Chromate Processes

Chromating is a process used primarily on zinc plating, zinc die casting (pot metal), and cadmium plating. 'Golden Cad' is really a cadmium plate that has been 'chromated' with a yellow chromate.

Zinc and cadmium are electroplates or metals which are readily attacked by mild acids, and will deteriorate rapidly, even if daubed lightly with tomato ketchup! To 'harden' the plate it is placed in a mild solution of special acid (the Chromate). This slightly attacks the plate, oxidizing it. The oxide forms a tough corrosion resistant crust, which protects the softer zinc or cadmium metal.

Chromates will only work on zinc die cast (pot metal), or parts previously plated with zinc, cadmium or Copy Cad. Prepare the part for chromating by zinc or 'Copy Cad' plating steel, or bead blasting pot metal. The plate needs to be in excellent condition, fresh and bright, otherwise defects will occur in the treatment. Do not handle the parts with your bare hands prior to dipping, as you will leave body oils in the form of fingerprints, which will show up on the finished item.

Old pot metal, (probably 25 years +) need to have fresh metal exposed without any oxidation present. To achieve this on carburetors, blast clean with baking soda and then rinse off in fresh water before dipping. If the result is blotchy, then blast clean again, and zinc plate the part to provide an even, fresh layer of zinc over the part.
Note: Baking Soda dissolves in water and will therefore not clog any important carburetor ports.

When using any of the following processes, it is important that the parts are rinsed thoroughly and they are allowed to dry overnight before handling.

Yellow Chromate

Iridescent Yellow Chromate Process has an oily look to it, with ripples of yellows, blues and greens. It is commonly found on brackets, brake boosters and carburetors.
The Yellow Chromate Solution contains Chromic Acid. Wear gloves, goggles, apron and a respirator with acid/gas cartridges.

Mixing The Yellow Chromate

For YELLOW IRIDESCENT FINISHES.
Add 1 gal of DISTILLED WATER to a plastic tank
Add 1 oz of CHROMATE LIQUID

For DEEP YELLOW - BRONZE FINISHES
Add 1 gal of DISTILLED WATER to a plastic tank
Add 2 oz of CHROMATE LIQUID

Using the Iridescent Yellow Chromate

Raise the temperature of the solution to 80 deg. F - using an immersion/aquarium heater.

Hang the part from a copper wire and immerse in the solution for 30 seconds (or until the correct color is achieved) swirling it to agitate. Remove and rinse in fresh water (Failure to do this will result in the part continuing to darken beyond the desired color). Set aside and air dry using a small fan.

Variations on the amount of chromate solution will achieve different effects. Less chromate will produce a light brass color and more will produce a dark bronze. Experiment!

When the process seems to no longer work effectively, add more liquid to the solution.

Store the unused liquid in a marked, glass container, in a locked area.

Olive Drab Green Chromate

Olive Drab Green Chromate is a single dip process consisting of two components. Olive Drab #1 & Olive Drab #2. The color is usually found on carburetors. The system is specifically designed to provide a Olive Drab Green color to previously zinc plated parts as well as pot metal. The chromate system only works on zinc metal (pot metal), zinc plate or cadmium, so all parts should be either manufactured from pot metal, or coated with zinc or cadmium plate. The system may also be used on 'Copy Cad' plate. The finish has performed well in salt spray tests.

Mixing Olive Drab Concentrate

NEVER COMBINE PART 1 AND PART 2 AT FULL STRENGTH. A VIOLENT REACTION WILL OCCUR. The Olive Drab Chromate contains Chromic Acid. Wear gloves, goggles, apron and a respirator with acid/gas cartridges.

In a plastic pail (HDPE preferred) add 2 gallons of distilled water.

Pour in all of the Olive Drab # 1. Avoid Splashing.
Pour in all of the Olive Drab # 2. Avoid Splashing.

Mix the solution carefully, avoiding splashing. The solution is now ready for use.

Using the Olive Drab Green Chromate

Raise the temperature of the Olive Drab Green solution to 80 deg F, using an immersion/aquarium heater. Hang the part from a copper wire and immerse in the solution for 30 seconds (or until the correct color is achieved) swirling it to agitate. Remove and rinse in fresh water (Failure to do this will result in the part continuing to darken beyond the desired color). Set aside and air dry using a small fan.

Olive Drab Troubleshooting

Problem	Cause	Solution
Dull streaks/bare spots	Poor rinsing after plating	Increase rinsing/agitation
Bronze to reddish color	Temperature too high	Lower Temperature
Olive color too iridescent	Solution too weak	Evaporate off some water
Dull powdery film, not adhering	Temp of air drying too hot	Adjust to 120 deg F or less
Poor corrosion resistance	Temp. of drying is over 160 deg F. Leaches out chromate	Reduce temperature Reduce temperature
Poor dye absorption	Immersion time in dye too short Dye temperature too low Chromate film too thin	Increase immersion time Increase temperature Increase dip time
Chromate wipes off	Can occur is the concentration is low or high, most commonly high	Immerse the part in the chromate for 10 seconds with mild agitation. If the chromate wipes off, add 0.5% by volume chromate and retest. If the wipe off is still evident, increase the immersion time to 20 seconds

Black Chromate

CASWELL's Black Chromate Kit is a single dip chromate process consisting of two components, Black Chromate A and Black Chromate B. This system can be used over CASWELL Zinc and Copy Cad Plating Systems and will give a consistent and uniform black color.

The Black Chromate A solution contains chromic acid, which is a corrosive acid. Wear gloves, goggles, apron and a respirator with acid/gas cartridges.

Mixing Black Chromate

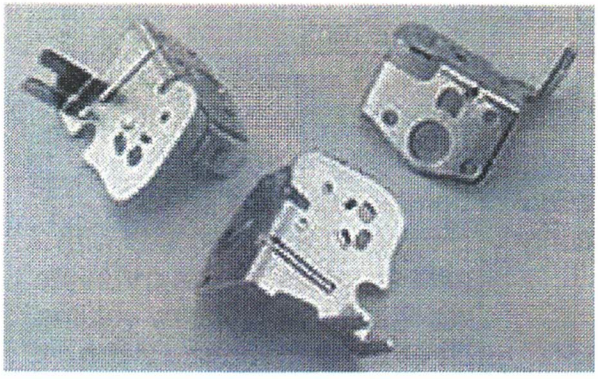
1. In a 2 Gal or larger plastic tank, add 7 pints (112 ozs) distilled water at room temperature
2. Add the contents of the bottle of Black Chromate A. Avoid Splashing
3. Add the contents of the bottle of Black Chromate B. Avoid Splashing

Using Black Chromate

Solution temperature should be 70-90 deg F for best results.

1. Rinse the part in distilled water after plating.
2. Hang the part from some copper wire and dip into the solution. Parts should be immersed for approx. 30-120 seconds. You may have to experiment with the time to get the right color.
3. Rinse the part in distilled water
4. Allow to air dry or dry with a hair dryer (air temp not to exceed 160 deg F)

Blue/Clear Chromate



Our Blue Chromate imparts a clear to blue/clear protective chromate finish over zinc or Copy Cad plated parts.

It's a single mix chemical, with excellent salt spray test results.

Mixing Blue Chromate

Blue Chromate contains chromic acid, which is a corrosive acid. Wear gloves, goggles, apron and a respirator with acid/gas cartridges.

1. In a plastic container, add 32 fl oz of Distilled Water
2. Add 8 fl oz Blue Chromate Concentrate. Avoid Splashing.

Using Blue Chromate

1. Hang the part from some copper wire and dip into the solution. Parts should be immersed for 15-40 seconds, depending on depth of color required.
2. Rinse the part well in distilled water
3. Allow to air dry, or dry with a hair dryer (do not exceed 150 deg F)