter Tolerance (mm)	Out-of-square Tolerance (mm)
Up to 25	±0.25	0.40
Over 25 to 30	±0.30	0.45
Over 30 to 40	±0.40	0.60
Over 40 to 50	±0.50	0.75
Over 50 to 60	±0.60	0.90
Over 60 to 70	±0.70	1.05
Over 70 to 80	±0.80	1.20
Over 80 to 100	±0.90	1.35
Over 100 to 125	+3.20 / -nil	3.20
Over 125 to 170	+4.80 / -nil	4.80
Over 170 to 215	+6.40 / -nil	6.40

Alloy and case hardening steel round bar ASTM A434M, BS 970 or AS 1444

Product range and theoretical weights											
Diameter		Weight (kg/m)	Diameter		Weight (kg/m)	Diameter		Weight (kg/m)	Diameter		Weight (kg/m)
mm	inches		mm	inches		mm	inches		mm	inches	
10.00	0.394	0.62	39.00	1.535	9.38	75.00	2.953	34.68	170.00	6.693	178.17
12.00	0.472	0.89	40.00	1.575	9.86	76.00	2.992	35.61	172.00	6.772	182.38
12.70	0.500	0.99	40.50	1.594	10.11	76.20	3.000	35.80	175.00	6.890	188.80
13.00	0.512	1.04	41.28	1.625	10.51	78.00	3.071	37.51	180.00	7.087	199.75
14.00	0.551	1.21	42.00	1.654	10.87	80.00	3.150	39.47	182.00	7.165	204.21
15.88	0.625	1.55	42.50	1.673	11.14	82.00	3.228	41.45	185.00	7.283	211.00
16.00	0.630	1.58	42.65	1.679	11.21	82.55	3.250	42.01	190.00	7.480	222.56
18.00	0.709	2.00	43.50	1.713	11.67	84.00	3.307	43.50	192.00	7.559	227.26
19.00	0.748	2.23	44.45	1.750	12.18	87.00	3.425	46.66	195.00	7.677	234.42
19.05	0.750	2.24	45.00	1.772	12.48	88.90	3.500	48.72	200.00	7.874	246.60
20.00	0.787	2.47	46.20	1.819	13.16	90.00	3.543	49.94	205.00	8.071	259.08
22.00	0.866	2.98	47.50	1.870	13.91	92.00	3.622	52.18	210.00	8.268	271.88
22.22	0.875	3.04	47.62	1.875	13.98	96.00	3.780	56.82	220.00	8.661	298.39
24.00	0.945	3.55	48.00	1.890	14.20	97.00	3.819	58.01	230.00	9.055	326.13
25.00	0.984	3.85	50.00	1.969	15.41	100.00	3.937	61.65	240.00	9.449	355.10
25.40	1.000	3.98	50.80	2.000	15.91	101.60	4.016	64.14	250.00	9.843	385.31
26.00	1.024	4.17	51.50	2.028	16.35	102.00	4.016	64.14	260.00	10.236	416.75
27.00	1.063	4.49	52.00	2.047	16.67	106.00	4.173	69.27	270.00	10.630	449.42
27.45	1.081	4.64	54.00	2.126	17.98	110.00	4.331	74.60	280.00	11.024	483.34
28.00	1.102	4.83	55.00	2.165	18.65	116.00	4.567	82.96	290.00	11.417	518.48
28.57	1.125	5.03	55.50	2.187	19.03	120.00	4.724	88.78	300.00	11.811	554.85
29.00	1.142	5.18	56.00	2.205	19.33	125.00	4.921	96.33	310.00	12.205	592.46
29.50	1.161	5.36	57.15	2.250	20.14	127.00	5.000	99.43	320.00	12.598	631.30
30.00	1.181	5.55	58.00	2.283	20.74	130.00	5.118	104.19	330.00	12.992	671.37
31.50	1.240	6.12	60.00	2.362	22.19	136.00	5.354	114.03	340.00	13.386	712.67
31.75	1.250	6.21	62.00	2.441	23.70	140.00	5.512	120.83	350.00	13.780	755.21
32.00	1.260	6.31	63.00	2.480	24.47	142.00	5.591	124.31	360.00	14.173	798.98
32.50	1.280	6.51	63.50	2.500	24.86	145.00	5.709	129.62	370.00	14.567	843.98
33.00	1.299	6.71	63.80	2.512	25.09	146.00	5.748	131.41	380.00	14.961	890.23
34.50	1.358	7.34	64.00	2.520	25.25	150.00	5.906	138.72	390.00	15.354	937.70
34.92	1.374	7.52	65.00	2.559	26.05	152.00	5.984	142.44	400.00	15.748	986.40
35.00	1.378	7.55	66.00	2.598	26.85	155.00	6.102	148.11	450.00	17.717	1248.41
36.00	1.417	7.99	68.00	2.677	28.51	158.00	6.220	153.90	500.00	19.685	1541.25
37.50	1.476	8.67	69.85	2.750	30.08	160.00	6.299	157.82			
38.00	1.496	8.90	70.00	2.756	30.21	162.00	6.378	161.79			
38.10	1.500	8.95	72.00	2.835	31.96	165.00	6.496	167.84			

Packing: All hard chrome bars are packaged in cardboard tubes which provide cushioning against impact damage which may occur in handling and transit. All bars are then boxed.

Chemical composition (% by weight)

Grade	C	Mn	Si	P	S	Cr	Mo
1045	0.43 - 0.45	0.60 - 0.90	0.10 - 0.35	0.05 max.	0.05 max.	–	–
4140	0.38 - 0.43	0.75 - 1.00	0.15 - 0.35	0.04 max.	0.04 max.	0.8 - 1.10	0.15 - 0.25

Chrome bar: product range and theoretical weights

Diameter (mm)	Weight (kg/m)	Diameter (mm)	Weight (kg/m)
19.05	2.24	50.80	15.93
20.00	2.47	56.00	19.33
22.22	3.05	57.15	20.16
25.00	3.85	60.00	22.22
25.40	3.98	63.00	24.27
28.57	5.03	63.50	24.89
30.00	5.55	69.85	30.11
31.75	6.22	70.00	30.24
32.00	6.32	76.20	35.84
34.92	7.52	80.00	39.42
35.00	7.55	82.55	42.00
36.00	8.00	85.00	44.54
38.10	8.96	88.90	48.78
40.00	9.87	90.00	50.00
44.45	12.19	100.00	61.73
45.00	12.50	101.60	63.72
47.63	13.98	114.30	80.54
50.00	15.43	127.00	99.56

Grades: 1045, 1045 induction hardened, 4140 hardened & tempered.



Cast Iron Unibar 400 - 15

Unibar 400-15 offers superior machinability combined with optimal impact, fatigue, electrical conductivity and magnetic permeability. Noise and vibration damping are good in this grade.

Specifications: GJS40015 and GGG40 (EN1563)

Size Range:

Round 30 mm - 450 mm Diameter
Ingot 450 mm - 757 mm Diameter
Square Up to 410 mm square
Rectangle Thickness 25 mm - 360 mm and width up to 650 mm

Chemical composition

Grade	C	Si	Mn	P	S	Pb
Min	3.40	2.30	0.10	-	-	—
Max	3.85	3.10	0.30	0.10	0.02	—

Mechanical:

UTS: 400 N/mm²

0.2%PS: 250 N/mm²

Elongation: 15% Minimum

Brinell Hardness:

Diameter	Hardness Range HB Min-Max
Up to 38 mm	190 Max
38 - 75 mm	180 Max
75 - 150 mm	180 Max
Above 150 mm	180 Max

Heat Treat Response: Unibar 400-15 is not recommended for hardening heat treatments.

Density: 7.20 g/cc