

# K1045 Medium carbon steel

Typical Analysis (Ave. values %)	C	Si	Mn	Ni	Cr	Mo	S	P
	0.45	0.30	0.70	-	-	-	0.035	0.035
NEAREST STANDARD	UNS		DIN		JIS		AISI	
	G10430		1.1191/1.0501 Ck45		S45C		1045	

<b>DESCRIPTION</b>	Fully-killed medium carbon steel.
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<b>APPLICATIONS</b>	Suitable for medium stressed parts in machinery and industrial tools. Components of small cross section requiring strength and wear properties better than low carbon unalloyed steel. Heavy forgings in the normalised condition for automotive and general engineering, such as axles, clutch members, shafts, piston rods and gear racks. Can also be used as a holder block for press tools and plastic moulds.
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<b>HEAT TREATMENT</b>	Forge	800-1100°C. Cool in furnace.
	Normalize	850°C. Air cool.
	Anneal	680-710°C. Cool slowly in controlled furnace.
	Stress relieve	600-650°C. Furnace or Air cool
	Flame or induction harden	820-860°C. Water or oil quench.
	Harden	800-830°C Water quench. Ave surface hardness 57 RC
	Temper	150-200°C air cool
	Annealed hardness	190 HB max

<b>MECHANICAL PROPERTIES</b> as tempered (40 mm)	Tensile Strength MPa	Yield Strength MPa	Elong. %	Impact Strength J
	620-770	375	17	27

<b>PHYSICAL PROPERTIES</b>	Density (kg/dm <sup>3</sup> )	7.85
	Nodulus of elasticity 10 <sup>3</sup> N/mm <sup>2</sup>	210
	Thermal conductivity W/(m.K)	45
	Electric resistivity Ohm.mm <sup>2</sup> /m	0.20
	Specific heat capacity J/(kg.K)	460
	Thermal expansion 10 <sup>6</sup> m/(m.K) (Room temp.)	11.1

<b>WELDING</b>	Limited for repair, use Bohler EV-63. Refer to Bohler welding literature.
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Round Black										
<b>SIZE RANGE</b>	30	40	56	75	95	115	150	190	230	
	33	42	60	80	100	120	160	200	240	
	38	45	65	85	105	130	170	210	250	
	39	50	70	90	110	140	180	220		
Round Machined k12										
<b>SIZE RANGE</b>	230	270	310	350	400	440	510	560		
	240	280	320	360	410	460	525	580		
	250	290	330	370	420	480	535	610		
	260	300	340	380	430	500	550	650		
Square Black										
<b>SIZE RANGE</b>	40x40		63x63		90x90		150x150			
	45x45		75x75		100x100		200x200			
	50x50		80x80		130x130					
Plate Cut to your requirements										
<b>SIZE RANGE</b>	12		32		65		90		150	
	16		40		70		100		160	
	20		50		75		120		180	
	25		60		80		140		200	

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

**LOCATIONS**

**Bohler Uddeholm Australia Pty Ltd ABN 15000013052**

Sydney	129-135 McCredie Rd Guildford	2161	Ph (02) 8724 5554	Fax (02) 8724 5555
Newcastle	3 Pavilion Pl Cardiff	2285	Ph (02) 4954 6611	Fax (02) 4956 5773
Albury	1 Eames St Albury	2640	Ph (02) 6041 3399	Fax (02) 6041 1820
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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