



CHRISTMAS STOCKHOLDERS LTD.

STEEL CUTTERS & STOCKHOLDERS

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BUYERS GUIDE BOOK





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Mild Steel Flats



Mild Steel Flats

Metric (mm)	Kg/M
13 x 3	0.31
13 x 5	0.51
13 x 6	0.61
16 x 3	0.38
16 x 5	0.63
20 x 3	0.47
20 x 5	0.79
20 x 6	0.94
20 x 8	1.26
20 x 10	1.57
20 x 12	1.88
25 x 3	0.59
25 x 5	0.98
25 x 6	1.18
25 x 8	1.57
25 x 10	1.96
25 x 12	2.36
25 x 15	2.94
25 x 20	3.92
30 x 3	0.71
30 x 5	1.18
30 x 6	1.41
30 x 8	1.88
30 x 10	2.36
30 x 12	2.83
30 x 15	3.53
30 x 20	4.71
30 x 25	5.89

Metric (mm)	Kg/M
40 x 3	0.94
40 x 5	1.57
40 x 6	1.88
40 x 8	2.51
40 x 10	3.14
40 x 12	3.77
40 x 15	4.71
40 x 20	6.28
40 x 25	7.85
40 x 30	9.42
50 x 3	1.18
50 x 5	1.96
50 x 6	2.36
50 x 8	3.14
50 x 10	3.93
50 x 12	4.71
50 x 15	5.89
50 x 20	7.85
50 x 25	9.81
50 x 30	11.78
50 x 40	15.70
60 x 3	1.41
60 x 5	2.36
60 x 6	2.83
60 x 8	3.77
60 x 10	4.71
60 x 12	5.65
60 x 15	7.07
60 x 20	9.42
60 x 25	11.78
60 x 30	14.13
60 x 40	18.84

Metric (mm)	Kg/M
65 x 3	1.53
65 x 4	2.04
65 x 5	2.55
65 x 6	3.06
65 x 8	4.08
65 x 10	5.10
65 x 12	6.12
65 x 15	7.65
65 x 20	10.21
65 x 25	12.76
65 x 30	15.31
65 x 35	17.86
65 x 40	20.41
65 x 45	22.96
65 x 50	25.52
70 x 3	1.65
70 x 5	2.75
70 x 6	3.30
70 x 8	4.40
70 x 10	5.50
70 x 12	6.59
70 x 15	8.24
70 x 20	10.99
70 x 25	13.74
70 x 30	16.49
70 x 50	27.48
75 x 6	3.53
75 x 8	4.71
75 x 10	5.89
75 x 12	7.07
75 x 15	8.83
75 x 20	11.80
75 x 25	14.70
75 x 30	17.70
75 x 40	23.60
75 x 50	29.40

Metric (mm)	Kg/M
80 x 3	1.89
80 x 5	3.14
80 x 6	3.77
80 x 8	5.02
80 x 10	6.28
80 x 12	7.54
80 x 20	12.56
80 x 25	15.70
80 x 30	18.84
80 x 40	25.12
80 x 45	28.26
80 x 50	31.40
80 x 65	40.80
90 x 5	3.53
90 x 6	4.24
90 x 8	5.65
90x10	7.07
90 x 12	8.48
90 x 15	10.60
90 x 20	14.13
90 x 25	17.66
90 x 30	21.20
90 x 35	24.73
90 x 40	28.26
90 x 45	31.79
90 x 50	35.33
100 x 3	2.36
100 x 5	3.93
100 x 6	4.71
100 x 8	6.28
100 x 10	7.85
100 x 12	9.42
100 x 15	11.78
100 x 20	15.70
100 x 25	19.63
100 x 30	23.55
100 x 35	27.48
100 x 40	31.40
100 x 45	35.33
100 x 50	39.25
100 x 60	47.10
100 x 65	51.10
100 x 75	58.90



Mild Steel Flats

Metric (mm)	Kg/M
110 x 10	8.64
110 x 12	10.36
110 x 15	12.95
120 x 6	5.65
120 x 10	9.42
120 x 12	11.30
120 x 20	18.84
120 x 25	23.55
130 x 5	5.10
130 x 6	6.12
130 x 8	8.16
130 x 10	10.21
130 x 12	12.25
130 x 15	15.31
130 x 20	20.41
130 x 22	22.40
130 x 25	25.51
130 x 30	30.62
130 x 40	40.80
130 x 45	45.92
130 x 50	51.03
130 x 60	61.23
130 x 75	76.50



Mild Steel Flats

Metric (mm)	Kg/M
220 x 10	17.27
220 x 12	20.72
220 x 15	25.91
250 x 6	11.78
250 x 8	15.70
250 x 10	19.60
250 x 12	23.55
250 x 15	29.44
250 x 20	39.25
250 x 25	49.06
250 x 30	58.88
250 x 40	78.50
250 x 45	88.31
250 x 50	98.13
300 x 6	14.13
300 x 8	18.84
300 x 10	23.55
300 x 12	28.26
300 x 15	35.33
300 x 20	47.10
300 x 25	58.88
300 x 30	70.65
300 x 40	94.20
300 x 45	105.98
300 x 50	117.75
300 x 60	141.30

Metric (mm)	Kg/M
150 x 3	3.54
150 x 5	5.89
150 x 6	7.07
150 x 8	9.42
150 x 10	11.78
150 x 12	14.13
150 x 15	17.66
150 x 20	23.55
150 x 25	29.44
150 x 30	35.33
150 x 40	47.10
150 x 45	52.99
150 x 50	58.88
150 x 60	70.65
150 x 75	88.32
160 x 10	12.56
160 x 12	15.07
180 x 6	8.48
180 x 8	11.30
180 x 10	14.13
180 x 12	16.96
180 x 15	21.20
180 x 20	28.26
180 x 25	35.33
180 x 30	42.39
180 x 40	56.52
180 x 50	70.65
200 x 6	9.42
200 x 8	12.60
200 x 10	15.70
200 x 12	18.84
200 x 15	23.55
200 x 20	31.40
200 x 25	39.25
200 x 30	47.10
200 x 40	62.80
200 x 45	70.65
200 x 50	78.50
200 x 75	117.75

Metric (mm)	Kg/M
350 x 10	27.48
350 x 12	33.00
350 x 15	41.21
350 x 20	54.95
350 x 25	68.69
350 x 30	82.43
350 x 40	109.90
400 x 10	31.40
400 x 12	37.68
400 x 15	47.10
400 x 20	62.80
400 x 25	78.50
400 x 30	94.20
400 x 40	125.60
450 x 12	42.39
450 x 20	70.65
450 x 25	88.31



Equal Angles

Designation		Mass per metre kg	Area of section cm ²	Distance of centre of gravity c cm
Size A mm	Thickness t mm			
20 x 20	3	0.88		
25 x 25	5	1.77	226	0.80
	4	1.45	185	0.76
	3	1.11	142	0.72
30 x 30	6	2.56	327	0.96
	5	2.18	278	0.92
	3	1.37	1.74	0.836
40 x 40	6	3.52	448	1.20
	5	2.97	3.79	1.16
	4	2.42	3.08	1.12
	3	1.85	2.36	1.08
45 x 45	6	4.00	509	1.32
	5	3.38	430	1.28
	4	2.74	3.49	1.23
50 x 50	8	5.82	741	1.52
	6	4.47	569	1.45
	5	3.77	4.8	1.40
	3	2.35	2.99	1.32
60 x 60	10	8.69	111	1.85
	8	7.09	9.03	1.77
	6	5.42	6.91	1.69
	5	4.57	5.82	1.64
70 x 70	10	10.30	131	2.09
	8	8.36	106	2.01
	6	6.38	813	1.83
80 x 80	10	11.90	151	2.34
	8	9.63	123	2.26
	6	7.34	925	2.17
90 x 90	12	15.90	203	2.66
	10	13.40	171	2.58
	8	10.90	139	2.50
	6	8.30	10.6	2.41
100 x 100	15	21.90	279	3.02
	12	17.80	22.7	2.90
	10	15.00	192	2.82
	8	12.20	155	2.74



Equal Angles

Moment of inertia	Radius of gyration	Elastic modulus	Plastic modulus
Axis x - x, y - y cm ⁴	Axis x - x, y - y cm	Axis x - x, y - y cm ³	Axis x - x, y - y cm ³
1.20	0.73	0.71	1.3
1.01	0.74	0.58	1.07
0.80	0.75	0.45	0.83
2.50	0.87	1.22	1.91
2.16	0.88	0.65	1.91
1.41	0.900	0.652	-
6.31	1.19	2.26	4.13
5.43	1.2	1.91	3.5
4.47	1.21	1.55	2.85
3.51	1.22	1.20	-
9.16	1.34	2.88	5.28
7.84	1.35	2.43	4.47
6.43	1.36	1.97	3.63
16.3	1.48	4.68	8.55
12.8	1.5	3.61	6.61
11.0	1.51	3.05	5.58
7.06	1.54	1.92	-
34.9	1.78	8.41	15.32
29.2	1.8	6.89	12.57
22.8	1.82	5.29	9.67
19.4	1.82	4.45	8.15
57.2	2.09	11.7	21.25
47.5	2.11	9.52	17.37
36.9	2.13	7.27	13.3
87.5	2.41	15.4	28.15
72.2	2.43	12.6	22.95
55.8	2.44	9.57	17.52
148	2.70	23.3	42.5
127	2.72	19.8	36.03
104	2.74	16.1	29.3
80.3	2.76	12.2	22.31
249	2.98	35.6	64.77
207	3.02	29.1	53.03
117.7	3.04	24.6	45.15
145	3.06	19.9	36.43



Equal Angles

Designation		Mass per metre kg	Area of section cm ²	Distance of centre of gravity c cm
Size A mm	Thickness t mm			
120 x 120	15	26.60	339	3.51
	12	21.60	275	3.40
	10	18.20	232	3.31
	8	14.70	187	3.23
150 x 150	18	40.10	510	437
	15	33.80	430	425
	12	27.30	348	412
	10	23.00	293	403
200 x 200	24	71.10	906	584
	20	59.90	763	568
	18	54.20	691	560
	16	48.50	618	5.52



Equal Angles

Moment of inertia	Radius of gyration	Elastic modulus	Plastic modulus
Axis x - x, y - y cm ⁴	Axis x - x, y - y cm	Axis x - x, y - y cm ³	Axis x - x, y - y cm ³
445	3.62	52.4	95.26
368	3.65	42.7	77.73
313	3.67	36.0	65.6
255	3.69	29.1	53.1
1050	4.54	98.7	179.37
898	4.57	83.5	151.85
737	4.60	67.7	123.35
624	4.62	56.9	103.77
3330	6.06	235	426.2
2850	6.11	199	361.01
2600	6.13	181	327.55
2340	6.16	162	293.49



Unequal Angles

Designation		Mass per metre kg	Area of section cm ²	Distance of centre of gravity	
Size Ax B mm	Thickness t mm			cx cm	cy cm ⁴
40 x 25	4	1.91	2.45	1.36	0.621
50 x 40	6	4.24	5.07	1.56	1.10
	5	3.33	4.28	1.55	1.06
60 x 30	6	3.99	5.08	2.20	0.72
	5	3.37	4.29	2.15	0.68
65 x 50	8	6.75	8.6	2.11	1.37
	6	5.16	6.58	2.04	1.29
	5	4.35	5.54	1.99	1.25
75 x 50	10	9.27	11.63	2.6	1.37
	8	7.39	9.41	2.52	1.29
	6	5.65	7.19	2.44	1.21
80 x 60	8	8.34	10.6	2.55	1.56
	7	7.36	9.38	2.51	1.52
	6	6.37	8.11	2.47	1.48
100 x 65	10	12.3	15.6	3.36	1.63
	8	9.94	12.7	3.27	1.55
	7	8.77	11.2	3.23	1.51
100 x 75	12	15.4	19.7	3.27	2.03
	10	13.0	16.6	3.19	1.95
	8	10.6	13.5	3.1	1.87
125 x 75	12	17.8	22.7	4.31	1.84
	10	15.0	19.1	4.23	1.76
	8	12.2	15.5	4.14	1.68
150 x 75	15	24.8	31.6	5.53	1.81
	12	20.2	25.7	5.41	1.69
	10	17	21.6	5.32	1.61
150 x 90	15	26.6	33.9	5.21	2.23
	12	21.6	27.5	5.08	2.12
	10	18.2	23.2	5.00	2.04
200 x 100	15	33.7	43	7.16	2.22
	12	27.3	34.8	7.03	2.10
	10	23.0	29.2	6.93	2.01
200 x 150	18	47.1	60.0	6.33	3.85
	15	39.6	50.5	6.21	3.73
	12	32.0	40.8	6.08	3.61

Mild Steel Rounds

Metric (mm)	Kg/M
6.0	0.22
8.0	0.39
10.0	0.62
12.0	0.89
16.0	1.58
20.0	2.47
22.0	2.98
25.0	3.85
30.0	5.55
35.0	7.55
40.0	9.86
50.0	15.40
60.0	22.20

Mild Steel Squares

Metric (mm)	Kg/M
6.4	0.32
8.0	0.50
10.0	0.79
12.0	1.13
15.0	1.77
16.0	2.01
20.0	3.14
22.0	3.80
25.0	4.91
30.0	7.07
40.0	12.60
50.0	19.60

Re-rolled Tees

Metric (mm)	Kg/M
40 x 40 x 5	3.52
40 x 40 x 6	2.97
50 x 50 x 6	4.47



Universal Beams



Designation		Dimensions					
Section mm	Mass p/Metre Kg	Depth	Width	Thickness		Radius	Area of section cm ²
		D mm	B mm	Web (w) mm	Flange (f) mm	of Fillet (r) mm	
127 x 76	13	127.0	76.2	4.2	7.6	7.6	16.8
152 x 89	16	152.4	88.9	4.6	7.7	7.6	20.5
178 x 102	19	1778.0	101.6	4.7	7.9	7.6	24.2
203 x 102	23	203.2	101.6	5.2	9.3	7.6	29.0
203 x 133	25	203.2	133.4	5.8	7.8	7.6	32.3
	30	206.8	133.8	6.3	9.6	7.6	38.0
254 x 102	22	254.0	101.6	5.8	6.8	7.6	28.4
	25	257.0	101.9	6.1	8.4	7.6	32.2
	28	260.4	102.1	6.4	10.0	7.6	36.2
254 x 146	31	251.5	146.1	6.1	8.6	7.6	40.0
	37	256.0	146.4	6.4	10.9	7.6	47.5
	43	259.6	147.3	7.3	12.7	7.6	55.1
305 x 102	25	304.8	101.6	5.8	6.8	7.6	31.4
	28	308.9	101.9	6.1	8.9	7.6	36.3
	33	312.7	102.4	6.6	10.8	7.6	41.8
305 x 127	37	303.8	123.5	7.2	10.7	8.9	47.5
	42	306.6	124.3	8.0	12.1	8.9	53.2
	48	310.4	125.2	8.9	14.0	8.9	60.8
305 x 165	40	303.8	165.1	6.1	10.2	8.9	51.5
	46	307.1	165.7	6.7	11.8	8.9	58.9
	54	310.9	166.8	7.7	13.7	8.9	68.4
356 x 127	33	348.5	125.4	5.9	8.5	10.2	41.8
	39	352.8	126.0	6.5	10.7	10.2	49.4
356 x 171	45	352.0	171.0	6.9	9.7	10.2	57.0
	51	355.6	171.5	7.3	11.5	10.2	64.6
	57	358.6	172.1	8.0	13.0	10.2	72.2
	67	364.0	173.2	9.1	15.7	10.2	85.4
406 x 140	39	397.3	141.8	6.3	8.6	10.2	49.4
	46	402.3	142.4	6.9	11.2	10.2	59.0
406 x 178	54	402.6	177.6	7.6	10.9	10.2	68.4
	60	406.4	177.8	7.8	12.8	10.2	76.0
	67	409.4	178.8	8.8	14.3	10.2	85.5
	74	412.8	179.7	9.7	16.0	10.2	95.0

Moment of Inertia		Radius of gyration		Elastic modulus		Plastic modulus	
Axis x-x cm ⁴	Axis y-y cm ⁴	Axis x-x cm	Axis y-y cm	Axis x-x cm ³	Axis y-y cm ³	Axis x-x cm ³	Axis y-y cm ³
477	56	5.33	1.83	75.0	15.0	84.7	22.5
838	90	6.40	2.10	110.0	20.0	123.7	31.0
1357	138	7.5	23.90	153.0	27.0	1718.0	41.4
2091	163	84.9	23.70	206.0	32.0	2318.0	47.8
2356	310	85.4	3.10	231.9	46.4	2598.0	71.39
2887	384	87.2	3.18	279.3	57.4	3133.0	88.05
2867	120	10.0	2.05	2257.0	23.6	261.9	37.55
3408	148	10.3	2.14	2652.0	29.0	305.6	45.82
4008	178	10.5	2.22	3079.0	34.9	353.4	54.84
4439	449	10.5	3.35	353.1	61.5	395.6	94.5
5556	571	10.8	3.47	434.0	78.1	485.3	119.6
6558	677	10.9	3.51	505.3	92.0	568.2	141.2
4387	120	11.8	1.96	287.9	23.6	337.8	37.98
5421	157	12.2	2.08	351.0	30.8	407.2	48.92
6487	193	12.5	2.15	415.0	37.8	479.9	59.85
7162	337	12.3	2.67	471.5	54.6	540.6	85.66
8143	388	12.4	2.70	531.2	62.5	610.5	98.24
9504	460	12.5	2.75	612.4	73.5	706.1	1157.0
8523	763	12.9	3.85	561.2	92.4	624.5	141.5
9948	897	13.0	3.90	647.9	108.3	722.7	165.8
11710	1061	13.1	39.40	753.3	127.3	844.8	195.3
8200	280	14.0	25.90	470.6	44.7	539.8	70.2
10087	357	14.3	26.90	571.8	56.6	653.6	88.6
12091	812	14.6	37.80	686.9	95.0	773.7	146.7
14156	968	14.8	3.87	796.2	112.9	894.9	174.1
16077	1109	14.9	3.92	896.5	128.9	100.9	198.8
19522	1362	15.1	3.99	107.3	157.3	121.2	243.0
12452	411	15.9	2.89	626.9	58.0	720.8	910.8
15647	539	16.3	3.02	777.8	75.7	888.4	118.3
18626	1017	16.5	3.85	925.3	114.5	1048	177.5
21508	1199	16.8	3.97	105.8	134.8	1194	208.3
24329	1365	16.9	4.00	118.8	152.7	1346	236.5
27329	1545	17.0	4.03	132.4	172.0	1504	266.9



Universal Beams



Designation		Dimensions					
Section mm	Mass p/Metre Kg	Depth	Width	Thickness		Radius	Area
		D mm	B mm	Web (w) mm	Flange (f) mm	of Fillet (r) mm	of section cm ²
457 x 152	52	449.8	152.4	7.6	10.9	10.2	66.5
	60	454.7	152.9	8.0	13.3	10.2	75.9
	67	457.2	151.9	9.1	15.0	10.2	85.4
	74	461.3	152.7	9.9	17.0	10.2	95.0
	82	465.1	153.5	10.7	18.9	10.2	104.5
457 x 191	67	453.6	189.9	8.5	12.7	10.2	85.4
	74	457.2	190.5	9.1	14.5	10.2	95.0
	82	460.2	191.3	9.9	16.0	10.2	104.5
	89	463.6	192.0	10.6	17.7	10.2	113.9
	98	467.4	192.8	11.4	19.6	10.2	125.3
533 x 210	82	528.3	208.7	9.6	13.2	12.7	104.4
	92	533.1	209.3	10.2	15.6	12.7	117.8
	101	536.7	210.1	10.9	17.4	12.7	129.3
	109	539.5	210.7	11.6	18.8	12.7	138.6
	122	544.6	211.9	12.8	21.3	12.7	155.8
610 x 229	101	602.2	227.6	10.6	14.8	12.7	129.2
	113	607.3	228.2	11.2	17.3	12.7	144.5
	125	611.9	229.0	11.9	19.6	12.7	159.6
	140	617.0	230.1	13.1	22.1	12.7	178.4
610 x 305	149	609.6	304.8	11.9	19.7	16.5	190.1
	179	617.5	307.0	14.1	23.6	16.5	227.9
	238	633.0	311.5	18.6	31.4	16.5	303.8
686 x 254	125	677.9	253.0	11.7	16.2	16.5	159.6
	140	683.5	253.7	12.4	19.0	16.5	178.6
	152	687.6	254.5	13.2	21.0	16.5	193.5
	170	692.9	255.8	14.5	23.7	16.5	216.6
762 x 267	147	753.9	265.3	12.9	17.5	16.5	188.1
	173	762.0	266.7	14.3	21.6	16.5	220.5
	197	769.6	268.0	15.6	25.4	16.5	250.8
838 x 292	176	834.9	291.6	14.0	18.8	17.8	224.1
	194	840.7	292.4	14.7	21.7	17.8	247.2
	226	850.9	293.8	16.1	26.8	17.8	288.7
914 x 305	201	903.0	303.4	15.2	20.2	19.1	256.4
	224	910.3	304.1	15.9	23.9	19.1	285.3
	253	918.5	305.5	17.3	27.9	19.1	322.8
	289	926.6	307.8	19.6.0	32.0	19.1	368.8
914 x 419	343	911.4	418.5	19.4	32.0	24.1	437.5
	388	920.5	420.5	21.5	36.6	24.1	494.5

Moment of Inertia		Radius of gyration		Elastic modulus		Plastic modulus	
Axis x-x cm ⁴	Axis y-y cm ⁴	Axis x-x cm	Axis y-y cm	Axis x-x cm ³	Axis y-y cm ³	Axis x-x cm ³	Axis y-y cm ³
21345	645	17.9	3.11	949	94.6	1094	133.2
25464	794	18.3	3.23	1120	103.9	1284	162.9
28577	878	18.3	3.21	1250	115.5	1441	182.2
32435	1012	18.5	3.26	1406	132.5	1622	209.1
36215	1143	18.6	3.31	1557	149.0	1800	235.4
29401	1452	18.5	4.12	1296	152.9	1471	237.3
33388	1671	18.7	4.19	1461	175.5	1657	272.2
37103	1871	18.8	4.23	1612	195.6	1833	304.0
41021	2086	19.0	4.28	1770	217.4	2014	337.9
45717	2343	19.1	4.33	1956	243.0	2232	378.3
47491	2005	21.3	4.38	1798	192.2	2056	300.1
55353	2392	21.7	4.51	2076	228.6	2366	356.2
61659	2694	21.8	4.56	2298	256.5	2620	400.0
66739	2937	21.9	4.60	2474	278.8	2824	435.1
76207	3393	22.1	4.67	2799	320.2	3203	500.6
75720	2912	24.2	4.75	2515	255.9	2882	400.0
87431	3439	24.6	4.88	2879	301.4	3288	470.2
98579	3933	24.7	4.96	3222	343.5	3677	535.7
111844	4512	25.0	5.03	3626	392.1	4146	612.5
124660	9300	25.6	6.99	4090	610.3	4572	936.8
151631	11412	25.8	7.08	4911	743.3	5521	1144
207571	15838	26.1	7.22	6559	1017	7456	1574
118003	4379	27.2	5.24	3481	346.1	3996	542.0
136276	5179	27.6	5.38	3988	408.2	4560	637.8
150319	5782	27.8	5.46	4372	454.5	4997	710.0
170147	6621	28.0	5.53	4911	517.7	5624	810.3
168966	5468	30.0	5.39	4483	412.3	5174	649.0
205177	6846	30.5	5.57	5385	513.4	6197	807.3
239894	8174	30.9	5.71	6234	610.0	7167	958.7
246029	7792	33.1	5.9	5894	534.0	6809	841.5
279450	9069	33.6	6.06	6648	620.0	7648	974.4
339747	11353	34.3	6.27	7986	772.9	9157	1211
325529	9427	35.6	6.06	7210	621.0	8362	982.5
375924	11223	36.3	6.27	8259	738.1	9522	1162
436610	13318	36.8	6.2	9507	871.9	10947	1372
504594	15610	37.0	6.51	10891	1014	12583	1603
625282	39150	37.8	9.46	13722	1871	15474	2890
718742	45407	38.1	9.58	15616	2160	17657	3339



Universal Columns



Designation		Dimensions					
Section mm	Mass p/Metre Kg	Depth	Width	Thickness		Radius	Area of section cm ²
		D mm	B mm	Web (w) mm	Flange (f) mm	of Fillet (r) mm	
152 x 152	23	152.4	152.4	6.1	6.8	7.6	29.8
	30	157.5	152.9	6.6	9.4	7.6	38.2
	37	161.8	154.4	8.1	11.5	7.6	47.4
203 x 203	46	203.2	203.2	7.3	11.0	10.2	58.8
	52	206.2	203.9	8.0	12.5	10.2	66.4
	60	209.6	205.2	9.3	14.2	10.2	75.8
	71	215.9	206.2	10.3	17.3	10.2	91.1
	86	222.3	208.8	13.0	20.5	10.2	110.1
254 x 254	73	254.0	254.0	8.6	14.2	12.7	92.9
	89	260.4	255.9	10.5	17.3	12.7	114.0
	107	266.7	258.3	13.0	20.5	12.7	136.6
	132	276.4	261.0	15.6	25.3	12.7	168.9
	167	289.1	264.5	19.2	31.7	12.7	212.4
305 x 305	97	307.8	304.8	9.9	15.4	15.2	123.3
	118	314.5	306.8	11.9	18.7	15.2	149.8
	137	320.5	308.7	13.8	21.7	15.2	174.6
	158	327.2	310.6	15.7	25.0	15.2	201.2
	198	339.9	314.1	19.2	31.4	15.2	252.3
	240	352.6	317.9	23.0	37.7	15.2	305.6
	283	365.3	321.8	26.9	44.1	15.2	360.4
356 x 368	129	355.6	368.3	10.7	17.5	15.2	164.9
	153	362.0	370.2	12.6	20.7	15.2	195.2
	177	368.3	372.1	14.5	23.8	15.2	225.7
	202	374.7	374.4	16.8	27.0	15.2	257.9
356 x 406	235	381.0	395.0	18.5	30.2	15.2	299.8
	287	393.7	399.0	22.6	36.5	15.2	366.0
	340	406.4	403.0	26.5	42.9	15.2	432.7
	393	419.1	407.0	30.6	49.2	15.2	500.9
	467	436.6	412.4	35.9	58.0	15.2	595.5
	551	455.7	418.5	42.0	67.5	15.2	701.8
	634	474.7	424.1	47.6	77.0	15.2	808.1

Moment of Inertia		Radius of gyration		Elastic modulus		Plastic modulus	
Axis x-x cm ⁴	Axis y-y cm ⁴	Axis x-x cm	Axis y-y cm	Axis x-x cm ³	Axis y-y cm ³	Axis x-x cm ³	Axis y-y cm ³
1263	403	65.1	3.68	165.7	52.95	184.3	80.87
1742	558	67.5	3.82	221.2	73.06	247.1	111.2
2218	709	68.4	3.87	247.2	91.78	310.1	140.1
4564	1539	88.1	5.11	449.2	151.5	497.4	230.0
5263	1770	89.0	5.16	510.4	173.6	568.1	263.7
6088	2041	89.6	5.19	581.1	199.0	652.0	302.8
7647	2536	91.6	5.28	708.4	246.0	802.4	374.2
9462	3119	92.7	5.32	851.5	298.7	978.8	455.9
11360	3973	11.1	6.46	894.5	305.0	988.6	462.4
14307	4849	11.2	6.52	1099	378.9	1228	575.4
17510	5901	11.3	6.57	1313	456.9	1485	695.5
22575	7519	11.6	6.68	1634	576.2	1875	878.6
29914	9796	11.9	6.79	2070	740.6	2417	1132
22202	7268	13.4	7.68	1442	476.9	1589	7235
27601	9006	13.6	7.75	1755	587.0	1953	8917
32838	10672	13.7	7.82	2049	691.4	2298	1052
38740	12524	13.9	7.89	2368	806.3	2680	1228
50832	16230	14.2	8.02	2991	103.4	3436	1576
64177	20239	14.5	8.14	3641	127.3	4245	1947
78777	24545	14.8	8.25	4314	152.5	5101	2337
40246	14555	15.6	9.39	2264	790.4	2482	1196
48525	17469	15.8	9.46	2681	943.8	2964	1430
57153	20470	15.9	9.52	3104	1100	3457	1668
66307	23632	16.0	9.57	3540	1262	3977	1917
79110	31008	16.2	10.2	4153	1270	4689	2384
99994	38714	16.5	10.3	5080	1940	5818	2952
122474	46816	16.8	10.4	6027	2324	6994	3541
146765	55410	17.1	10.5	7004	2723	8229	4157
183118	67905	17.5	10.7	8388	3293	10009	5038
227023	82665	18.0	10.9	9964	3951	12078	6058
275140	98211	18.5	11.0	11592	4632	14247	7114



Parallel flange Channels

Designation		Dimensions					
Section mm	Mass p/Metre Kg	Depth	Width	Thickness		Radius	Area of section cm ²
		D mm	B mm	Web (w) mm	Flange (f) mm	of Fillet (r) mm	
100 x 50 x 10	10.2	100	50	5.0	8.5	9	13.0
125 x 65 x 15	14.8	125	65	5.5	9.5	12	18.8
150 x 75 x 18	17.9	150	75	5.5	10.0	12	22.8
150 x 90 x 24	23.9	150	90	6.5	12.0	12	30.4
180 x 75 x 20	20.3	180	75	6.0	10.5	12	25.9
180 x 90 x 26	26.1	180	90	6.5	12.5	12	33.2
200 x 75 x 23	23.4	200	75	6.0	12.5	12	29.9
200 x 90 x 30	29.7	200	90	7.0	14.0	12	37.9
230 x 75 x 26	25.7	230	75	6.5	12.5	12	32.7
230 x 90 x 32	32.2	230	90	7.5	14.0	12	41.0
260 x 75 x 28	27.6	260	75	7.0	12.0	12	35.1
260 x 90 x 35	34.8	260	90	8.0	14.0	12	44.4
300 x 90 x 41	41.4	300	90	9.0	15.5	12	52.7
300 x 100 x 46	45.5	300	100	9.0	16.5	15	58.0
380 x 100 x 54	54.0	380	100	9.5	17.5	15	68.7
430 x 100 x 64	64.4	430	100	11.0	19.0	15	82.1

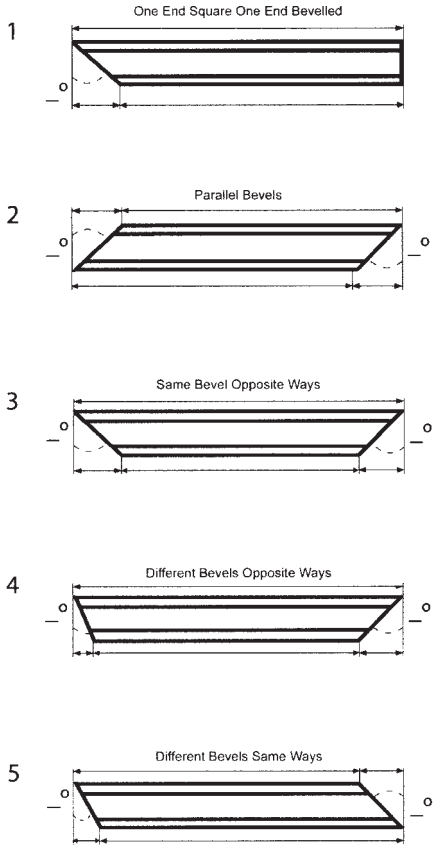


Moment of Inertia		Radius of gyration		Elastic modulus		Plastic modulus	
Axis x-x cm ⁴	Axis y-y cm ⁴	Axis x-x cm	Axis y-y cm	Axis x-x cm ³	Axis y-y cm ³	Axis x-x cm ³	Axis y-y cm ³
208	32.3	4.00	1.58	41.5	9.89	48.9	17.5
483	80.0	5.07	2.06	77.3	18.8	89.9	33.2
861	131	6.15	2.40	115	26.6	132	47.2
1162	253	6.18	2.89	155	44.4	179	76.9
1370	146	7.27	2.38	152	28.8	176	51.8
1817	277	7.40	2.89	202	47.4	232	83.5
1963	170	8.11	2.39	196	33.8	227	60.6
2523	314	8.16	2.88	252	53.4	291	94.5
2748	181	9.17	2.35	239	34.8	278	63.2
3518	334	9.27	2.86	306	55.0	355	98.9
3619	185	10.10	2.30	278	34.4	328	62.0
4728	353	10.30	2.82	364	56.3	425	102
7218	404	11.70	2.77	481	63.1	568	114
8229	568	11.90	3.13	549	81.7	641	148
15030	643	14.80	3.06	791	89.2	933	161
21940	722	16.30	2.97	1020	97.9	1222	176



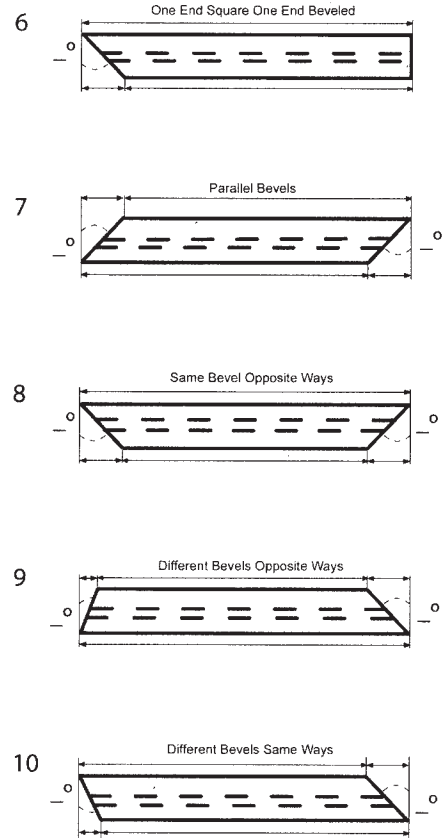
Mitre Guide

Hollow Sections, Universal Beams,
Columns & Joists - Bevel Across Web



Mitre Guide

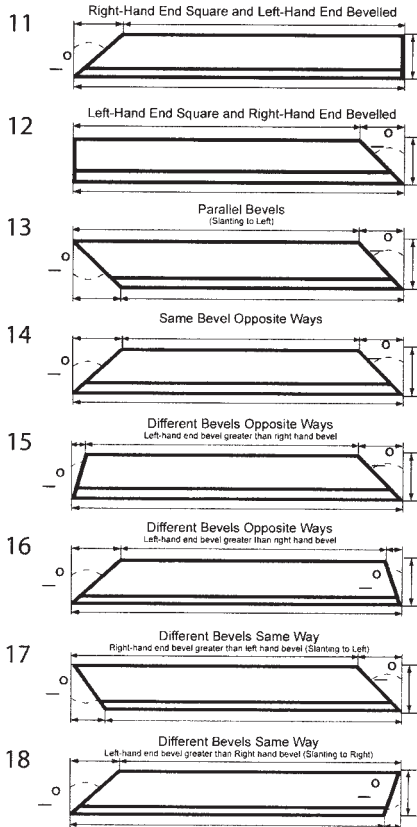
Universal Beams, Columns & Joists
Bevel Across Flange





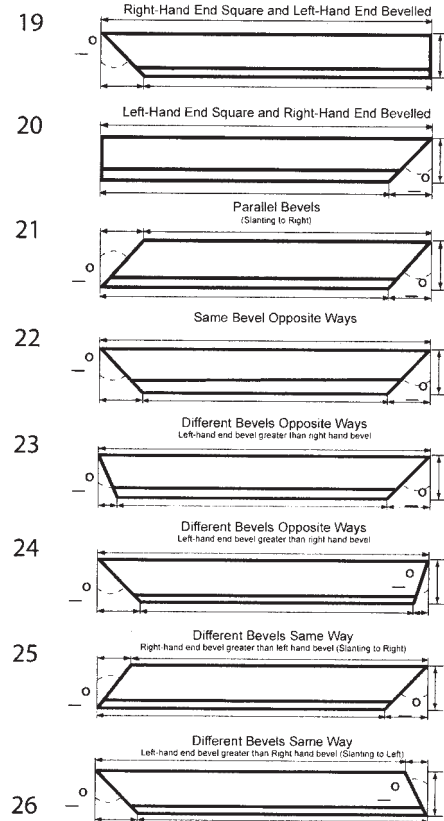
Mitre Guide

Angles - Long Point on Back



Mitre Guide

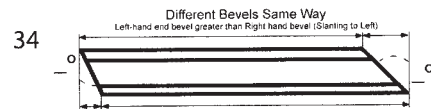
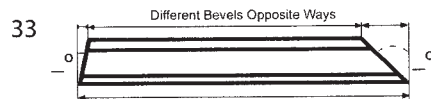
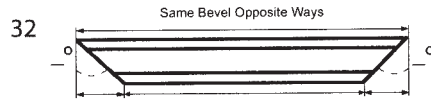
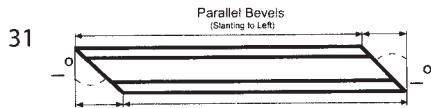
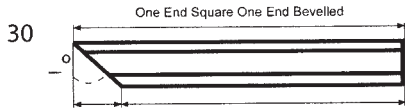
Angles - Long Point on Toes





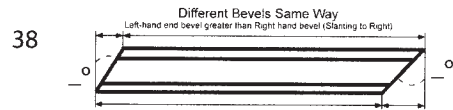
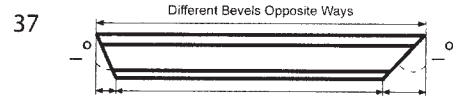
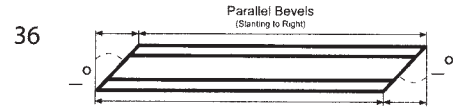
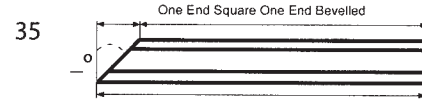
Mitre Guide

Channels - Bevel Across Back



Mitre Guide

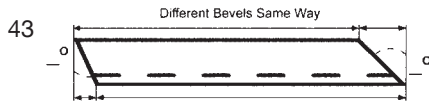
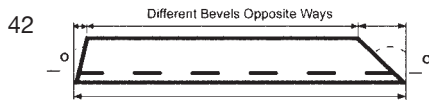
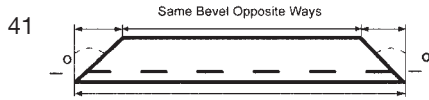
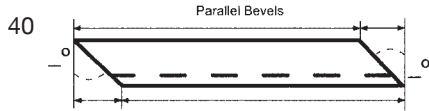
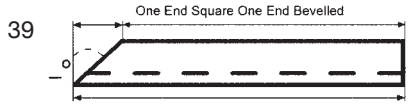
Channels - Bevel Across Back





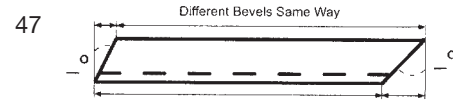
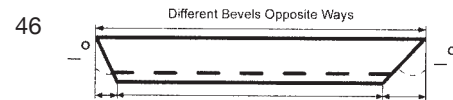
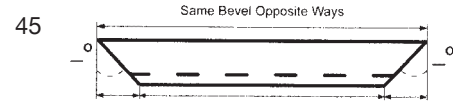
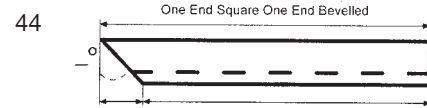
Mitre Guide

Channels - Bevel Across Legs
Long Point on Back



Mitre Guide

Channels - Bevel Across Legs
Long Point on Toes





Circular Hollow Sections

Designation		Mass per Metre	Metre per Tonne
Outside Diameter	Outside Diameter		
mm	mm	mm	(approx)
21.3	3.0	1.34	746
26.9	2.0	1.21	826
	2.5	1.49	671
	3.0	1.77	565
33.7	2.0	1.54	649
	2.5	1.90	526
	3.0	2.27	441
	4.0	2.93	341
42.4	2.0	1.97	508
	2.5	2.43	412
	3.0	2.91	344
	4.0	3.79	264
48.3	2.0	2.25	444
	2.5	2.79	358
	3.0	3.35	299
	4.0	4.37	229
	5.0	5.34	187
60.3	3.0	4.24	236
	4.0	5.55	180
	5.0	6.82	147
76.1	2.5	4.48	223
	3.0	5.41	185
	4.0	7.11	141
	5.0	8.77	114
88.9	3.0	6.36	157
	4.0	8.38	119
	5.0	10.30	97
101.6	3.0	7.29	137
	3.6	8.70	115
	4.0	9.63	104
114.3	3.0	8.13	123
	3.6	9.83	102
	4.0	10.90	92
	5.0	13.50	74
	6.3	16.80	60
127.0	3.0	9.92	101



Circular Hollow Sections

Designation		Mass per Metre	Metre per Tonne
Outside Diameter	Outside Diameter		
mm	mm	mm	(approx)
139.7	3.0	9.99	100
	4.0	13.50	74
	5.0	16.60	60
	6.3	20.70	48
	8.0	26.00	38
	10.0	32.00	31
168.3	4.0	16.00	63
	5.0	20.10	50
	6.3	25.20	40
	8.0	31.60	32
	10.0	39.00	26
193.7	12.5	48.00	21
	5.0	23.30	43
	6.3	29.10	34
219.1	8.0	36.60	27
	10.0	45.30	22
	12.5	55.90	18
	5.0	26.40	38
	6.3	33.10	30
244.5	8.0	41.60	24
	10.0	51.60	19
	12.5	63.70	16
	16.0	80.10	12
273.0	6.3	37.00	27
	8.0	46.70	21
	10.0	57.80	17
	12.5	71.50	14
	16.0	90.20	11
	6.3	41.40	24
323.9	8.0	52.30	19
	10.0	64.90	15
	12.5	80.30	12
	16.0	101.00	10
	6.3	49.30	20
	8.0	62.30	16
10.0	10.0	77.40	13
	12.5	96.00	10
	16.0	121.00	8



Square Hollow Sections

Nominal Size		Mass per Metre	Metre per Tonne
Size	Thickness		
mm	mm	mm	(approx)
20 x 20	2.0	1.12	897
	2.5	1.35	741
25 x 25	2.0	1.43	700
	2.5	1.74	574
	3.0	2.04	491
30 x 30	2.0	1.65	606
	2.5	2.14	468
	3.0	2.51	399
40 x 40	2.0	2.28	439
	2.5	2.92	342
	3.0	3.45	290
	4.0	4.46	224
50 x 50	5.0	5.40	185
	2.0	2.91	344
	2.5	3.71	270
	3.0	4.39	228
	4.0	5.72	175
60 x 60	5.0	6.97	143
	6.3	8.49	118
	3.0	5.34	187
	4.0	6.97	143
	5.0	8.54	117
70 x 70	6.3	10.47	96
	8.0	12.82	78
	3.0	6.28	159
	3.6	7.46	134
	4.0	7.86	127
80 x 80	5.0	10.11	99
	6.3	12.45	80
	8.0	15.33	65
	3.0	7.22	139
	3.6	8.59	116
	4.0	9.11	110
90 x 90	5.0	11.68	86
	6.3	14.43	69
	8.0	17.84	56
	3.0	7.95	126
	3.6	9.72	103
100 x 100	4.0	10.40	96
	5.0	13.30	75
	6.0	15.82	64
	3.0	8.89	112
	4.0	12.00	83
5.0	14.80	68	
6.0	16.70	60	
8.0	22.87	44	
10.0	27.88	36	



Square Hollow Sections

Nominal Size		Mass per Metre	Metre per Tonne
Size	Thickness		
mm	mm	mm	(approx)
120 x 120	4.0	14.50	69
	5.0	17.96	56
	6.3	22.34	45
	8.0	27.89	36
	10.0	34.16	29
	12.5	41.60	24
140 x 140	5.0	21.10	47
	6.3	26.30	38
	8.0	32.92	30
	10.0	40.44	25
	12.5	49.45	20
150 x 150	5.0	22.67	44
	6.0	26.20	38
	8.0	35.43	28
	10.0	43.58	23
	12.5	53.38	19
180 x 180	6.3	34.21	29
	8.0	42.96	23
	10.0	53.00	19
	12.5	65.15	15
	16.0	81.42	12
200 x 200	6.3	38.17	26
	8.0	47.99	21
	10.0	59.28	17
	12.5	73.00	14
	16	91.47	11
250 x 250	6.3	48.06	21
	8.0	60.55	17
	10.0	74.98	13
	12.5	92.63	11
	16.0	116.60	9
300 x 300	6.3	57.90	17
	8.0	73.10	14
	10.0	90.70	11
	12.5	112.00	9
	16.0	142.00	7
350 x 350	8.0	85.70	12
	10.0	106.00	9
	12.5	132.00	8
	16.0	167.00	6
400 x 400	10.0	122.00	8
	12.5	152.00	7
	16.0	192.00	5



Rectangular Hollow Sections

Nominal Size		Mass per Metre	Metre per Tonne
Size	Thickness		
mm	mm	mm	(approx)
50 x 25	2.0	2.12	472
	2.5	2.73	366
	3.0	3.22	311
50 x 30	2.0	2.28	439
	2.5	2.92	342
	3.0	3.45	290
	4.0	4.46	224
	5.0	5.40	185
60 x 40	2.5	3.71	270
	3.0	4.39	228
	4.0	5.72	175
	5.0	6.97	143
	6.3	8.49	118
80 x 40	2.5	4.39	228
	3.0	5.34	187
	4.0	6.97	143
	5.0	8.54	117
	6.3	10.50	95
	8.0	12.80	78
90 x 50	3.0	6.28	159
	3.6	7.46	134
	5.0	10.10	99
	6.3	12.50	80
	8.0	15.30	65
100 x 50	2.5	5.56	180
	3.0	6.75	148
	4.0	8.86	113
	5.0	10.90	92
	6.3	13.40	75
	8.0	16.60	60
100 x 60	3.0	7.22	139
	3.6	8.59	116
	5.0	11.70	85
	6.3	14.40	69
	8.0	17.80	56
120 x 60	3.0	6.97	143
	3.6	9.72	103
	5.0	13.30	75
	6.3	16.40	61
	8.0	20.40	49



Rectangular Hollow Sections

Nominal Size		Mass per Metre	Metre per Tonne
Size	Thickness		
mm	mm	mm	(approx)
120 x 80	5.0	14.80	68
	6.3	18.40	54
	8.0	22.90	44
	10.00	27.90	36
150 x 100	5.0	18.70	53
	6.3	23.30	43
	8.0	29.10	34
	10.0	35.70	28
	12.5	43.60	23
160 x 80	5.0	18.00	56
	6.3	22.30	45
	8.0	27.90	36
	10.0	34.20	29
	12.5	41.60	24
200 x 100	5.0	22.70	44
	6.3	28.30	35
	8.0	35.40	28
	10.0	43.60	23
	12.5	53.40	19
200 x 120	6.0	28.30	35
	8.0	36.50	27
	10.0	44.40	23
250 x 100	6.0	31.10	32
	8.0	40.20	25
	10.0	49.10	20
250 x 150	5.0	30.50	33
	6.3	38.20	26
	8.0	48.00	21
	10.0	59.30	17
	12.5	73.00	14
300 x 200	16.0	91.50	11
	6.3	48.10	21
	8.0	60.50	17
	10.0	75.00	13
	12.5	92.60	11
	16.0	117.00	9



Rectangular Hollow Sections

Nominal Size		Mass per Metre	Metre per Tonne
Size	Thickness		
mm	mm	mm	(approx)
400 x 200	6.3	57.90	17
	8.0	73.10	14
	10.0	90.70	11
	12.5	112.00	9
	16.0	142.00	7
500 x 300	10.0	122.00	8
	12.5	152.00	7
	16.0	192.00	5



Reinforcing Fabric

to BS 4483 British standard preferred meshes
in stock size sheets 4.8m Long 2.4m Wide

British Standard reference	Longitudinal wires			Cross wires			Mass	
	size mm	pitch mm	area mm ² /m	size mm	pitch mm	area mm ² /m	kg/m ²	kg/sheet
Square Mesh Fabric								
A 393	10	200	393	10	200	393	6.16	70.96
A 252	8	200	252	8	200	252	3.95	45.50
A 193	7	200	193	7	200	193	3.02	34.79
A 142	6	200	142	6	200	142	2.22	25.57
A 98	5	200	98	5	200	98	1.54	17.74
Structural Fabric								
B1131	12	100	1131	8	200	252	10.9	125.57
B 785	10	100	785	8	200	252	8.14	93.77
B 503	8	100	503	8	200	252	5.93	68.31
B 385	7	100	385	7	200	193	4.53	52.19
B 283	6	100	283	7	200	193	3.73	42.97
B 196	5	100	196	7	200	193	3.05	35.14
Long Mesh Fabric								
C 785	10	100	785	6	400	70.8	6.72	77.41
C 636	9	100	636	6	400	70.8	5.55	63.94
C 503	8	100	503	5	400	49	4.34	50.00
C 385	7	100	385	5	400	49	3.41	39.28
C 283	6	100	283	5	400	49	2.61	30.07
Wrapping Fabric								
D 98	5	200	98	5	200	98	1.54	17.74
D 49	2.5	100	49	2.5	100	49	0.77	8.87

Fabric is produced from cold drawn wire complying with BS 4482 with a characteristic strength not less than 485 N/mm². Sheets of other sizes and with alternative combinations of wire size and spacing can be produced to suit individual requirements



Cold Reduced Sheets



Technical Information

Metric (mm)	Kg/M
1.2	9.42
1.0	7.85

Metric (mm)	Kg/M
0.8	6.28
0.7	5.50

(The following information supplied in our technical section has been compiled from various standards publications. It is by no means comprehensive and is for quick reference only.)

For more detailed information please contact our sales department who will be happy to supply you with up-to-date technical help)

Hot Rolled Strip Mill Sheets

Metric (mm)	Kg/M
3.0	23.550
4.0	31.400
5.0	39.250
6.0	47.100
8.0	62.800
10.0	78.500
12.5	98.125
15.0	117.750
20.0	157.000
22.5	176.625
25.0	196.250
30.0	235.500
32.0	251.200
35.0	274.750
40	314.000

Metric (mm)	Kg/M
45	353.25
50	392.50
55	431.75
60	471.00
65	510.25
70	549.50
75	588.75
80	628.00
90	706.50
100	785.00
110	863.50
120	942.00
130	1020.00
150	1177.50

INTRODUCTION

As part of the exercise towards the removal of technical barriers to trade, the European Committee for Iron & Steel Standardisation (ECISS) has prepared a series of European Standards (ENs) for structural steels.

EN 10025 : 2004 is the new European standard for structural steel. The following pages show the new grades, properties and the nearest equivalent grades from former standards including EN 10025 : 1993. The grade designation system is also explained.

Christmas Stockholders can provide a very wide range of rolled sections and plates and the information following has been prepared to show how the new standard applies to these products.

The European Committee for Iron and Steel Standardisation is responsible for producing the European Standards (ENs) for structural steels. The first of these standards, EN 10025, was published in the UK by BSI as EN 10025:1990, partly superseding BS 4360 : 1986, which was reissued as BS 4360 : 1990.

In 1993, a second edition of EN 10025 was made available together with EN 10113 : parts 1,2 & 3 and EN 10155. In June 1994, EN 10210 : part 1 was published and at the same time BS 4360 was officially withdrawn. The balance of the BS 4360 steels not affected by these ENs were re-issued in new British Standards BS 7613 and BS 7668.

In 1996, with the publication of EN 10137, BS 7613 was withdrawn. BS 7668 will remain until an EN for atmospheric corrosion resistant hollow sections is available.

In 2004 the standard EN 10025 was revised to address the provisions of EU Construction Products Directive (89/106/EEC). It is now published in six parts to bring together almost all the "Structural Metallic Products" into one comprehensive standard.

Floor Plates (Durbar)

Metric (mm)	Kg/M
2500 x 1250 x 3.0 O/P	26.19
3000 x 1500 x 3.0 O/P	26.19
2000 x 1000 x 4.5 O/P	37.97
2500 x 1250 x 4.5 O/P	37.97
3000 x 1500 x 4.5 O/P	37.97
2000 x 1000 x 6.0 O/P	49.74
2500 x 1250 x 6.0 O/P	49.74
3000 x 1500 x 6.0 O/P	49.74
2000 x 1000 x 8.0 O/P	65.44

Metric (mm)	Kg/M
2500 x 1250 x 8.0 O/P	65.44
3000 x 1500 x 8.0 O/P	65.44
2000 x 1000 x 10.0 O/P	81.14
2500 x 1250 x 10.0 O/P	81.14
3000 x 1500 x 10.0 O/P	81.14
2000 x 1000 x 12.5 O/P	100.77
2500 x 1500 x 12.5 O/P	100.77
3000 x 1500 x 12.5 O/P	100.77



Technical Information

The New European Standard EN 10025 : 2004

The new standard is published in six parts and draws together earlier standards to produce one standard for the majority of structural steel products.

The six parts are:

- PART 1** General technical delivery conditions.
PART 2 Technical delivery conditions for non-alloy structural steels.
(Supersedes EN 10025 : 1993)
PART 3 Technical delivery conditions for normalised/normalised rolled weldable fine grain structural steels.
(Supersedes EN 10113 : parts 1 & 2 : 1993)
PART 4 Technical delivery conditions for thermomechanically rolled weldable fine grain structural steels.
(Supersedes EN 10113 : parts 1 & 3 : 1993)
PART 5 Technical delivery conditions for structural steels with improved atmospheric corrosion resistance – also known as weathering steels.
(Supersedes EN 10155 : 1993)
PART 6 Technical delivery conditions for flat products of high yield strength structural steels in the quenched and tempered condition.
(Supersedes EN 10137 : parts 1 & 2 : 1996)

Grade Designation Systems

The designation systems used in the new standard are similar but not identical to EN 10025 : 1993 and very different to the more familiar BS 4360 designations so the guide below has been prepared to assist purchasers, specifiers, designers and steel users.

Symbols used in EN 10025 : part 2 : 2004

Non-alloy structural steels

- S... Structural Steel
 E... Engineering Steel
 .235... Minimum yield strength (Reh) in MPa @ 16mm
 ...JO... Longitudinal Charpy V-notch impacts 27 J @ 0 deg C
 ...J2... Longitudinal Charpy V-notch impacts 27 J @ -20 deg C
 ...K2... Longitudinal Charpy V-notch impacts 40 J @ -20 deg C
 ...+AR Supply condition as rolled
 ...+N Supply condition normalised or normalised rolled

Customer Options

- ...C... Grade suitable for cold forming
 ...Z... Grade with improved properties perpendicular to surface

Examples: S235JR+AR, S355K2C+N

Grades, properties and nearest equivalents.

Table 1. EN10025 : part 2 : 2004 - Nonalloy structural steels

Comparison between grades in EN 10025: part 2 : 2004 & nearest equivalent versions in EN 10025 : 1993 and BS 4360 : 1990

EN 10025 : part 2 : 2004					EN 10025 : 1993	BS 4360 : 1990
Grade	Yield (Reh) min	Tensile (Rm)	Charpy V-notch longitudinal		Grade	Grade
	Strength at t = 16mm (MPa)		Temp (deg C)	Energy (J) t = 16mm		
S185	185	290/510	-	-	S185	-
- *1	235	360/510	-	-	S235	40A
S235JR *2			20	27	S235JRG1/G2	40B
S235J0			0	27	S235J0	40C
S235J2			-20	27	S235J2G3/G4	40D
- *1	275	410/560	-	-	S275	43A
S275JR *2			20	27	S275JR	43B
S275J0			0	27	S275J0	43C
S275J2			-20	27	S275J2G3/G4	43D
- *1	355	470/630	-	-	S355	50A
S355JR *2			20	27	S355JR	50B
S355J0			0	27	S355J0	50C
S355J2			-20	27	S355J2G3/G4	50D
S355K2			-20	40	S355J2G3/G4	50DD
E295	295	470/610	-	-	E295	-
S335	335	570/710	-	-	S335	-
E360	360	650/830	-	-	E360	-

(1 MPa = 1 N/mm²)

Notes:

1. For all products to be compliant with the EU Construction Products Directive (CPD 89/106/EC) the material must offer a guaranteed minimum impact performance. This has resulted in the removal of this grade from the standard, and the lowest grade now offered is the JR version for each yield strength variation.

2. Verification of the specified impact value is only carried out when agreed at the time of the enquiry and order.



Technical Information

Grades, properties and nearest equivalents (Cont).

Table 2. EN10025 : part 2 : 2004 - Nonalloy structural steels

Comparison between grades in EN 10025: part 2 : 2004 & nearest equivalent versions in EN 10025 : 1993 and BS 4360 : 1990

EN 10025 : part 3 : 2004					EN10113 : part 2 : 1993	BS 4360 : 1990
Grade	Yield (ReH) min	Tensile (Rm)	Charpy V-notch longitudinal		Grade	Grade
	Strength at t = 16mm (MPa)		Temp (deg C)	Energy (J) t = 16mm		
S275N	275	375/510	-20	40	S275N	43DD
S275NL			-50	27	S275NL	43EE
S355N	355	470/630	-20	40	S355	50
S355NL			-50	27	S355NL	50EE
S420N	420	520/680	-20	40	S420N	-
S420NL			-50	27	S420NL	-
S460M	460	550/720	-20	40	S460M	55C
S460ML			-50	27	S460ML	55EE

(1 MPa = 1 N/mm²)

Notes:

1. For all products to be compliant with the EU Construction Products Directive (CPD 89/106/EC) the material must offer a guaranteed minimum impact performance. This has resulted in the removal of this grade from the standard, and the lowest grade now offered is the JR version for each yield strength variation.

2. Verification of the specified impact value is only carried out when agreed at the time of the enquiry and order.

Table 3. EN10025 : part 4 : 2004 - Thermomechanically rolled weldable fine grain structural steels

Comparison between grades in EN 10025 : part 4 : 2004 & nearest equivalent versions in EN 10113 : part 3 : 1993

EN 10025 : part 4 : 2004					EN10113 : part 3 : 1993
Grade	Yield (ReH) min	Tensile (Rm)	Charpy V-notch longitudinal		Grade
	Strength at t = 16mm (MPa)		Temp (deg C)	Energy (J) t = 16mm	
S275M	275	370/510	-20	40	S275N
S275ML			-50	27	S275NL
S355M	355	470/630	-20	40	S355
S355ML			-50	27	S355NL
S420M	420	520/680	-20	40	S420N
S420ML			-50	27	S420NL
S460M	460	550/720	-20	40	S460M
S460ML			-50	27	S460ML

Table 4. EN10025 : part 5 : 2004 - Structural steels with improved atmospheric corrosion resistance

Comparison between grades in EN 10025: part 5 : 2004 and nearest equivalent versions in EN 10155 : 1993 and BS 4360 : 1990

EN 10025 : part 5 : 2004					EN 10155 : 1993	BS 4360 : 1990
Grade	Yield (ReH) min	Tensile (Rm)	Charpy V-notch longitudinal		Grade	Grade
	Strength at t = 16mm (MPa)		Temp (deg C)	Energy (J) t = 16mm		
S235JOW	235	360/510	0	27	S235JOW	-
S235J2W			-20	27	S235J2W	-
S355JOWP	355	470/630	0	27	S355JOWP	WR50A
S355J2WP			-20	27	S355J2WP	-
S355JOW	355	470/630	0	27	S355JOW	WR50B
S355J2W			-20	27	S355J2W	WR50C
S355K2W			-20	40	S355K2W	WR50D

(1 MPa = 1 N/mm²)



Technical Information

Mechanical properties for acceptance purposes (see Note 1)

Grade	Yield Stress N/mm ² minimum	Tensile Strength N/mm ²	Elongation on 5,65 √S ₀ % minimum	Charpy V-notch impact test (longitudinal)		
				Thickness mm	Average energy J minimum	
				Longitudinal	Transverse (See Note 3)	
A	235	400 – 520 (see Note 1)	22 (see Note 2)	-	-	-
B				≤ 50	27	20
D				> 50 ≤ 70	34	24
E				> 70 ≤ 100	41	27

Impact tests are to be made on the various grades at the following temperatures:
 A grade 20°C
 B grade 0°C
 C grade -20°C
 D grade -40°C

NOTES

(1) Requirements for products over 50mm thick in Grades A, B and D and 100mm thick in Grade E are subject to agreement. See 2.1.1.

(2) For full thickness tensile test specimens with a width of 25mm and a gauge length of 200mm (see Fig. 2.2.4 in Chapter 2), the minimum elongation is to be:

Thickness mm	>5	>10	>15	>20	>25	>30	>35
Elongation %	14	16	17	18	19	20	21

(3) Generally, tests need only be made in the longitudinal direction. For special applications, transverse test specimens may be required by the purchaser of L.R. Transverse test results are to be guaranteed by the supplier.

(4) Impact tests are not required for Grade A material up to 50mm thick, nor for thicknesses above 50mm when the material is produced using a fine grained practice and is also normalized or thermomechanically controlled rolled.

(5) Impact tests are generally not required for Grade B steel of 25mm or less in thickness. However, the manufacturer should confirm, by way of regular in-house tests, and on occasional material selected by the Surveyor, that the material meets the above requirement. These results shall be reported to the Surveyor. The frequency of the in-house checks, should as a minimum, be every 250 tonnes.

NOTES

- For AH grade steels in all strength levels and thicknesses up to 12,5mm, the specified minimum manganese content is 0,70%.
- The steel is to contain aluminium, niobium, vanadium or other suitable grain refining elements, either singly or in any combination.
When used singly, the steel is to contain the specified minimum content of the grain refining element. When used in combination, the specified minimum content of each element is not applicable.
- The total aluminium content may be determined instead of the acid soluble content. In such cases the total aluminium content is not to be less than 0,020%.
- Alloying elements other than those listed above are to be included in the approved manufacturing specification.
- The grain refining elements are to be in accordance with the approved composition.

(1) The requirements for products thicker than those detailed in the Table are subject to agreement.

(2) For full thickness tensile test specimens with a width of 25mm and a gauge length of 200mm, the minimum elongation is to be:

Thickness mm		<5	>5 <10	>10 <15	>15 <20	>20 <25	>25 <30	>30 <40	>40 <50	>50
Elongation %	Strength level 32 Strength level 36 Strength level 40	14	16	17	18	19	20	21	22	to be specially agreed
		13	15	16	17	18	19	20	21	
		12	14	15	16	17	18	19	20	

(3) In the case of FH grades, the requirements of this Table apply only up to a maximum thickness of 50mm.



EN10029:1991

Dimensional Tolerances



Weight Guide

EN10029:1991		Tolerances on the nominal thickness							
Nominal thickness	Class A		Class B		Class C		Class D		
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	
	≥ 3 < 5	-0,4	+0,8	-0,3	+0,9	-0	+1,2	-0,6	+0,6
≥ 5 < 8	-0,4	+1,1	-0,3	+1,2	-0	+1,5	-0,75	+0,75	
≥ 8 < 15	-0,5	+1,2	-0,3	+1,4	-0	+1,7	-0,85	+0,85	
≥ 15 < 25	-0,6	+1,3	-0,3	+1,6	-0	+1,9	-0,95	+0,95	
≥ 25 < 40	-0,8	+1,4	-0,3	+1,9	-0	+2,2	-1,1	+1,1	
≥ 40 < 80	-1,0	+1,8	-0,3	+2,5	-0	+2,8	-1,4	+1,4	
≥ 80 < 150	-1,0	+2,2	-0,3	+2,9	-0	+3,2	-1,6	+1,6	
≥ 150 < 250	-1,2	+2,4	-0,3	+3,3	-0	+3,6	-1,8	+1,8	

For Guidance: Size of Plates and weights (KGS)

MM	2000x1000	2500 x1250	3000x1500	4000 x2000	6000x2000	8000x2000	12000x2000	5000x2500	6000x2500
3	47	74	106	188	283	377	565	294	353
4	63	98	141	251	377	502	754	393	471
5	79	123	177	314	471	628	942	491	589
6	94	147	212	377	565	754	1130	589	707
6.5	102	159	230	408	612	816	1225	638	765
7	110	172	247	440	659	879	1319	687	824
8	126	196	283	502	754	1005	1507	785	942
9	141	221	318	565	848	1130	1696	883	1060
10	157	245	353	628	942	1256	1884	981	1178
11	173	270	389	691	1036	1382	2072	1079	1295
12	188	294	424	754	1130	1507	2261	1178	1413
12.5	196	307	442	785	1178	1570	2355	1227	1472
15	236	368	530	942	1413	1884	2826	1472	1766
16	251	393	565	1005	1507	2010	3014	1570	1884
18	283	442	636	1130	1696	2261	3391	1766	2120
20	314	491	707	1256	1884	2512	3768	1963	2355
22	345	540	777	1382	2072	2763	4145	2159	2591
25	393	613	883	1570	2355	3140	4710	2453	2944
30	471	736	1060	1884	2826	3768	5652	2944	3533
35	550	859	1236	2198	3297	4396	6594	3434	4121
40	628	981	1413	2512	3768	5024	7536	3925	4710
45	707	1104	1590	2826	4239	5652	8478	4416	5299
50	785	1227	1766	3140	4710	6280	9420	4906	5888
60	942	1472	2120	3768	5652	7536	11304	5888	7065
65	1021	1595	2296	4082	6123	8164	12246	6378	7654
70	1099	1717	2473	4396	6594	8792	13188	6869	8243
75	1178	1840	2649	4710	7065	9420	14130	7359	8831
80	1256	1963	2826	5024	7536	10048	15072	7850	9420
90	1413	2208	3179	5652	8478	11304	16956	8831	10598
100	1570	2453	3533	6280	9420	12560	18840	9813	11775

EN10029:1991		Special tolerances for flatness			
Class N	Dimensions in mm				
	Nominal thickness	Steel type L (1)		Steel type H (1)	
		Measuring Length			
	1000	2000	1000	2000	
≥ 3 < 5	9	14	12	17	
≥ 5 < 8	8	12	11	15	
≥ 8 < 15	7	11	10	14	
≥ 15 < 25	7	10	10	13	
≥ 25 < 40	6	9	9	12	
≥ 40 < 250	5	8	8	11	

If the distance between the points of contact of the straight-edge and the plate is <1000mm the permissible deviation from flatness shall comply with the following requirements:

For steel type L max. 1% or for steel type H max. 1.5% of the distance between points of contact on the plate between 300mm to 1000mm, but not exceeding the values given in table 4.

Please note that any specification or standard shown in this guide, including weights and properties is strictly for guidance purposes only, and Christmas Stockholders does not accept any liability for loss as a result of the specifications, weights, properties etc, shown within this guide.

