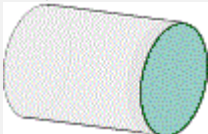


## 1045 HARD CHROME PLATED BAR

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)<br> | Metric        | 6 mm - 200 mm Dia |
|  | Imperial      | 1/2" - 6"Dia      |

### Related Specifications

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

| <b>Hard Chrome Plating</b>  |        |   |        |                       |        |                |        |   |
|---|--------|---|--------|-----------------------|--------|----------------|--------|---|
| Typical Surface Hardness  |        | HV 1000 - 1150                          |        |                       |        |                |        |   |
| Typical Surface Smoothness  |        | 0.10 - 0.30 umRa (Microns)              |        |                       |        |                |        |   |
| Typical Surface Deposit*  |        | 0.025 - 0.050 mm<br>(0.001") - (0.002") |        |                       |        |                |        |   |
| *Note: Can be supplied up to 0.125 mm against order, subject to minimum quantity requirements.  |        |   |        |                       |        |                |        |   |
| <b>Diameter and Straightness Tolerance</b>  |        |   |        |                       |        |                |        |   |
| 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<br>0.25mm/1000mm<br>Over 50mm<br>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 |   |
| <b>Typical Bar Lengths</b>  |        |   |        |                       |        |                |        |   |
| 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.<br>NB. Bars have 100mm approx. unchromed surface at each end.  |        |   |        |                       |        |                |        |   |
| <b>Packaging</b>  |        |   |        |                       |        |                |        |   |
| Supplied in cardboard tubes for protection.   |        |   |        |                       |        |                |        |   |
| <b>Machining</b>  |        |   |        |                       |        |                |        |   |
| 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. |        |   |        |                       |        |                |        |   |
| <b>Welding</b>  |        |   |        |                       |        |                |        |   |
| 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.   |        |   |        |                       |        |                |        |   |
| <b>Welding Procedure</b>  |        |   |        |                       |        |                |        |   |
| Welding of 1045 should always be carried out using low hydrogen electrodes - please consult your welding consumables supplier.  |        |   |        |                       |        |                |        |   |
| <b>Suggested pre-heat temperature</b>   |        |   |        |                       |        |                |        |   |
| <b>Section</b>  | 25mm   | 50mm                                    | 75mm   | 150mm +               |        |                |        |   |
| <b>°C</b>   | 100    | 140                                     | 200    | 300                   |        |                |        |   |
| <b>Post Welding</b>   |        |   |        |                       |        |                |        |   |
| Cool as slowly as possible in dry lime, sand etc.   |        |   |        |                       |        |                |        |   |

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