

SERFILCO®

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FILTRATION OF CHROMIUM SOLUTIONS

Chromium deposits from an electroplating solution are used for both decorative and functional engineering applications. They vary from light to heavy in thickness, using baths which plate from room temperature up to 140°F. The specific gravity, up to 1.4, is higher than most other plating baths. Pump motors, therefore, should be oversized. In some chromium baths the chemicals are in complete solution, while others contain self-regulating solids. Fluorides, which would dictate the materials of construction for pumps and filter, may or may not be present. Fluorides will attack most ceramic material used for pump seals, however, special fluoride resistant seals are available, as well as Hastelloy® pump shafts. A water flushed double mechanical seal is desirable. CPVC is the most suitable plastic.

An in-tank CPVC pump and filter is recommended for hard chrome containing fluorides. On small tanks, a CPVC seal-less magnetic-coupled pump with polypropylene or CPVC filter chamber is also usable. The magnetic-coupled pump has no seals or bearings and, since it is in the tank, no problem of leakage.

LIMIT SOLIDS FLOW TO FILTER

With self-regulating baths, care should be taken to filter the solution only off the top and to bypass around the filter during agitation of the self-regulating chemicals. Any solids from the self-regulating bath which are picked up by the filter would, in time, be dissolved. The purpose in keeping them from the filter in large quantities is to prevent the solids from restricting the flow through the filter and reducing the amount of agitation. However, with an oversized filter the regulating chemicals can be retained on the surface of the filter media without reducing flow too much.

USE PROPER FILTER CARTRIDGE

Filtration with 15 micron Hi-Perf filter cartridges* at flow rates providing 1 to 2 tank turnovers per hour, is recommended. This can usually be accomplished with any of the filtration systems sized at 1 filter cartridge for each 50 gallons. Denser filter cartridges at higher flow rates should be employed where the highest possible clarity and deposit quality are required.

With increased agitation, filtration becomes nec-

essary to remove any solids held in suspension. The solids will include small particles of stop-off lacquers or metallic particles loosened by the initial momentary current reversal prior to the deposit of the chromium. Otherwise, these particles can cause misplating or be incorporated into the deposit, causing roughness.

HEXAVALENT CHROMIUM FILTRATION

Filtration of hexavalent chromium solutions is becoming more and more common due to the use of better materials of construction for filtration equipment, especially CPVC. Increased agitation speeds up the plating rate and prevents burning at hot spots. It increases the throwing power in recessed areas and provides a more uniform grain structure with better wear qualities. The flow from the pump may be directed to certain areas of the parts to be plated, or to locations which would otherwise be dead spots in the tank.

TRIVALENT CHROMIUM

Trivalent chromium solutions require continuous filtration. Contact with metals is to be avoided because these solutions have a low tolerance for metal contamination. A filter system with 2 or 3 - 10" cartridges or precoated sleeves per 100 gallons will provide adequate dirt holding capacity. Turnover rates of 2 - 4 times per hour are recommended. Dual cell baths that use additives require carbon treatment similar to nickel plating baths. Automatic additions using an Amp-Time feeder system are useful.

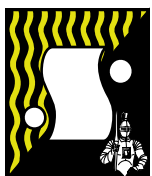
Precoating of cleanable sleeves, discs or fine cartridges may be necessary during the purification stage because of the formation of gelatinous precipitates.

The pump used for agitation can also double as a transfer pump making it possible to pump the solution into a storage tank during inspection and cleaning of the plating tank.

** Verify fiber compatibility with the solution by an immersion test.*

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SERFILCO®, LTD.

2900 MacArthur Blvd 847-509-2900
Northbrook, IL 60062-2005 U.S.A. 800-323-5431
Email: sales@serfilco.com FAX: 847-559-1995
serfilco.com Web: http://www.