

BRIGHT STEELS

1020 Carbon steel

Typical Analysis (Ave. values %)	C	Si	Mn	P	S
	0.20	0.25	0.45	0.04	0.04
NEAREST STANDARD	AS	AISI	BS	DIN	
	M1020	1020	070M20 EN3B	1.0402 C22	

DESCRIPTION	Cold finished (drawn or turned and polished) mild steel. Suitable for case hardening. Welds readily. 1020 is a general purpose low tensile mild steel with a tensile strength of 430 MPa minimum, and Brinell hardness range 120 – 140. 1020 is not suitable for quench and temper applications. Normally used in the as supplied condition.
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APPLICATIONS	General engineering components, machinery parts, shafts, camshafts, pins, ratchets, spindles, axles & small gears.
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MECHANICAL PROPERTIES (Ave. values)	Condition	Tensile Strength MPa Min	Yield Strength MPa Min	Elongation %
	Cold drawn	430	340	10-13
	Turned & Polished	410	230	22

HEAT TREATMENT	Carburize	900-950°C. Furnace or Air cool
	Harden	780-800°C Water quench.
	Temper	180-210°C air cool

WELDING	Readily weldable, use Bohler FOX OHV electrodes or EMK-6 for MIG or TIG welding.
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Round Drawn/ Turned & Polished h10										
SIZE RANGE	4.76	12	17	21.8	27	33	40	55	70	90
	6	12.7	17.2	22	27.5	33.1	41.27	56	75	95
	6.35	14	18	22.23	28.58	34.92	42	57.15	76.2	95.25
	7.94	14.29	18.23	23	29.2	35	44.45	60	80	100
	8	15	19	24	30	36	45	63.5	82.55	101.6
	9.53	15.88	19.05	25	31.75	38.1	50	65	85	
	10	16	20	25.4	32	39	50.8	69.85	88.9	

Round Turned & Polished h11										
SIZE RANGE	110	120	130	140	152.4	165.1	180	228.6		
	114.3	127	137.9	150	160	177.8	203.2	254		
Round Black										
SIZE RANGE	45	65	85	110	140	170	200	280		
	50	70	90	120	150	180	210			
	60	75	100	130	160	190	230			
Hexagonal Drawn h11										
SIZE RANGE	12	25	31.75	44.45	50.8	75	90	150		
	19.05	25.4	38.1	45	63.5	76.2	100			
	20	30	40	50	65	88.9	101.6			
Flat Drawn h11										
SIZE RANGE	20x3	40x10	50.8x12.7	76.2x12.7	101.6x12.7					
	20x5	40x12	50.8x38.1	76.2x31.75	101.6x50.8					
	20x10	40x15	55x40	76.2x38.1	101.6x76.2					
	25x5	40x20	63.5x12.7	76.2x50.8	127x76.2					
	25x6	40x25	63.5x31.75	80x40	150x12					
	25x10	50x6	75x6	100x6	150x15					
	25x12	50x8	75x10	100x10	150x20					
	25x15	50x10	75x12	100x12	150x25					
	32x10	50x12	75x15	100x15	150x50					
	32x15	50x15	75x20	100x20	152.4x25.4					
	32x20	50x20	75x25	100x25	200x12					
	32x25	50x25	75x40	100x40						
	38.1x12.7	50x40	75x50	100x50						

Sizes normally stocked in Australia. Some branches may not hold the entire range.
 Other sizes available on request.

1030 Carbon steel

Typical Analysis (Ave. values %)	C	Si	Mn	P	S
	0.30	0.25	0.75	0.04	0.04
NEAREST STANDARD	AS	AISI	BS	DIN	
	M 1030	1030	EN5B	1.0528 C30	

DESCRIPTION	Cold finished (drawn or turned and polished) carbon steel. The higher carbon content of 1030 make this grade stronger than 1020 and is suitable for induction hardening in sizes below 38 mm Dia. 1030 is normally used in the as supplied condition with a tensile strength of 500MPa minimum.
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APPLICATIONS	General engineering components, machinery parts, shafts, camshafts, pins, ratchets, spindles, axles, small gears, & hydraulic cylinders
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MECHANICAL PROPERTIES (Ave. values)	Condition	Tensile Strength MPa Min.	Yield Strength MPa Min.	Elongation %
	Cold drawn	520	410	10-12
	Turned & Polished	500	250	20

HEAT TREATMENT	Carburize	Not Recommended
	Harden	850-880°C Water quench.
	Temper	180-210°C air cool

WELDING	Readily weldable, use Bohler FOX OHV electrodes or EMK-6 for MIG or TIG welding.
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Round Drawn/ Turned & Polished h10										
SIZE RANGE	6.35	14	24	31.75	38.1	50	63.5	82.55	114.3	
	8	15.88	25	32	39	50.8	65	88.9	120	
	9.53	16	25.4	33	40	55	70	90	127	
	10	19.05	27	34.92	41.27	56	75	100	130	
	12	20	28.57	35	44.45	57.15	76.2	101.6		
	12.7	22.22	30	36	45	60	80	110		

Sizes normally stocked in Australia. Some branches may not hold the entire range.
Other sizes available on request.

1045 Carbon steel

Typical Analysis (Ave. values %)	C	Si	Mn	P	S
	0.45	0.25	0.75	0.04	0.04
NEAREST STANDARD	AS	AISI	BS	DIN	
	1045	1045	080A47 EN43B	1.0503 C45	

DESCRIPTION	1045 is a medium tensile carbon steel with good strength and impact properties. Supplied in the cold drawn or turned and polished condition, with a typical tensile strength range of 600 - 950 Mpa. Good machinability.
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APPLICATIONS	Applications requiring flame or induction hardening. High strength shafts, hydraulic rams, camshafts, pins & spindles
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MECHANICAL PROPERTIES (Ave. values)	Condition	Tensile Strength MPa Min.	Yield Strength MPa Min.	Elongation %
	Cold drawn	640	500	8-9
	Turned & Polished	600	300	14

HEAT TREATMENT	Carburize	Not suitable
	Harden	850-860°C. Oil or Water quench, 54-60 R/C
	Harden (Induction)	820-850°C Water quench, 54-60 R/C
	Temper	180-210°C air cool

WELDING	Limited to repair work, use Bohler EV-63-refer Bohler welding literature
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Round Drawn/ Turned & Polished h10										
SIZE RANGE	15.87	25	33	41.27	50.8	63.5	76.2	100	127	
	19.05	25.4	34.92	44.45	52	65	80	101.6	130	
	20	28.57	35	45	55	69.85	82.55	110	150	
	22	30	38.1	47.62	57.15	70	88.9	114.3		
	22.23	31.75	40	50	60	75	90	120		
Square Drawn h11										
SIZE RANGE	25.4x25.4		28.57x28.57		31.75x31.75		38.1x38.1			
Hexagonal Drawn h11										
SIZE RANGE	38.1	44.45								

Sizes normally stocked in Australia. Some branches may not hold the entire range.
 Other sizes available on request.

1214 Free machining

Typical Analysis (Ave. values %)	C	Si	Mn	P	S
	0.015	0.10	1.0	0.07	0.30
NEAREST STANDARD	AS	AISI	BS	DIN	
	1214	~1213/1215	220M07 EN1A	1.0715 95Mn28	

DESCRIPTION	1214 is cold finished (drawn or turned and polished) free machining low tensile 370 MPa. minimum mild steel. Generally used in the as supplied condition.
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APPLICATIONS	A large range of machined products where high volume is required from automatics.
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MECHANICAL PROPERTIES (Ave. values)	Condition	Tensile Strength MPa Min.	Yield Strength MPa Min.	Elongation %
	Cold drawn	400	290	7-9
	Turned & Polished	370	230	18

HEAT TREATMENT	Carburize	900-920°C. Furnace or Air cool
	Harden	780-800°C Water quench.
	Temper	180-210°C air cool

WELDING	Not Recommended
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Round Drawn/ Turned & Polished h10										
SIZE RANGE	6	11.11	16	22.23	30	39	50	57.15	75	95.25
	6.35	12	17	24	31.75	40	50.8	60	76.2	100
	7.94	12.7	18	25	33	41.28	52	63.5	80	101.6
	8	14.29	19.05	25.4	35	44.45	53.98	65	82.55	
	9.53	15	20	27	36	45	55	70	88.89	
	10	15.87	22	28.57	38.1	47.62	56	72	90	
Round Peeled & Polished h11										
SIZE RANGE	110	114.3	120	130	152.4					
Hexagonal Drawn h11										

SIZE RANGE	9.52	15.88	22.23	28.57	31.75	36	44.45	50.8	76.2	
	12.7	19.05	24	30	34.92	38.1	46	61.21		
Square Drawn to h11										
SIZE RANGE	6.35x6.35		15.88x15.88		22.23x22.23		31.75x31.75		50.8x50.8	
	7.94x7.94		16x16		25x25		38.1x38.1		63.5x63.5	
	9.52x9.52		19x19		25.4x25.4		40x40		76.2x76.2	
	10x10		19.05x19.05		28.57x28.57		44.45x44.45		88.9x88.9	
	12.7x12.7		20x20		30x30		50x50		101.6x101.6	

Sizes normally stocked in Australia. Some branches may not hold the entire range.
Other sizes available on request.

TOLERANCES for bright bar	Rounds			Square	Hex	Flat
	Precision Ground	Cold drawn	Turned & Polished			
	h8	h10	h11	h11	h11	h11
	Tolerance mm					
	Dia/Cross section	h7	h8	h9	h10	h11
	≤ 3	+0 / -0.010	+0 / -0.014	+0 / -0.025	+0 / -0.040	+0 / -0.060
	>3 - ≤6	+0 / -0.012	+0 / -0.018	+0 / -0.030	+0 / -0.048	+0 / -0.075
	>6 - ≤10	+0 / -0.015	+0 / -0.022	+0 / -0.036	+0 / -0.058	+0 / -0.90
	>10 - ≤18	+0 / -0.018	+0 / -0.027	+0 / -0.043	+0 / -0.070	+0 / -0.110
	>18 - ≤30	+0 / -0.021	+0 / -0.033	+0 / -0.052	+0 / -0.084	+0 / -0.130
	>30 - ≤50	+0 / -0.025	+0 / -0.039	+0 / -0.062	+0 / -0.100	+0 / -0.160
	>50 - ≤80	+0 / -0.030	+0 / -0.046	+0 / -0.074	+0 / -0.120	+0 / -0.190
>80 - ≤120	+0 / -0.035	+0 / -0.054	+0 / -0.087	+0 / -0.140	+0 / -0.220	
>120 - ≤180	+0 / -0.040	+0 / -0.063	+0 / -0.100	+0 / -0.160	+0 / -0.250	
>180 - ≤250	+0 / -0.046	+0 / -0.072	+0 / -0.115	+0 / -0.185	+0 / -0.290	
>250 - ≤315	+0 / -0.052	+0 / -0.081	+0 / -0.130	+0 / -0.210	+0 / -0.320	

Sizes normally stocked in Australia. Some branches may not hold the entire range.
Other sizes available on request.

LOCATIONS

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Wollongong	40 Doyle Ave Unanderra	2526	Ph (02) 4272 6544	Fax (02) 4272 7563
Marayong	1/21 Binney Rd Marayong	2148	Ph (02) 9831 4431	Fax (02) 9671 1682
Melbourne	282-290 Greens Rd Dandenong	3175	Ph (03) 9767 5554	Fax (03) 9767 5555
Bayswater	4 Ramage St Bayswater	3153	Ph (03) 9729 7356	Fax (03) 9738 0850
Adelaide	1 Williams Cir Pooraka	5095	Ph (08) 8368 4554	Fax (08) 8368 4555
Brisbane	12-18 Limestone St Darra	4076	Ph (07) 3712 9554	Fax (07) 3712 9555
Townsville	9-11 Caldwell St Garbutt	4814	Ph (07) 4479 4800	Fax (07) 4725 1316
Perth	29-33 Gauge Cir Canningvale	6155	Ph (08) 9455 8672	Fax (08) 9455 8673
Kewdale	5 Beete St Welshpool	6106	Ph (08) 9350 9582	Fax (08) 9350 9683
Launceston	20 Murphy St Invermay	7248	Ph (03) 6334 3542	Fax (03) 6331 4001

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