



# COLDIP® NI-Z SAPPHIRE 400

TECHNICAL DATA  
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## COLDIP® NI-Z SAPPHIRE 400

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

COLDIP® NI-Z SAPPHIRE 400	is a unique all trivalent passivating conversion coating for electroplated zinc/nickel alloy.
COLDIP® NI-Z SAPPHIRE 400	will impart an aesthetically pleasing blue-bright conversion coating which when applied properly will produce a finish that exceeds 400 hours of neutral salt spray to white corrosion products.
COLDIP® NI-Z SAPPHIRE 400	is a cost-effective alternative to high corrosion finishes in an all-trivalent product.
COLDIP® NI-Z SAPPHIRE 400	when top coated with Zinc-Chro-SHIELD® will provide 500 hours to white corrosion products.

## SOLUTION MAKEUP

	<u>RANGE</u>	<u>OPTIMUM</u>
COLDIP® NI-Z SAPPHIRE 400A:	4 - 8% by volume	6% by volume
COLDIP® NI-Z SAPPHIRE 400B:	8 - 12% by volume	10% by volume
Dip Time:	30 - 75 seconds	60 seconds
Temperature:	80 - 100° F (26 - 38° C)	90° F (32° C)
pH:	4.0 - 4.4	4.2

NOTE: Shorter immersion times will generally require higher concentrations of the COLDIP® NI-Z SAPPHIRE 400A. If passivate appears yellow, decrease immersion time. If passivate is largely purple/tan, increase immersion time.

## MAINTENANCE ADDITIONS

COLDIP® NI-Z SAPPHIRE 400A:	40 mL per 100 square feet
COLDIP® NI-Z SAPPHIRE 400B:	20 mL per 100 square feet
Hydrochloric Acid:	approximately 2.5 mL per 100 square feet

NOTE: Periodic titrations should be made to ensure correct concentration.

## TYPICAL CYCLE

1. PLATE
2. RINSE
3. RINSE
4. COLDIP® NI-Z SAPPHIRE 400
5. COLD WATER RINSE
6. HOT WATER RINSE
7. DRY

## 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 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. Slowly 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 Standard 0.010 N Sodium Thiosulfate from a blue to clear-green endpoint.

CALCULATION:      mL 0.010 N Sodium Thiosulfate x 0.2 = % COLDIP® NI-Z SAPPHIRE 400A

## HELPFUL HINTS

1. It is best to allow 30 min equalization time after making up a new passivate solution.
2. A hang time after removing the parts from the passivate for 20 seconds allows a more uniform blue color.

3. Continuous filtration of the working solution is strongly recommended. A slight precipitate may form in the solution during operation which is normal but should be removed for best results.
4. A hydrochloric acid pre-dip may be necessary to activate the Zn-Ni substitute. A recommended starting point is 20 seconds at pH = 2.0.

## **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.