

# CHROMIUM - HAZARDS AND REGULATION

Chromium exists in three distinct forms or species - hexavalent, trivalent and metallic. The hazards associated with chromium, and hence the regulations which apply, are wholly dependent upon which form of chromium is present:

## VERY LOW HAZARD - CHROMIUM METAL / Cr<sup>0</sup>

**Appearance:** metallic grey/silver in colour

**Presence:** Cr plated articles, Cr present in stainless steel  
(Note: In plating, Cr (VI) or Cr (III) is converted to chromium metal)

**Health, Safety and Environmental Effects:**

- Essentially inert



## LOW HAZARD - TRIVALENT CHROMIUM / Cr<sup>3+</sup> / Cr (III)

**Appearance:** green in colour

**Presence:** Cr (III) plating solutions, Cr (III) passivating solutions

**Health, Safety and Environmental Effects:**

- Not classified as hazardous for supply
- An essential dietary element
- UK Occupational Exposure Standard (OES) = 0.5 mg/m<sup>3</sup>



## HIGHEST HAZARD - HEXAVALENT CHROMIUM / Cr<sup>6+</sup> / Cr (VI)

**Appearance:** red, orange or yellow in colour (dependent on specific chemical compound and concentration - most concentrated = red, least concentrated = yellow)

**Presence:** chromic acid, Cr (VI) plating solutions, Cr (VI) passivating, anodising and etching solutions  
Note: Passivation films produced from Cr (VI) processes still contain Cr (VI)

**Health, Safety and Environmental Effects:**

- Category 1 Carcinogen
- Very toxic by inhalation/ingestion
- Corrosive
- Oxidising
- Skin/respiratory sensitizer
- UK Maximum Exposure Limit (MEL) = 0.05 mg/m<sup>3</sup>
- Dangerous for the Environment



## End of Life Directives:

- Due to the hazards associated with hexavalent chromium, the European Directives on End of Life Vehicles (ELVD) and Waste Electrical and Electronic Equipment (WEEE) restrict its use in these products
- The ELVD and WEEE restrictions ONLY apply to hexavalent chromium - the Directives DO NOT restrict the presence of trivalent chromium or chromium metal in these products

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