COLUMBIA® CHEMICAL
Simplifying Surface Finishing®

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

COLDIP® TRI-V 121

TECHNICAL DATA
01-28-2021

COLDIP® TRI-V 121

A HIGH CORROSION RESISTANT TRIVALENT BLUE-BRIGHT CONVERSION COATING FOR ZINC

COLDIP® TRI-V 121	is a unique, high performance, trivalent conversion coating for electroplated zinc.
COLDIP® TRI-V 121	is an aesthetically pleasing blue-bright conversion coating which when applied properly will provide a finish that exceeds 175 hours of neutral salt spray to white corrosion products.
COLDIP® TRI-V 121	is a cost-effective alternative to high corrosion finishes in an all trivalent containing products.
COLDIP® TRI-V 121	is an easy to use one-part system that is applied by conventional immersion techniques.
COLDIP® TRI-V 121	when top coated with Zinc-Chro-SHIELD® or Zinc-Chro-PELLENT will provide 350+ hours to white corrosion products.

OPERATING PARAMETERS

	GENERAL APPLICATION	GMW 3044 APPLICATION
Concentration:	5% - 10% by volume	8% - 10% (optimum 9%)
Dip time:	45 - 120 seconds	50 - 70 seconds (optimum 60 seconds)
Temperature:	80 - 100° F (26 - 38° C)	80 - 100° F
pH:	1.5 - 3.0	2.0 - 2.5 (optimum 2.3)
Zinc deposit thickness:	Minimum 0.3 mil (8 microns)	8 - 16 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 121 and the pH is high, small additions of 50% by volume of nitric acid can be made to adjust the pH.

ANALYTICAL PROCEDURE

1. Pipette a 10 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 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 0.338 = Percent COLDIP® TRI-V 121

TYPICAL CYCLE

1. PLATE
2. RINSE
3. ACID PRE-DIP (0.25% - 0.5% NITRIC ACID)
4. RINSE
5. COLDIP® TRI-V 121
6. COLD WATER RINSE
7. HOT WATER RINSE
8. DRY

HELPFUL HINTS

1. A Nitric Acid pre-dip is recommended to increase the life of the COLDIP® TRI-V 121 solution, particularly when an alkaline zinc electrolyte is utilized.

2. Removing fallen parts from the COLDIP® TRI-V 121 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 1.5 - 3.0, 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 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 121 solution will affect the corrosion resistance of the passivate film. Maintaining the working temperature at 90 - 100° F (32 - 38°C) will help improve corrosion protection.

7. Simply by increasing the COLDIP® TRI-V 121 working concentration, temperature and dwell time can improve overall consistency of color and corrosion protection.

8. Sulfuric Acid or Nitric Acid can be used to adjust the pH down in a working COLDIP® TRI-V 121 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.