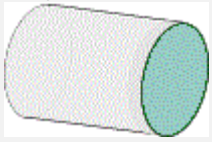
1045 HARD CHROME PLATED BAR

1045 is a medium tensile carbon steel supplied in the cold drawn or turned, precision ground, polished, chrome plated and final polished condition, with a typical base metal tensile strength of 670 - 800 Mpa, plus a typical hard chrome plated surface hardness of HV 1000 - 1150. Characterised by an extremely smooth surface finish with excellent wear and corrosion resistance, coupled with a base material giving good strength and impact properties, plus good machinability and reasonable weldability.
1045 hard chrome plated bar is used extensively by the hydraulic and pneumatic industries, and is employed by other industry sectors for a wide range of applications.
Typical applications are: Agricultural Equipment, Compressors, Car Jacks and other Transport Lifting equipment, Food Processing Equipment, Hoists, Mining and other Earth Moving Equipment, Machine Tools, Mechanical Tools and Equipment, Rods and Shafts (Various), Waste Disposal Transport and Equipment etc.

Colour Code	Stocked Sizes	
Serpentine (Bar End) 	Metric	6 mm - 200 mm Dia
	Imperial	1/2" - 6"Dia

Related Specifications	
Australia	AS 1443 - 1994 1045
Germany	W.Nr 1.0503 C45 W.Nr 1.1191 CK45
Great Britain	BS970 - Part 3 - 1991 080A47 BS970 - Part 1 - 1972 080M46 BS970 - 1955 EN43B
Japan	JIS G 4051 S45C
USA	AISI C1045 ASTM A29/A29M - 91 1045 SAE 1045 UNS G 10450

Chemical Composition		
	Min. %	**Max. %**
Carbon	0.43	0.50
Silicon	0.10	0.35
Manganese	0.60	0.90
Phosphorous	0	0.04
Sulphur	0	0.04

Typical (Base Metal) Mechanical Properties - As Supplied Condition		
Manufacturing Process	Cold Drawn	Turned
Tensile Strength Mpa	800	670
Yield Strength Mpa	700	470
Elongation in 50mm %	9	20
Hardness Brinell HB	230	200

Hard Chrome Plating

Typical Surface Hardness	HV 1000 - 1150
Typical Surface Smoothness	0.10 - 0.30 umRa (Microns)
Typical Surface Deposit*	0.025 - 0.050 mm (0.001") - (0.002")

*Note: Can be supplied up to 0.125 mm against order, subject to minimum quantity requirements.

Diameter and Straightness Tolerance

Diameter	mm	Up to 51mm Dia		Over 51mm - 102mm Dia		Over 102mm Dia		Straightness
	Inches	Up to 2.0		Over 2.0 - 4.0		Over 4.0		Below 50mm 0.25mm/1000mm Over 50mm 0.30mm/1000mm
Tolerance	mm	+0.00	-0.025	+0.00	-0.050	+0.00	-0.075	
	Inches	+0.00	-0.001	+0.00	-0.002	+0.00	-0.003	

Typical Bar Lengths

Up to 18 mm Dia	2000mm - 3600mm
19.05 mm to 25 mm Dia	4000mm
Over 25 mm Dia	6000mm

Bar lengths are approximates only.
NB. Bars have 100mm approx. unchromed surface at each end.

Packaging

Supplied in cardboard tubes for protection.

Machining

1045 hard chrome plated bar has very good machinability, similar to 1045 uncoated bar. Machining however should commence beneath the chrome plating, or at the unchromed surface at the end of the bar. To protect the polished chrome surface, soft materials such as copper, aluminium or mild steel should be used as clamping materials and any particles of hard chrome should be removed immediately to avoid scratching. Otherwise all machining operations may be carried out satisfactorily.

Welding

1045 hard chrome plated bar is readily weldable (similar to 1045 uncoated bar) providing the correct procedure is employed. The cardboard tube protecting the chrome plating should first be removed from the heat affected area otherwise it can cause some corrosion of the plating due to fumes emitted.

Welding Procedure

Welding of 1045 should always be carried out using low hydrogen electrodes - please consult your welding consumables supplier.

Suggested pre-heat temperature

Section	25mm	50mm	75mm	150mm +
°C	100	140	200	300

Post Welding

Cool as slowly as possible in dry lime, sand etc.