

Merchant Bar Sections (continued)

Table 41 Tensile Properties — Hot Rolled Bar Sections — Regular Grades — AS 1442

Designation	Form	Specified Size mm	Min. Yield Strength MPa	Min. Tensile Strength MPa	Min. % Elongation Gauge Length = $5.65 \sqrt{S_0}$
U3	Rounds, Squares, Hexagons	≤50	250	410	22
		> 50≤170	230	410	22
	Flat Bar	≤12	260	410	22
		>12≤40	250	410	22
		>40≤60	230	410	22
Billets	≤120	230	410	22	
U5	Bars	≤100	270	540	16
U6	Bars	≤100	300	600	14
9	Bars & Billets	≤100	300	540	18

Table 42 Chemical Composition — For OneSteel Merchant Bar Sections — Regular Grades — AS 1444 & AS 1447

Steel Type	Grade	C		Si		Mn		P		S		Cr	
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Alloy Steels and Spring Steels	5155	0.50	0.60	0.10	0.35	0.70	1.00	*	0.040	*	0.040	0.70	0.90
	5160	0.55	0.65	0.10	0.35	0.70	1.00	*	0.040	*	0.040	0.70	0.90
	9255	0.50	0.60	1.60	2.20	0.70	1.05	*	0.040	*	0.040	*	*
	9258	0.55	0.65	1.60	2.20	0.70	1.05	*	0.040	*	0.040	*	*
	9261	0.55	0.65	1.80	2.20	0.70	1.00	*	0.040	*	0.040	0.10	0.25

Notes

- Merchant Bar Sections are also available in AS/NZS 3679.1:1996 specification. See Tables 35 to 37. Other grades may be available on enquiry.

Table 43 OneSteel Grades

Steel Type	Grade	C		Si		Mn		P		S		Cr		V	
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
OneSteel	U1004	*	0.06	*	0.05	0.25	0.50	*	0.040	*	0.050	*	*	*	*
	1015	0.13	0.18	0.10	0.35	0.30	0.60	*	0.040	*	0.050	*	*	*	*
	1082	0.78	0.90	0.10	0.35	0.60	0.90	*	0.050	*	0.050	*	*	*	*
	X4K92M61S	0.55	0.65	1.60	1.90	0.70	1.00	*	0.040	*	0.040	0.10	0.25	0.15	0.25

Table 44 Heat Treatment Limitations

Grade	Maximum Recommended Cross Section*		
	Rounds	Squares	Flats
5155	32 mm	30 mm	22 mm
5160	40 mm	36 mm	28 mm
9261	27 mm	25 mm	19 mm
9255	28 mm	25 mm	
9258		16 mm	

*The recommendations are based on the criterion that, at the maximum dimensions, a hardness of 50 HRC can be achieved in the centre of the quenched section.

The actual properties obtained are dependent on both grade and heat treatment process control. As OneSteel has no control over the springmakers' heat treatment process, the above recommendations cannot be guaranteed. However, springmakers with efficient heat treatment facilities will be able to achieve a hardness value of 50 HRC as recommended.

Merchant Bar Sections

Rounds, Squares, Flats and Hexagons

Availability

Merchant bar rounds, squares, flats and hexagons are available in a variety of steel grades and sizes.

Due to process limitations not all grades are available in all sizes. For new applications we recommend you confirm product availability with a OneSteel Sales Office at an early stage of design. Other specifications and sizes may also be available on enquiry.

Specifications

Merchant bar sections are available in the following standards:

- 300PLUS® and AS/NZS 3679.1
Structural Steel-Hot Rolled Bars and Sections.
- AS 1442
Carbon Steels and Carbon Manganese Steels-Hot Rolled Bars and Semifinished Products.
- AS 1444
Wrought Alloy Steels Standard, Hardenability (H) Series and Hardened and Tempered to Designated Mechanical Properties.
- AS 1447
Hot-Rolled Spring Steels.
- OneSteel grades
(based on AISI-SAE nomenclature).

Table 4 Rounds — Size Availability and Mass

Diameter (mm)	Mass (kg/m)
10	0.616
12	0.887
13	1.04
14	1.21
15	1.39
16	1.58
17	1.78
18	1.99
19	2.23
20	2.46
21	2.72
22	2.98
24	3.55
26	4.17
27	4.49
30	5.55
32	6.31
33	6.71
36	7.99
39	9.38
42	10.9
45	12.5
48	14.2
50	15.4
56	19.3
60	22.2
65	26.0
75	34.7
80	39.5
90	49.9

Standard Length: 6 Metres

Table 5 Squares — Size Availability and Mass

Thickness (mm)	Mass (kg/m)
10*	0.790
12	1.13
16	2.01
20	3.14
25	4.91
40	12.5

Standard Length: 6 Metres

* Confirm availability with sales office.

Table 6 Hexagons — Size Availability and Mass

Size (mm)	Mass (kg/m)
20	2.72
25	4.25
30	6.12
37.5	9.56
39.5	10.6
44	13.2
47.5	15.3
49	16.3
53.5	19.5
57.5	22.5
63	27.0

Standard Length: 6 Metres

Table 7 Flats — Size Availability and Mass (kg/m)

Width (mm)	Thickness (mm)									
	5	6	8	10	12	16	20	25	40	50
20				1.57						
25	0.981	1.18	1.57	1.96	2.36					
32	1.26	1.51	2.01	2.51	3.01					
40	1.57	1.88	2.51	3.14	3.77	5.02	6.28			
50	1.96	2.36	3.14	3.93	4.71	6.28	7.85	9.81		
65	2.55	3.06	4.08	5.10	6.12	8.16	10.2			
75	2.94	3.53	4.71	5.89	7.07	9.42	11.8	14.7	23.6	
90		4.24	5.65	7.07	8.48					
100	3.93	4.71	6.28	7.85	9.42	12.6	15.7	19.6		39.3
110		5.18	6.91	8.64	10.4					
130	5.10	6.12	8.16	10.2	12.2	16.3	20.4	25.5		
150	5.89	7.07	9.42	11.8	14.1	18.8	23.6	29.4		58.9
180		8.48		14.1	17.0		28.3			
200		9.42	12.6	15.7	18.8	25.1	31.4	39.3		
250		11.8	15.7	19.6	23.6					
300		14.1	18.8	23.6	28.3					

Standard Length: 6 Metres