

DATA SHEET

Deveco Tri 102

High corrosion trivalent chromate coating

Deveco TRI 102 is a mid-corrosion chromate at 6%. It has a pleasing **blue-bright** coating on electroplated zinc and zinc-alloys. It exceeds **48 hours** protection on zinc plating to white corrosion in salt fog testing.

Deveco TRI 102 is a high-corrosion chromate at 10%. It imparts a clear, colorless coating on electroplated zinc and zinc alloys. It exceeds **144 hours** protection on zinc plating to white corrosion in salt fog testing. When used in conjunction with **Deveco TRI-GOLD Conc.** as a yellow chromate, the corrosion protection is further enhanced.

Deveco TRI 102 will meet GME00252 and GMW3044. It is a cost effective alternative to other trivalent chromate products.

Chromate solutions are made using either **Deveco TRI 102-MU**, or **Deveco TRI 102**. **Deveco Tri 102-MU** is formulated with lower acidity, so new chromate solutions need little or no pH adjustment, whereas make-ups using **Deveco Tri 102** require additions of 50% Caustic Soda to bring the pH up into operating range.

Deveco TRI 102 when top-coated with **Deveco 980** or similar topcoats will deliver up to **250 hours** to white corrosion in salt fog testing.

OPERATING PARAMETERS

| Blue-bright, Mid-corrosion | Recommended | Range |
|----------------------------|--------------|--------------------|
| Deveco TRI 102 | 6% by volume | 4 to 8 % by volume |
| Temperature | 80 °F | 75 to 90 °F |
| Time | 45 seconds | 30 to 60 seconds |
| PH | 1.8 | 1.8 to 2.2 |

| Clear, High-corrosion | Recommended | Range |
|-----------------------|---------------|---------------------|
| Deveco TRI 102 | 10% by volume | 8 to 12 % by volume |
| Temperature | 90 °F | 80 to 100 °F |
| Time | 45 seconds | 30 to 60 seconds |
| PH | 2.0 | 1.8 – 2.2 |

To lower the pH, use **Deveco TRI 102** chromate.

To raise the pH, use **50% Caustic Soda**.

TYPICAL CYCLE

1. Zinc, Zn-Ni, Zn-Co, Zn-Fe, or Sn-Zn Plate.
2. Rinse
3. Nitric Acid Predip (0.5 – 1.0% by volume) Zinc plate only
4. Rinse
5. Deveco TRI 102
 - a. For Zn-Ni alloys, heat the chromate to 110 – 120 °F and raise the pH to 3.0 – 3.5.
6. Cold Water Rinse
7. Hot Water Rinse
8. Dry (or apply a subsequent post-dip)

Deveco TRI 102

Page 2 of 2

- As with any chromate, the plating bath must be in good operating order, within proper parameters and without excessive trace metals and/or organic contamination, to get satisfactory corrosion protection from the trivalent chromate film.
- In a new make-up of **Deveco TRI 102-MU**, the pH may be slightly below the operating norm. Bring it into the operating range with 50% Caustic Soda, if necessary
 - *(When the chromate is made up using **Deveco TRI 102**. It will require additional 50% Caustic Soda to bring the pH back up into operating range.)*
- A Nitric Acid pre-dip is recommended for zinc plating, to increase the life of the chromate, particularly when plated in an alkaline zinc electrolyte. No pre-dip is recommended for alloy plating, since it usually darkens the zinc-alloy plate.

ANALYSIS of TRI 102 Chromate Solutions:

1. Add a 10 ml sample of the chromating solution into a flask.
2. Add about 100 mls DI or distilled water.
3. Add 1 to 2 mls of phenolphthalein indicator.
4. Titrate with 1.0 N Sodium Hydroxide to a violet-blue end-point. (pH 8.2)

NOTE: The sample will become cloudy before the end-point is reached.

Mls 1.0 N Sodium Hydroxide x 2.4 = % by volume of Deveco TRI 102.

Use Deveco TRI 102 for maintaining concentrations.

Analyze the chromate solution for **Zinc** and **Iron** by AA analysis.

In a 10% **Deveco TRI 102** chromate solution, Zinc concentration above 30 g/l (30,000 PPM) and Iron concentration above 1 g/l (1,000 PPM) inhibit the chromating reaction and make it difficult to create a good chromate film. Decant or dump the bath to maintain the Zinc and Iron concentrations below these limits.

CAUTION:

Deveco TRI 102 is a corrosive liquid and should be handled with caution.

Please refer to the MSDS before using the product.

DISCLAIMER:

The information presented herein, while not guaranteed, is to the best of our knowledge true and accurate. No warranty or guarantee expressed or implied is made regarding the performance of any products, since the manner of use is beyond our control. No suggestion for product use or anything contained herein shall be construed as recommendation for its use in infringement of any existing patent and we assume no responsibility or liability for operations which do infringe any such patents. The above includes confidential and proprietary information of Deveco Corporation and is furnished to you for your use solely on products or processes supplied by us to you.

Deveco TRI 102 Analysis (Alternative Method)

- Pipette 2 mls of sample into a 250 ml flask
- Add about 50 mls DI water
- Add 2 to 3 grams Ammonium Persulfate ($(\text{NH}_4)_2\text{S}_2\text{O}_8$)
 - (Also known as Ammonium Peroxydisulfate)
- Heat to boiling for 1 hour, adding DI water as needed
- Remove from heat and cool to near room temp.
- Add about 2 grams Ammonium Bifluoride (NH_4HF_2)
- Add about 30 mls of 50% HCl Hydrochloric Acid
- Add about 10 mls of 10% KI Potassium Iodide
- Titrate with 0.1 N Sodium Thiosulfate until solution begins to lighten
- Add about 5 mls Starch Indicator solution
- Continue to Titrate with 0.1 N Sodium Thiosulfate – end pt: blue → clear

Mls 0.1 N Sodium Thiosulfate x 1.45 = % Deveco TRI 102

Add Deveco TRI 102 for maintaining concentration.