PLATING RESOURCES, INC.

"Surface Finishing Technology"

Dura-76
Contaminant Masking Additive

Description

Dura-76 is a granular hard chrome additive that is used to chelate trivalent and metallic bath contamination. Its use provides a significant savings by improving deposit quality as well as avoiding the need for bath dumps. New baths with Dura-76 produce higher quality deposits and older baths perform more like newer solutions. Dura-76 or Dura-76F works well in any type of hex-chrome bath, either a conventional or a proprietary type. Dura-76 operates in conjunction with any bath catalyst and improves the deposit by chelating typical contaminants such as Trivalent, Iron, Copper as well as Nickel and other Heavy Metals.

This chelation doesn't actually remove these contaminants, but binds with them and renders them inactive in the electrolytic process. This chelation allows the bath chemistry to operate as if in a non contaminated state. Contaminant removal is always recommended; Dura-76 works well with Porous Pots and/or Ion Exchange or Membrane systems.

Advantages

Following are the benefits of using the Dura-76 Additive in either conventional or proprietary processes.

- **Increases performance, contaminated baths perform more like newer solutions.**
- **Buffers the bath for increased throwing power, hardness and crack structure.**
- **Reduces Pits, nodules and edge burning, regardless of contaminant levels.**
- **Allows continued usage without dumping.**

Product Type The following Dura Additives should be used depending upon the bath type.

Dura - 76: Conventional baths as well as Dura-60, Dura-2000 and HEEF® baths.

Dura - 76F: Dura-100 and other high fluoride baths.

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Optimum Concentration

The initial addition of Dura-76 or 76-F is dependent upon the Total Contaminant Loading (TCL) in the bath. A sample of the plating solution should be sent to Plating Resources for a detailed analysis and spectrographic evaluation for this determination; recommendations can then be made. Generally, bath contaminants fall into the following categories depending on the concentration and type of contaminants present.

Total Contaminant Loading (TCL)	Optimum oz/gal.
Level 1	2.5
Level 2	3.8
Level 3	5.0

Bath Additions

The Dura-76 and 76-F are consumed during plating in direct proportion to the total ampere hours used. Regular maintenance additions should be made, as shown below, to maintain the optimum concentration depending upon the TCL in the bath. These additions can also be approximated by the amount of chromic acid consumed. A monthly bath sample should be sent to Plating Resources to test for contaminants as well as any minor adjustments to the Dura-76 level that may be needed. In certain cases, it may be necessary to increase the Dura-76 concentration as the bath ages and the TCL increases. A Booster Addition of 1 oz. per gallon can be made whenever bath performance degrades.

TCL	Per 100,000 Amp. hours	Per 100 lbs. Chromic Acid Consumed; Typical
Level 1	2.5 pounds	10 pounds
Level 2	3.8 pounds	15 pounds
Level 3	5.0 pounds	20 pounds

Dura-76 should not be added when plating, wait until the end of a shift when the tank is empty. It dissolves fairly quickly in the hot chrome solution; air agitation should be used to ensure complete solubility and avoid any surface residue. The Dura-76 is usually effective within 30 minutes of the addition, with sufficient agitation.

Crystallization

In certain unusual situations with high concentrations, over chelation may occur. This can cause a white or orange colored crystallization to build up on the anodes, coils or tank walls. Should this occur, simply stop making additions for 4 - 5 normal cycles of chromic acid adds. At this point the Dura-76 additions can be resumed. Any such crystallization can be removed and disposed of. Similar crystallization can occur when a highly contaminated bath is allowed to cool. This is normal and not of concern; heating and agitation will dissolve the Additive.

Regulations

All chrome plating baths produce misting and this can be reduced if lower chrome levels are used. This mist contains Cr(VI) which is regulated by the EPA for environmental and OSHA for worker safety issues. Be sure to follow all federal, state and local regulations for safe operation and hazardous disposal.

Caution

The plating bath contains chromic acid, sulfuric acid and the Dura additive outlined above. These are all industrial chemicals and must be handled carefully and in accordance with the directives provided in the individual SDS forms.

Read and understand the SDS on all of these chemicals before handling or using. Ensure that all regulatory standards are followed and limit personal exposure as required for Cr(VI) by OSHA.

Avoid personal contact with these chemicals, avoid splashing and avoid breathing any fumes released during operation. Do not inhale any dust, mist or vapors from these chemicals. Do not allow these products to contact the skin or eyes. In case of contact, flush immediately with large amounts of fresh water and seek immediate medical attention.

Wear protective clothing such as aprons, gloves, face masks and respirators. Be sure that adequate eyewashes and emergency showers are available nearby before handling or using any of these chemicals.

Designated work clothing should be worn while using these chemicals and the worker(s) should thoroughly shower and change into fresh-clean street clothing before going home. Decontaminate all work clothing before reuse.

The user is responsible for providing adequate work clothing, personal protection, and limiting personal exposure and providing any required clean-up, decontamination as well as any needed medical attention.