



STEEL PIPES & FITTINGS (PTY) LTD

Your One Stop Steel, Tubing and Hardware Shop



— SPECIAL STEELS —

Index

Free Cutting Steel	220M07	(EN1A)	Page 2
Bright Mild Steel	070M20	(EN3A)	Page 4
“40” Carbon Axle Steel	080M40	(EN8)	Page 6
“55” Carbon Steel	070M55	(EN9)	Page 8
1% Chromium Molybdenum Steel	709M40	(EN19)	Page 10
1½% Nickel Chromium Molybdenum Steel	817M40	(EN24)	Page 12
¾% Nickel Chromium Case Hardening Steel	655M13	(EN36B)	Page 14
Hollow Bar		(ST52)	Page 16
Keysteel			Page 18
Metric Tolerances			Page 19
Formulae for theoretical mass calculations	(PER METER)		Page 20

N.B. Test certificates for all materials are available on request.

For standard sizes / specifications of materials outside our stock range and the scope of this booklet please give us a call and we shall endeavor help find them.

Advice and assistance with regard to metal selection is provided in good faith but without responsibility.

SULPHURISED FREE CUTTING STEEL

220M07 (En1A)

CHEMICAL COMPOSITION

ELEMENT	MIN.	MAX.
Carbon	-	0.15
Silicon	0.10	0.40
Manganese	0.90	1.30
Phosphorous	-	0.07
Sulphur	0.20	0.30

MECHANICAL PROPERTIES

(BRIGHT COLD ROLLED OR BRIGHT COLD DRAWN ONLY)

Size (Section in mm)	13.5mm or less	13.5mm - 38mm	38mm - 63.5mm	63.5mm - 100mm
Tensile Strength: Mpa min.	490	430	385	355
Elongation % min.	10	14	14	14

FOREIGN EQUIVALENT SPECIFICATIONS

Standard German Mat No.	Din	SAE	AISI	JIS
1.0711	9S20	1112	B 1112	G4804 (SUM 21)

APPLICATIONS

It's typically used for high speed production of repetition work (e.g. manufacture of bushes, pins, bolts, nuts, studs and couplings) where the major requirements are rapid machining and maximum tool life.

Cutting speeds on bright drawn free cutting steel bar are considerable above those of ordinary mild steel, and components are produced of similar mechanical properties with a far superior surface finish.

Forgeability	:	Poor
Heat Treatment Ability	:	Poor
Machineability	:	Excellent
Weldability	:	Poor

Possible Disadvantages

As this material has high additions of Sulphur, the formation of defects or "stringers" is evident throughout.

This fact should be considered prior to machining jobs having big reductions on diameter or jobs bored out for bushes, etc.

STOCK SIZE RANGE

Round
(in mm diameter)

Hexagon
(in mm across flats)

6	0.222 kg/m	24	3.551 kg/m	10	0.681 kg/m	30	6.118 kg/m
7	0.302 kg/m	25	3.853 kg/m	11	0.823 kg/m	33	7.403 kg/m
8	0.395 kg/m	26	1.168 kg/m	12	0.979 kg/m	36	8.811 kg/m
9	0.499 kg/m	27	4.495 kg/m	13	1.149 kg/m	38	9.817 kg/m
10	0.617 kg/m	28	4.824 kg/m	14	1.332 kg/m	41	11.428 kg/m
11	0.746 kg/m	30	5.549 kg/m	15	1.530 kg/m	46	14.385 kg/m
12	0.888 kg/m	32	6.313 kg/m	16	1.740 kg/m	50	16.996 kg/m
13	1.042 kg/m	35	7.553 kg/m	17	1.965 kg/m	55	20.565 kg/m
14	1.175 kg/m	36	7.990 kg/m	18	2.203 kg/m		
15	1.387 kg/m	38	8.903 kg/m	19	2.455 kg/m		
16	1.578 kg/m	40	9.865 kg/m	20	2.719 kg/m		
18	1.998 kg/m	42	10.867 kg/m	21	2.998 kg/m		
19	2.224 kg/m	45	12.485 kg/m	24	3.916 kg/m		
20	2.466 kg/m	50	15.413 kg/m	26	4.596 kg/m		
22	2.984 kg/m	55	18.650 kg/m	27	4.956 kg/m		

BRIGHT MILD STEEL

070M20 (EN3A)

CHEMICAL COMPOSITION

ELEMENT	MIN.	MAX.
Carbon	0.16	0.24
Silicon	0.10	0.40
Manganese	0.50	1.90
Sulphur	-	0.05
Phosphorous	-	0.05

MECHANICAL PROPERTIES (BRIGHT COLD ROLLED OR BRIGHT COLD DRAWN ONLY)

Limited Ruling Section, min.	152mm
Tensile Strength, MPa min.	430
Yield Stress, MPa min.	215
Elongation, % min.	21
Izod Impact Value	-
Brinell Hardness Number	126 / 179

FOREIGN EQUIVALENT SPECIFICATIONS

Standard German Mat No.	Din	SAE	AISI	JIS
1.0402	C22	1020	1020	

APPLICATIONS

It's typically used for shafts, bolts, nuts, studs and couplings and machinery components where a low tensile strength material is required.

Forgeability	:	Good
Heat Treatment Ability	:	Good
Machineability	:	Good
Weldability	:	Good

STOCK SIZE RANGE (BRIGHT DRAWN AND TURNED ROUND BAR)

6 mm	0.222 kg/m	25 mm	3.853 kg/m	60 mm	22.195 kg/m	125 mm	96.337 kg/m
7 mm	0.302 kg/m	1"	3.978 kg/m	2 1/2"	24.861 kg/m	130 mm	104.195 kg/m
8 mm	0.395 kg/m	26 mm	4.168 kg/m	65 mm	26.049 kg/m	5 1/4"	109.634 kg/m
9 mm	0.499 kg/m	28 mm	4.824 kg/m	2 5/8"	27.408 kg/m	135 mm	112.364 kg/m
3/8"	0.559 kg/m	1 1/8"	5.034 kg/m	2 3/4"	30.018 kg/m	5 1/2"	120.323 kg/m
10 mm	0.617 kg/m	30 mm	5.549 kg/m	70 mm	30.210 kg/m	140 mm	120.841 kg/m
11 mm	0.746 kg/m	1 1/4"	6.215 kg/m	2 7/8"	32.878 kg/m	145 mm	129.627 kg/m
7/16"	0.761 kg/m	32 mm	6.313 kg/m	75 mm	34.680 kg/m	5 3/4"	131.511 kg/m
12 mm	0.888 kg/m	1 3/8"	7.520 kg/m	3"	35.799 kg/m	150 mm	138.721 kg/m
1/2"	0.994 kg/m	35 mm	7.553 kg/m	80 mm	39.458 kg/m	6"	143.195 kg/m
14 mm	1.175 kg/m	36 mm	7.990 kg/m	3 1/4"	42.013 kg/m	155 mm	148.123 kg/m
9/16"	1.259 kg/m	38 mm	8.903 kg/m	85 mm	44.545 kg/m	160 mm	157.833 kg/m
15 mm	1.387 kg/m	1 1/2"	8.950 kg/m	3 1/2"	48.726 kg/m		
5/8"	1.554 kg/m	40 mm	9.865 kg/m	90 mm	49.939 kg/m		
16 mm	1.578 kg/m	1 5/8"	10.504 kg/m	95 mm	55.642 kg/m		
17 mm	1.782 kg/m	42 mm	10.876 kg/m	3 3/4"	55.936 kg/m		
18 mm	1.998 kg/m	1 3/4"	12.181 kg/m	100 mm	61.654 kg/m		
19 mm	2.226 kg/m	45 mm	12.485 kg/m	4"	63.642 kg/m		
20 mm	2.466 kg/m	1 7/8"	13.984 kg/m	105 mm	67.973 kg/m		
13/16"	2.626 kg/m	48 mm	14.205 kg/m	4 1/4"	71.846 kg/m		
21 mm	2.719 kg/m	50 mm	15.413 kg/m	110 mm	74.601 kg/m		
22 mm	2.984 kg/m	2"	15.911 kg/m	4 1/2"	80.547 kg/m		
7/8"	3.045 kg/m	2 1/8"	17.962 kg/m	115 mm	81.537 kg/m		
15/16"	3.496 kg/m	55 mm	18.650 kg/m	120 mm	88.781 kg/m		
24 mm	3.551 kg/m	2 1/4"	20.137 kg/m	4 3/4"	89.745 kg/m		

Larger sizes in black bar and forgings are also available but remember to allow for surface removal of ± 6% to ensure cleanup.

“40” CARBON AXLE STEEL

080M40
(En8)

CHEMICAL COMPOSITION

ELEMENT	MIN.	MAX.
Carbon	0.36	0.44
Silicon	0.10	0.40
Manganese	0.60	1.90
Phosphorous	-	0.05
Sulphur	-	0.05

MECHANICAL PROPERTIES

(BRIGHT COLD ROLLED OR BRIGHT COLD DRAWN ONLY)

	Condition		
	N	Q	R
Limiting Ruling Section, mm	254	64	19
Tensile Strength, MPa min.	510 / 540	620 / 770	690 / 850
Yield Stress, MPa min.	245	385	465
Elongation, % min.	17	16	16
Izod Impact Value, Joule	20	33.4	33.4
Brinell Hardness Number	152 / 207	179 / 229	201 / 255

FOREIGN EQUIVALENT SPECIFICATIONS

Standard German Mat No.	Din	SAE	AISI	JIS
1.0503	C45	1043	1043	

APPLICATIONS

It's typically used for dynamo and motor shafts, heat-treated bolts, crankshafts, connecting rods, driving rings and flanges, railway couplings, axles, brackets, housing, miscellaneous gun carriage and small arms parts not subjected to high stresses or severe wear.

Forgeability	:	Good
Heat Treatment Ability	:	Good
Machineability	:	Good
Weldability	:	Average

STOCK SIZE RANGE (BRIGHT DRAWN AND TURNED ROUND BAR)

6 mm	0.222 kg/m	25 mm	3.853 kg/m	60 mm	22.195 kg/m	125 mm	96.337 kg/m
7 mm	0.302 kg/m	1"	3.978 kg/m	2 1/2"	24.861 kg/m	130 mm	104.195 kg/m
8 mm	0.395 kg/m	26 mm	4.168 kg/m	65 mm	26.049 kg/m	5 1/4"	109.634 kg/m
9 mm	0.499 kg/m	28 mm	4.824 kg/m	2 5/8"	27.408 kg/m	135 mm	112.364 kg/m
3/8"	0.559 kg/m	1 1/8"	5.034 kg/m	2 3/4"	30.018 kg/m	5 1/2"	120.323 kg/m
10 mm	0.617 kg/m	30 mm	5.549 kg/m	70 mm	30.210 kg/m	140 mm	120.841 kg/m
11 mm	0.746 kg/m	1 1/4"	6.215 kg/m	2 7/8"	32.878 kg/m	145 mm	129.627 kg/m
7/16"	0.761 kg/m	32 mm	6.313 kg/m	75 mm	34.680 kg/m	5 3/4"	131.511 kg/m
12 mm	0.888 kg/m	1 3/8"	7.520 kg/m	3"	35.799 kg/m	150 mm	138.721 kg/m
1/2"	0.994 kg/m	35 mm	7.553 kg/m	80 mm	39.458 kg/m	6"	143.195 kg/m
14 mm	1.175 kg/m	36 mm	7.990 kg/m	3 1/4"	42.013 kg/m	155 mm	148.123 kg/m
9/16"	1.259 kg/m	38 mm	8.903 kg/m	85 mm	44.545 kg/m	160 mm	157.833 kg/m
15 mm	1.387 kg/m	1 1/2"	8.950 kg/m	3 1/2"	48.726 kg/m		
5/8"	1.554 kg/m	40 mm	9.865 kg/m	90 mm	49.939 kg/m		
16 mm	1.578 kg/m	1 5/8"	10.504 kg/m	95 mm	55.642 kg/m		
17 mm	1.782 kg/m	42 mm	10.876 kg/m	3 3/4"	55.936 kg/m		
18 mm	1.998 kg/m	1 3/4"	12.181 kg/m	100 mm	61.654 kg/m		
19 mm	2.226 kg/m	45 mm	12.485 kg/m	4"	63.642 kg/m		
20 mm	2.466 kg/m	1 7/8"	13.984 kg/m	105 mm	67.973 kg/m		
13/16"	2.626 kg/m	48 mm	14.205 kg/m	4 1/4"	71.846 kg/m		
21 mm	2.719 kg/m	50 mm	15.413 kg/m	110 mm	74.601 kg/m		
22 mm	2.984 kg/m	2"	15.911 kg/m	4 1/2"	80.547 kg/m		
7/8"	3.045 kg/m	2 1/8"	17.962 kg/m	115 mm	81.537 kg/m		
15/16"	3.496 kg/m	55 mm	18.650 kg/m	120 mm	88.781 kg/m		
24 mm	3.551 kg/m	2 1/4"	20.137 kg/m	4 3/4"	89.745 kg/m		

Larger sizes in black bar and forgings are also available but remember to allow for surface removal of ± 6% to ensure cleanup.

“55” CARBON STEEL

070M55 (En9)

CHEMICAL COMPOSITION

ELEMENT	MIN.	MAX.
Carbon	0.50	0.60
Silicon	0.10	0.40
Manganese	0.50	1.90
Phosphorous	-	0.05
Sulphur	-	0.05

MECHANICAL PROPERTIES

	Condition			
	N	R	S	T
Limiting Ruling Section, mm	254	102	64	19
Tensile Strength, MPa min.	600 / 700	690 / 850	770 / 930	850 / 1 000
Yield Stress, MPa min.	310	415	485	570
Elongation, % min.	13	14	14	12
Izod Impact Value, Joule	-	-	-	-
Brinell Hardness Number	201 / 255	201 / 255	223 / 277	248 / 302

FOREIGN EQUIVALENT SPECIFICATIONS

Standard German Mat No.	Din	SAE	AISI	JIS
1.1209	Cm55	1055	1055	

APPLICATIONS

It's typical uses are sprockets and springs, cylinders, cams, crankshafts, keys, small arms parts, small gears, machine tools, balls for ball mills, ballraces, machined parts requiring moderate wear resistance.

Forgeability	:	Good
Heat Treatment Ability	:	Good
Machineability	:	Fair
Weldability	:	Not Recommended

STOCK SIZE RANGE (ROUND BLACK BAR)

20	2.466 kg/m	60	22.195 kg/m	100	61.654 kg/m
25	3.853 kg/m	65	26.049 kg/m	108	71.846 kg/m
30	5.549 kg/m	70	30.210 kg/m	115	81.537 kg/m
35	7.553 kg/m	75	34.680 kg/m	120	88.781 kg/m
40	9.865 kg/m	80	39.458 kg/m	130	104.195 kg/m
45	12.485 kg/m	85	44.545 kg/m	140	120.841 kg/m
50	15.413 kg/m	90	49.939 kg/m	150	138.721 kg/m
55	18.650 kg/m	95	55.642 kg/m	160	157.833 kg/m

Larger sizes in black bar and forgings are also available but remember to allow for surface removal of $\pm 6\%$ to ensure cleanup.

1% CHROMIUM MOLYBDENUM STEEL

709M40 (En19)

CHEMICAL COMPOSITION

ELEMENT	MIN.	MAX.
Carbon	0.36	0.44
Silicon	0.10	0.35
Manganese	0.70	1.00
Phosphorous	-	0.04
Sulphur	-	0.04
Chromium	0.90	1.20
Molybdenum	0.25	0.35

MECHANICAL PROPERTIES

	Condition				
	R	S	T	U	V
Limiting Ruling Section, mm	254	152	102	64	29
Tensile Strength, MPa min.	690 / 850	770 / 930	850 / 1 000	930 / 1 080	1 000 / 1 160
Yield Stress, MPa min.	480	570	665	740	835
Elongation, % min.	15	15	13	12	12
Izod Impact Value, Joule	34	54	54	47.5	47.5
Brinell Hardness Number	201 / 255	223 / 277	248 / 302	269 / 331	293 / 352

FOREIGN EQUIVALENT SPECIFICATIONS

Standard German Mat No.	Din	SAE	AISI	JIS
1.7225	GS-42CrMo4	4140H	4140H	G4042 Type: SCM4H

APPLICATIONS

It's typical uses are axle shafts, crankshafts, connecting rods, gears, high tensile bolts and studs, propeller shafts joints, rifle barrel and breech mechanisms for small arms parts, introduction hardened trackpins.

Forgeability	:	Good
Heat Treatment Ability	:	Very Versatile
Machineability	:	Difficult
Weldability	:	Not Recommended

STOCK SIZE RANGE (ROUND BLACK BAR)

20	2.466 kg/m	80	39.458 kg/m
25	3.853 kg/m	85	44.545 kg/m
30	5.549 kg/m	90	49.939 kg/m
35	7.553 kg/m	95	55.642 kg/m
40	9.865 kg/m	100	61.654 kg/m
45	12.485 kg/m	110	74.536 kg/m
50	15.413 kg/m	115	81.537 kg/m
55	18.650 kg/m	120	88.781 kg/m
60	22.195 kg/m	130	104.195 kg/m
65	26.049 kg/m	140	120.841 kg/m
70	30.210 kg/m	150	138.721 kg/m
75	34.680 kg/m	160	157.833 kg/m

Larger sizes in black bar and forgings are also available but remember to allow for surface removal of $\pm 6\%$ to ensure cleanup.

1% NICKEL CHROMIUM MOLYBDENUM STEEL

817M40 (En24)

CHEMICAL COMPOSITION

ELEMENT	MIN.	MAX.
Carbon	0.36	0.44
Silicon	0.10	0.35
Manganese	0.45	0.70
Phosphorous	-	0.04
Sulphur	-	0.04
Nickel	1.30	1.70
Chromium	1.00	1.40
Molybdenum	0.20	0.35

MECHANICAL PROPERTIES

	Condition					
	T	U	V	W	X	Z
Limiting Ruling Section, mm	254	102	64	29	29	29
Tensile Strength, MPa min.	850 / 1 000	930 / 1 080	1 000 / 1 160	1 080 / 1 240	1 160 / 1 130	1 540 min
Yield Stress, MPa min.	635	740	835	925	1 005	1 130
Elongation, % min.	13	12	12	11	10	5
Izod Impact Value, Joule	40.7	47.5	47.5	40.7	34	11
Brinell Hardness Number	248 / 302	269 / 331	293 / 352	311 / 375	341 / 404	444 min

FOREIGN EQUIVALENT SPECIFICATIONS

Standard German Mat No.	Din	SAE	AISI	JIS
1.6565	40NiCrMo6	9850	9850	G4103, Class 8 Type: SNCM8

APPLICATIONS

Its typical uses are automobile main shafts, axle shafts, connecting rod bolts, synchronizing cones, push rods, studs, differential shafts, motorcycle kick starters ratchets, pinion sleeves, mandrel bars for tube manufacturing, gun barrels, breech mechanism parts, high duty engine connecting rods, high temperature bolts in oil refining and steam installations, various parts of machine tools such as spindle gears, compensating washers, transmission gears, slide rack and slide cams.

Forgeability	:	Good
Heat Treatment Ability	:	Good
Machineability	:	Fair
Weldability	:	Not Recommended

STOCK SIZE RANGE (ROUND BLACK BAR)

20	2.466 kg/m	60	22.195 kg/m	100	61.654 kg/m
25	3.853 kg/m	65	26.049 kg/m	108	71.846 kg/m
30	5.549 kg/m	70	30.210 kg/m	115	81.537 kg/m
35	7.553 kg/m	75	34.680 kg/m	120	88.781 kg/m
40	9.865 kg/m	80	39.458 kg/m	130	104.195 kg/m
45	12.485 kg/m	85	44.545 kg/m	140	120.841 kg/m
50	15.413 kg/m	90	49.939 kg/m	150	138.721 kg/m
55	18.650 kg/m	95	55.642 kg/m	160	157.833 kg/m

Larger sizes in black bar and forgings are also available but remember to allow for surface removal of $\pm 6\%$ to ensure cleanup.

3¼% NICKEL CHROMIUM CASE HARDENING STEEL

**655M13
(En36B)**

CHEMICAL COMPOSITION

ELEMENT	MIN.	MAX.
Carbon	0.12	0.18
Silicon	0.10	0.35
Manganese	0.30	0.60
Phosphorous	-	0.05
Sulphur	-	0.05
Nickel	3.00	3.75
Chromium	0.60	1.10

MECHANICAL PROPERTIES

HEAT TREATED CONDITIONS	
Tensile Strength, MPa min.	1 000
Elongation, % min.	9
Izod Impact Value, Joule	40
Brinell Hardness Number, max.	255

FOREIGN EQUIVALENT SPECIFICATIONS

Standard German Mat No.	Din	SAE	AISI	JIS
1.5752	14NiCr10	3316	E3316	G4052 Type: SNC22H

APPLICATIONS

Its typical uses are heavy duty gears, auto and heavy vehicle transmission components, steering worms, track rod pins, gudgeon pins, timing wheels and other applications where a high surface hardness is required.

Forgeability	:	Good
Heat Treatment Ability	:	Very Good
Machineability	:	Good
Weldability	:	Not Recommended

STOCK SIZE RANGE (ROUND BLACK BAR)

20	2.466 kg/m	85	44.545 kg/m	200	246.614 kg/m
25	3.853 kg/m	90	49.939 kg/m	210	271.893 kg/m
30	5.549 kg/m	95	55.642 kg/m	220	298.403 kg/m
35	7.553 kg/m	100	61.654 kg/m	230	326.148 kg/m
40	9.865 kg/m	108	71.846 kg/m	240	355.125 kg/m
45	12.485 kg/m	115	81.537 kg/m	250	385.336 kg/m
50	15.413 kg/m	120	88.781 kg/m		
55	18.650 kg/m	130	104.195 kg/m		
60	22.195 kg/m	140	120.841 kg/m		
65	26.049 kg/m	150	138.721 kg/m		
70	30.210 kg/m	160	157.833 kg/m		
75	34.680 kg/m	180	199.757 kg/m		
80	39.458 kg/m	190	222.570 kg/m		

Larger sizes and forgings are also available and please remember to allow for surface removal of $\pm 6\%$ to ensure cleanup.

HOLLOW BAR

CHEMICAL COMPOSITION

ELEMENT	MIN.	MAX.
Carbon	0.18	0.23
Silicon	0.50	0.55
Manganese	1.50	1.80
Phosphorous	-	0.05
Sulphur	-	0.05

MECHANICAL PROPERTIES

Tensile Strength: MPa min.	520
Yield Strength: MPa min.	310
Elongation % min.	18

FOREIGN EQUIVALENT SPECIFICATIONS

Standard German Mat. No.	Din	AISI
1.0580	St52	1518

STOCK SIZE RANGE

Size-mm		Wall Thickness	Mass	Size-mm		Wall Thickness	Mass
O/D	I/D	mm	kg/m	O/D	I/D	mm	kg/m
32	16	8	5.0	71	56	7.5	12.7
36	16	10	6.7	75	40	17.5	25.8
40	25	7.5	6.4	75	45	15	23.3
45	28	8.5	8.1	75	50	12.5	20.3
45	32	6.5	6.6	75	60	7.5	13.6
50	25	12.5	12	80	40	20	30.6
50	32	9	9.6	80	45	17.5	28.3
50	40	5	4.6	80	50	15	25.2
56	28	14	15	80	63	8.5	16.3
56	36	10	11.5	85	40	22.5	35.2
56	40	8	10	85	45	20	33.3
63	32	15.5	18.6	85	50	17.5	30.5
63	40	11.5	15.2	85	55	15	27.2
63	45	9	12.7	85	67	9	18.3
63	50	6.5	9.9	85	75	5	9.9
71	36	17.5	23.7	90	50	20	35.8
71	45	13	19.5	90	63	13.5	27
71	50	10.2	15.2	90	71	9.5	20.5

Size-mm		Wall Thickness	Mass	Size-mm		Wall Thickness	Mass
O/D	I/D	mm	kg/m	O/D	I/D	mm	kg/m
95	50	22.5	41.6	170	150	10	40.1
95	63	16	32.7	180	100	40	143.4
95	97	14	29.7	180	112	34	123.4
95	75	10	22.9	180	125	27.5	109.5
100	56	22	43.9	180	140	20	82.8
100	71	14.5	32.4	180	150	15	68
100	80	10	24.2	180	160	10	42.6
106	56	25	51.8	190	106	42	159
106	63	21.5	47	190	132	29	121.5
106	71	17.5	40	190	150	20	88
106	80	13	32	190	160	15	72.3
106	85	10.5	25.9	200	112	44	176
106	90	8	19.7	200	140	30	133.1
112	63	24.5	54.9	200	160	20	96.8
112	80	16	40.1	212	125	43.5	188.4
112	90	11	30	212	150	31	147
118	63	27.5	63.7	212	160	26	125.2
118	80	19	48.9	212	170	21	108
118	90	14	38.8	224	160	32	161
125	71	27	67.8	224	170	27	139.5
125	80	22	58.6	224	180	22	120
125	90	17.5	49.4	236	140	48	232
125	100	12.5	37.8	236	170	33	176
132	100	16	45.9	236	190	23	132.2
140	80	30	84.7	250	150	50	245
140	100	20	63	250	180	35	185
140	112	14	47.5	250	200	25	138.7
150	80	35	102.9	267	167	50	268
150	90	30	93.2	267	187	40	224
150	100	25	77.8	267	217	25	150
150	106	22	70.2	267	228	19.5	120
150	112	19	62.2	270	200	35	202.8
150	125	12.5	47	273	173	50	276
160	90	35	112	273	193	40	231
160	100	30	100.9	273	201	36	211
160	112	24	85.0	273	223	25	154
160	132	14	55.8	292	228	32	206
170	100	35	121	292	242	25	165
170	118	26	97.8	292	252	20	135
170	140	15	63.4	298	218	40	255

KEYSTEEL

Metric		Imperial	
Square	4	Square	$\frac{1}{8}$ "
	5		$\frac{3}{16}$ "
	6		$\frac{1}{4}$ "
	8		$\frac{3}{8}$ "
	10		$\frac{1}{2}$ "
	12		$\frac{5}{8}$ "
	14		$\frac{3}{4}$ "
	16		$\frac{7}{8}$ "
	18		1"
	20		$1\frac{1}{2}$ "
	22		2"
	25		
	28		
	30		
	32		
	36		
	40		
	45		
	50		
Flat	8 x 5	Flat	$\frac{1}{4}$ X $\frac{3}{16}$
	8 x 7		$\frac{3}{8}$ X $\frac{1}{4}$
	10 x 8		$\frac{1}{2}$ X $\frac{1}{4}$
	12 x 8		$\frac{1}{2}$ X $\frac{3}{8}$
	12 x 10		$\frac{5}{8}$ X $\frac{7}{16}$
	14 x 9		$\frac{5}{8}$ X $\frac{1}{2}$
	16 x 10		$\frac{3}{4}$ X $\frac{1}{2}$
	18 x 11		1 X $\frac{3}{4}$
	20 x 12		$1\frac{1}{4}$ X $\frac{7}{8}$
	22 x 14		
	25 x 14		
	28 x 16		
	32 x 18		
	36 x 20		
	40 x 22		

METRIC TOLERANCE

ROUNDS

DIAMETER				TOLERANCE	
Over	3mm	to	13mm	+Nil	/ - 0.050 mm
Over	13mm	to	24mm	+Nil	/ - 0.075 mm
Over	24mm	to	50mm	+Nil	/ - 0.100 mm
Over	50mm	to	100mm	+Nil	/ - 0.125 mm
Over	100mm	to	125mm	+Nil	/ - 0.150 mm

SQUARES

WIDTH				TOLERANCE	
Over	3mm	to	6mm	+Nil	/ - 0.075 mm
Over	6mm	to	10mm	+Nil	/ - 0.090 mm
Over	10mm	to	18mm	+Nil	/ - 0.110 mm
Over	18mm	to	30mm	+Nil	/ - 0.130 mm
Over	30mm	to	50mm	+Nil	/ - 0.160 mm

HEXAGONS






WIDTH				TOLERANCE	
Over	6mm	to	10mm	+Nil	/ - 0.090 mm
Over	10mm	to	18mm	+Nil	/ - 0.110 mm
Over	18mm	to	30mm	+Nil	/ - 0.130 mm
Over	30mm	to	50mm	+Nil	/ - 0.160 mm
Over	50mm	to	80mm	+Nil	/ - 0.190 mm

FLATS

(EXCLUDING KEY STEEL)

WIDTH			THICKNESS	
SIZE	TOLERANCE		SIZE	TOLERANCE
Over 3mm - 6mm	+Nil	/ - 0.075 mm	Over 1.5mm - 3mm	+Nil / - 0.060 mm
Over 6mm - 10mm	+Nil	/ - 0.090 mm	Over 3mm - 6mm	+Nil / - 0.075 mm
Over 10mm - 18mm	+Nil	/ - 0.110 mm	Over 6mm - 10mm	+Nil / - 0.090 mm
Over 18mm - 30mm	+Nil	/ - 0.130 mm	Over 10mm - 18mm	+Nil / - 0.110 mm
Over 30mm - 50mm	+Nil	/ - 0.160 mm	Over 18mm - 30mm	+Nil / - 0.130 mm
Over 50mm - 80mm	+Nil	/ - 0.190 mm	Over 30mm - 50mm	+Nil / - 0.250 mm
Over 80mm - 100mm	+Nil	/ - 0.220 mm	Over 50mm	+Nil / - 0.300 mm

FORMULAE FOR THEORETICAL MASS CALCULATIONS (PER METER)

Section	Formulae & Spec	Aluminium	Brass	Bronze	Copper	Steel	Stainless
 Round	$D \times D \times$	0.002132	0.006657	0.006924	0.007010	0.00616	0.00631
 Hollow / Tube	$D - t \times t \times$	0.0085	0.026	0.02778	0.028	0.02466	0.0253
 Flat / Sheet	$D \times t \times$	0.002712	0.00848	0.00882	0.00889	0.00786	0.00804
 Square	$D \times D \times$	0.002712	0.00848	0.00882	0.00889	0.00786	0.00804
 Hexagon	$D \times D \times$	0.00235	0.007344	0.007638	0.00776	0.0068	0.006963

Tel : 041 453 3813 | Fax : 041 453 3884
sales@steelpipespe.co.za | accounts@steelpipespe.co.za | www.steelpipespe.co.za

3 Perl Road, Korsten, Port Elizabeth | P.O Box 2762, North End, 6056