



1000 Western Drive
Brunswick, OH 44212
PHONE: 330-225-3200
FAX: 330-225-1499
www.columbiachemical.com

COLDIP® TRI-V 400 CL

TECHNICAL DATA
01-27-2021

COLDIP® TRI-V 400 CL *CLEAR LIQUID PASSIVATE 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 that, 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 PARAMETERS

	<u>RANGE</u>
Concentration:	5 - 10% by volume
Dip Time:	30 - 90 seconds
Temperature:	80 - 100° F (26 - 38°C)
pH	3.7 - 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 passivate.

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.

TYPICAL CYCLE

1. PLATE
2. RINSE
3. ACID PRE-DIP (0.25% TO 0.5% NITRIC ACID)
4. RINSE
5. COLDIP® TRI-V 400 CL
6. COLD WATER RINSE
7. HOT WATER RINSE
8. DRY

ANALYTICAL PROCEDURE

1. Pipette a 10.0 mL passivate 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 for 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

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 passivate.
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 passivate-based conversion coatings, care should be taken to avoid excessive 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 passivate film. Maintaining the working temperature at 90° to 100°F (32° to 38°C) will help improve corrosion protection.
7. Simply 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 & STORAGE

Columbia Chemical recommends referring to the specific product Safety Data Sheets for safety, handling, and storage precautions.

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 customer and beyond our control, we cannot guarantee that the customer will obtain the results described in this bulletin, nor can we assume responsibility of the use of this product by the customer in any process which may infringe the patents of third parties.