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## E-Chrome™ 851-L

### A Yellow/Bronze Iridescent Chromate Finish For Cadmium and Zinc

**E-Chrome 851-L** is a liquid concentrate which is diluted with water to produce a yellow/bronze iridescent chromate conversion finish on plated cadmium and zinc surfaces.

The **E-Chrome 851-L** finish has outstanding resistance to salt spray and will greatly surpass the normal 96 hour salt spray resistance required by specification for yellow chromates on zinc. The finish will withstand up to 200 hours salt spray. The pleasing appearance of the deposit is a decorative finish in itself. The **E-Chrome 851-L** finishes will form an excellent base for paint. The finishes may be dyed to various colors.

#### SOLUTION MAKE-UP

##### Zinc Plating

<b>E-Chrome 851-L</b>	1/2 to 2% by volume
Temperature	65° - 90°F
Time	5 to 30 seconds

The finishes on zinc will vary from a light yellow with a green tint and some red hues to a deep tan color with a slight iridescence. Reducing the immersion times and reducing the **851-L** concentration will favor the lighter multi-hued coatings on zinc plate.

##### Cadmium Plating

<b>E-Chrome 851-L</b>	1% to 3% by volume
Temperature	65° to 90°F
Time	5 to 30 seconds

A bronze color with a slight iridescence is produced on cadmium plates.

#### PROCESSING PROCEDURE

1. Zinc or cadmium plated surfaces: The brightness of the final finish will be directly related to the brightness of the plated surface because the **851-L** solution has a minimal stripping effect.
2. A Thorough cold water rinse will prolong the life of the **851-L** solution.
  - A. Optional 1% Sulfuric Acid rinse to neutralize residual plating solution with barrel processed work
  - B. Cold water rinse

3. Immersion in **E-Chrome 851-L** solution for the length of time required to produce the desired finish.
4. Cold water rinse
5. Hot water rinse. For optimum corrosion resistance, the immersion time must be kept to a minimum and the temperature must be kept below 150°F. If the dwell time is too long there may be cases where the pH of the hot water can cause a leaching of the color. The addition of 1 to 2% by volume of a clear chromating dip solution will frequently eliminate leaching.
6. Hot air dry. Optimum corrosion resistance will be obtained if the temperature of the hot air is kept below 170°F.

## **SOLUTION CONTROL**

The concentration of **E-Chrome 851-L** solution is gradually reduced and the color will become lighter as work is processed through the solution. The addition of **851-L** concentrate (25% to 50% of the original make-up) should restore the desired color.

If a bright multi-hued finish cannot be maintained with a given concentration and processing cycle, then the addition of 0.1ml of concentrated Sulfuric Acid per gallon of **E-Chrome 851-L** solution will assist in producing the desired color.

The strength of the **E-Chrome 851-L** working solution can be determined with the following titration procedure:

1. Pipette a 2 ml sample of the bath into a 250 ml Erlenmeyer flask. Add 100 ml of distilled water.
2. Add 15 ml of concentrated Hydrochloric Acid and 10 ml of a 10% Potassium Iodide solution.
3. Titrate the sample with 0.1N Sodium Thiosulfate until the solution changes to a light yellow/straw color.
4. Add one (1) ml of freshly prepared 1% stabilized Starch Solution and continue the titration until the blue color disappears.

Calculation: **Fl oz/gal E-Chrome 851-L** = ml of 0.1N Sodium Thiosulfate x 0.5

## **FINISHING TIPS**

Most problems arise from using too strong of a solution. It is best to start with the lowest possible concentration to produce the desired results. Increase the concentration gradually if the color is too light with the established immersion time. The immersion time may also be too long for the established concentration.

Contamination of zinc plating solutions with copper and cadmium should be avoided because these contaminations will cause the **E-Chrome 851-L** finish to turn black.

Excessive heat from baking parts to relieve hydrogen embrittlement of plated parts will destroy the protective quality of the **E-Chrome 851-L** finish. Therefore the parts should be baked prior to immersion in the **E-Chrome 851-L** solution.

Heavy chromate coatings are formed with high concentrations of **E-Chrome 851-L** or with long immersion times and these coatings are soft and gelatinous. Care must be exercised to prevent

excessive scratching or dislodging of the coating. Therefore, excessive agitation should be avoided and bulk barrel work should be agitated only enough to shift contact points.

If sluff off occurs or the finish develops a powdery or smutty appearance due to too high of an **851-L** concentration, the addition of 1/16 to 1/4% of Nitric Acid will eliminate these problems.

## **EQUIPMENT**

Polypropylene or polyethylene tanks or PVC, Koroseal or rubber lined steel tanks are suitable for use with the **E-Chrome 851-L** solutions.

## **CAUTION**

**E-Chrome 851-L** contains chromium compounds and is an acidic solution. Do not get in eyes, on skin or clothing. Causes skin burns and is very corrosive to eyes and mucous membranes.

Avoid splashing the **E-Chrome 851-L** solution when preparing working solutions or while making additions. Avoid breathing mists and fumes from **E-Chrome 851-L** solutions. While preparing and working with **E-Chrome 851-L** solutions, wear goggles or face shield, rubber gloves and rubber apron.

In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes. For eyes call a physician.

Do not mix the **E-Chrome** concentrate or the **851-L** working solution with alkaline materials, organic materials, or with any other chemical substances. Do not work with **E-Chrome 851-L** without first reading and understanding the **MATERIAL SAFETY DATA SHEET** furnished by **EPI**.

## **PACKAGING**

Five (5) gallon non-returnable containers.

## **IMPORTANT NOTICE! For Industrial Use Only**

The following is made in lieu of all warranties, expressed or implied, including the implied warranties of merchantability and fitness for purpose: seller's and manufacturer's only obligation shall be to replace such quantity of the product as proved to be defective. Before using, user shall determine the suitability of the product for its intended use, and user assumes all risk and liability whatsoever in connection therewith. **Neither seller nor manufacturer shall be liable either in tort or in contract for any loss or damage, direct, incidental or consequential, arising out of the use or the inability to use the product.**

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