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# COLDIP TRI-V 400 CL

LIQUID CHROMATE  
 TECHNICAL DATA  
 08-15-13

## COLDIP TRI-V 400 CL

### *A CORROSION RESISTANT CLEAR CONVERSION COATING FOR ZINC*

- COLDIP TRI-V 400 CL is a truly clear, trivalent conversion coating for electroplated zinc.
- COLDIP TRI-V 400 CL is an aesthetically pleasing truly clear conversion coating which, when applied properly, will provide a finish that exceeds 48 hours of neutral salt spray to first white corrosion.
- COLDIP TRI-V 400 CL is an easy to use one part system that is applied by conventional immersion techniques.
- COLDIP TRI-V 400 CL is chelator-free and does not rely on chelate ligand technology, making it environmentally friendly.

## *OPERATING INSTRUCTIONS*

### RANGE

Concentration:	5% to 10% by volume
Dip time:	30 to 90 seconds
Temperature:	80° to 100° F (26° - 38°C)
pH	3.7 to 4.2
Zinc deposit thickness:	Minimum 0.3 Mil (8 Microns)

NOTE: Dip times can vary depending upon the concentration and the age of the chromate.

## *MAINTENANCE ADDITIONS*

Periodic titrations should be made to ensure correct concentration. If the analysis shows the proper amount of COLDIP TRI-V 400 CL and the pH is high, small additions of 50% by volume of nitric acid or sulfuric acid can be made to adjust the pH.

## ANALYTICAL PROCEDURE

1. Pipette a 10.0 mL chromate sample into a 100 mL volumetric flask. Dilute to 100 mL with distilled water and mix well.
2. Pipette 10.0 mL of the above diluted solution into a 250 mL Erlenmeyer flask and dilute to 100 mL with distilled water.
3. Add 5 mL 20% Sodium Hydroxide and 1 mL 35% Hydrogen Peroxide.
4. Boil solution approximately 5 minutes.
5. Add 1 mL 10% Nickel Chloride Solution and continue boiling for an additional 2 minutes.
6. Cool solution to room temperature.
7. With mixing, add 10 mL Concentrated Hydrochloric Acid, 1 g Ammonium Bifluoride, 10 mL 10% Potassium Iodide and 2 mL Starch Indicator Solution.
8. Titrate with 0.010 N Sodium Thiosulfate Solution to a clear / green endpoint.

FACTOR: mL 0.010 N Sodium Thiosulfate x 1.01 = Percent COLDIP TRI-V 400 CL

## TYPICAL CYCLE:

- PLATE
- RINSE
- ACID PRE-DIP (0.25% TO 0.5% NITRIC ACID)
- RINSE
- COLDIP TRI-V 400 CL
- COLD WATER RINSE
- HOT WATER RINSE
- DRY

## HELPFUL HINTS

1. A Nitric Acid pre-dip is recommended to increase the life of the COLDIP TRI-V 400 CL solution, particularly when an alkaline zinc electrolyte is utilized.
2. Removing fallen parts from the COLDIP TRI-V 400 CL tank and the Nitric Acid pre-dip tank is recommended to reduce the build-up and drag-in of iron contamination. In cases where the iron has exceeded the maximum concentration, the use of COLDIP IRON CONTROL can be used to help extend the life of the chromate.
3. Although the pH for a new solution make-up may be below the recommended operating range of 1.8 to 2.5, parts can be processed since the pH will climb after only a few hours.
4. Zinc-Chro SHIELD or Zinc-Chro-PELLENT can be used in the final hot water rinse to help improve corrosion protection.
5. With trivalent chromate based conversion coatings, care should be taken to avoid excess abrasion of the parts after processing. Trivalent coatings when fractured do not "heal" as in the case of traditional hexavalent products.

6. A cold COLDIP TRI-V 400 CL solution will affect the corrosion resistance of the chromate film. Maintaining the working temperature at 90° to 100°F (32° to 38°C) will help improve corrosion protection.
7. Simply by increasing the COLDIP TRI-V 400 CL working concentration, temperature and dwell time can improve overall corrosion protection.
8. Nitric Acid or sulfuric acid can be used to adjust the pH down in a working COLDIP TRI-V 400 CL solution.

## **HANDLING AND STORAGE**

**CAUTION:** COLDIP TRI-V 400 CL is corrosive and contains chromium compounds and strong mineral acids. Contact with the skin or eyes should be carefully avoided. Protective clothing and eye shields or goggles should be worn when handling COLDIP TRI-V 400 CL.

In case of contact, flush with large amounts of water. Remove contaminated clothing. For more detailed handling and storage instructions, please refer to the MSDS.

**FREEZABILITY:** As with most chemical products, it is preferable that freezing be avoided. However, if freezing should occur during transportation or storage, directions for handling the products covered in this technical data sheet are as follows:

If COLDIP TRI-V 400 CL freezes, warm to 95-105F/35-41C in a warm water bath. Thoroughly mix until precipitates are completely dissolved.

## **NON-WARRANTY**

The data contained in this bulletin is believed by Columbia Chemical Corp. to be accurate, true, and complete. Since, however, final methods of use of this product are in the hands of the end-user and beyond our control, we cannot guarantee that the end-user will obtain the results described in this bulletin, nor can we assume responsibility of the use of this product by the end-user in any process which may infringe the patents of third parties.