



## Hardchrome Plating

- Hard Coating
- Low Friction
- Excellent Wear Resistance
- Good Corrosion Resistance
- “Cold” Process
- Non Fretting Anti-Galling
- Superfinishing to Mirror Finishes
- Thinwall Technology or Heavy Build-Up
- 0.25 – 1,000 Micron Thick
- Grinding and Polishing Service

## THE PROCESS

Hard Chrome plating is an electrolytic method of depositing Chrome for engineering applications, from a Chromic acid solution. Deposits can be applied from .25 – 1,000 microns thickness for a wide range of applications. The thinner deposits being used to substantially increase the life of components in wear applications or corrosive environments, and the thicker deposits being used for salvage and repair of worn, damaged or mis-machined components.

Hard Chrome is classed as a “COLD” process, the operating temperature of 50 – 60°C ensures no detrimental effects to the physical or mechanical properties of the base materials. Hard Chrome can be deposited successfully and advantageously onto most metallic substrate materials.



## Hardchrome Plating

### THE PROPERTIES

**HIGH HARDNESS** – electro-deposited Chrome is extremely hard, with typical values of 850 – 1050 HV (63 – 70 HRC), hence the term “Hard” Chrome. This makes it an excellent coating for wear resistant and abrasion resistant applications such as Moulds and Dies, Punches, Bearing and Seal surfaces, and sliding components.

**LOW COEFFICIENT OF FRICTION** – Hard Chrome has a very low coefficient of friction, approx. one half that of Steel. The coefficient against Steel of 0.16 lubricated (0.21 dry), makes it ideally suited for such applications as Bearing and Seal surfaces, and machinery components.

**WEAR RESISTANCE** – The high hardness and low frictional properties of Hard Chrome provide it with extremely good resistance to abrasive and erosive wear, extending the life of components such as Moulds, Dies and Punches etc, up to ten times in most cases.

**CORROSION RESISTANCE** – Hard Chrome has an extremely high resistance to atmospheric oxidation, and a good resistance to most oxidising and reducing agents (with the exception to Chlorides and

other Halides), hence its wide-spread use in the Food and Chemical Industries.

**SACRIFICIAL WEAR LAYER** – Since Hard Chrome deposits are readily removed with chemical strippers, without detrimental effect to the base material, the part can be stripped and re-plated repeatedly, when wear shows, without loss or damage to the base part. This is a significant advantage for high wear, high cost parts such as Plastic Moulds and Dies where abrasive filled plastics are used.

PHYSICAL PROPERTIES	
Density	6.90 – 7.18 g/cm <sup>3</sup>
Atomic Weight	52.01
Atomic Number	24.
Melting Point	1,850°C
Coef. of Friction	6 x 10 <sup>-6</sup> /°C
Thermal Conductivity	0.67 W/cm-°K
Electrical Resistivity	13 – 6 <sup>6</sup> micro hm/cm
Youngs Modulus	15 x 10 <sup>6</sup> lb/in <sup>2</sup>
Elongation	1.0%
Hardness	850 – 1050 HV
Taber Wear Resistance	2 – 3 mg/1000 cycles
Ultimate Tensile Strength	200 MPa
Magnetic Properties	Non-magnetic
Coef. of Friction (against steel)	0.16 lubricated – 0.21 dry

**MACHINING** – Hard Chrome deposits can be successfully finished by grinding, finishing or polishing.

### APPLICATIONS –

- Hydraulic and Pneumatic Piston Rods and Cylinders
- Plastic and Rubber Rolls, Moulds, Dies, Screws, etc.
- Automotive and Mechanical components
- Press Tools and Punches
- Print Cylinders and Plates
- Food Machinery
- Valves, Gates and Bodies
- Mining Equipment
- Timber and Paper Processing Equipment
- Pump Shafts and Rotors
- Textile Components

### LARGE CAPACITY –

Hardchrome Engineering offer some of the largest capacities available, with 16 tonne lifting facility (25 tonne in Adelaide) and plating tanks capable of accepting components up to 8.0 metres in length and 1.3 metres diameter.



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