





This process employs inert anodes, inorganic trivalent chromium salts, conductivity salts, complexing agents, wetting agents,



The introduction of commercial, decorative trivalent chromium plating has been a major benefit to the plating industry and to meeting health and safety regulations.

The aesthetic differences in photos like those above, comparing the plating baths, seem to bear stark witness to the far more benign trivalent chromium bath.

The reduction of trivalent chromium to the metallic state requires three electrons, versus the same reaction that requires six electrons for the hexavalent chromium ion. Therefore, the trivalent chromium bath is at least twice as efficient as the hexavalent bath (approximately 30% compared to approximately 10%).

The rectification demand is likewise reduced. Trivalent chromium baths tolerate 5% AC current ripple (similar to nickel). Current interruption does not result in the plated deposit whitewash in hexavalent-based baths.

Two types of decorative trivalent chrome baths are in commercial use. One uses carbon anodes in a chloride-based electrolyte. The other uses an alloy of the platinum group of elements on an inert core in a sulfate-based electrolyte. Both types of baths require a source of Chromium III inorganic salts, a grain refiner, buffer





In comparison to hexavalent chromium, decorative trivalent chromium electrolytes gas much less – and, significantly, that gas is non-hazardous and non-toxic. They are twice as efficient, exhibiting 25-30% efficiency vs. 10-15%. Also, the wetting agent provides a thin foam blanket, eliminating at least 99% of mists

3.

Certain oils can be exceedingly difficult to remove in the soak cleaner, especially if they adversely affect the finishing cycle. Chlorinated and paraffin oils can literally gum up on parts especially when using caustic (sodium or potassium hydroxide) cleaners. Better cleaning results can be obtained with non-caustic, alkaline cleaners that are silicate-based, containing specific ratios of nonionic to anionic surfactants.

Molybdenum-sulfide lubricating grease can also be a tough material to clean off. The soak cleaner type described above may also work best here.

Mineral, spindle and water-soluble oils may best be removed in US



Title:



## White Paper

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