COLUMBIA® CHEMICAL
Simplifying Surface Finishing®

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

SpectraMATE® 25

A HIGH PERFORMANCE THICK-FILM TRIVALENT CONVERSION COATING FOR ZINC

SpectraMATE® 25	is a high performance, thick-film trivalent conversion coating for electroplated zinc that provides a finish that consistently exceeds 250 hours of neutral salt spray to white corrosion products without top coats, when applied properly
SpectraMATE® 25	produces a slightly iridescent, multicolor finish (hues of yellow, green, purple and pink) which is unique among high corrosion trivalent passivate processes
SpectraMATE® 25	is an easy to use one-part system that does not require multiple starter, adjuster, and replenisher type additives allowing it to operate at a wider, and more user-friendly pH range (pH = 1.4 - 3.4) than conventional trivalent passivates.
SpectraMATE® 25	provides over 500 hours to white corrosion when top coated with Zinc-Chro-SHIELD® or Zinc-Chro-PELLENT.
SpectraMATE® 25	is ideal for both and rack and barrel installations utilizing cyanide, alkaline cyanide-free or acid-chloride zinc plating electrolytes.

OPERATING PARAMETERS

	GENERAL APPLICATION	GMW 3044 APPLICATION
Concentration:	8 - 10% by volume	8 - 10% (Optimum 9%)
Dip time:	45 - 120 seconds	50 - 70 seconds (Optimum 60 seconds)
Temperature:	50 - 110° F (10 - 42° C)	80 - 100° F
pH:	1.4 - 3.4	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 SpectraMATE® 25 and the pH is high, small additions of 50% by volume of nitric acid can be made to adjust the pH.

TYPICAL CYCLE

1. PLATE
2. RINSE
3. NITRIC ACID PREDIP (0.5% BY VOLUME)
4. RINSE
5. SpectraMATE® 25
6. COLD WATER RINSE
7. HOT WATER RINSE
8. DRY

ANALYTICAL PROCEDURE

TITRATION PROCEDURE:

ITEMS NEEDED

1. DI Water
2. 20% Sodium Hydroxide Solution
3. 35% Hydrogen Peroxide Solution
4. 10% Nickel Chloride Solution
5. Conc. Hydrochloric Acid
6. Ammonium Bifluoride
7. 10% Potassium Iodide Solution
8. Starch Indicator Solution
9. 0.010N Sodium Thiosulfate Solution

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. 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 the solution to a clear / green endpoint using 0.010 N Sodium Thiosulfate.

CALCULATION:

Percent SpectraMATE® 25 = mL 0.010 N Sodium Thiosulfate x 0.332

HELPFUL HINTS

1. A Nitric Acid pre-dip is recommended to increase the life of the passivate particularly when an alkaline zinc electrolyte is utilized.

2. Although the pH for a new solution make-up may be below the recommended operating range of 1.4 - 3.4, parts can be processed since the pH will climb after only a few hours.

3. Sulfuric Acid or Nitric Acid can be used to adjust the pH down in a working SpectraMATE® 25 solution.

IRON CONTAMINATION

Iron contamination is a problem for all of the high-end/high performance trivalent passivation technologies. Iron can cause yellowing, staining, discoloration and reduced corrosion protection.

Extreme care should be used to keep iron from entering the working SpectraMATE® 25 passivate solution. The process tank should be cleaned at least once or twice per 8-hour shift to eliminate the potential for dissolving fallen parts. Adequate rinsing should always be maintained and nitric pre-dips prior to passivating should be dumped frequently to reduce drag-in of iron. Also, tubular parts should be allowed to completely drain before entering the passivate solution.

COLDIP IRON CONTROL can be used as a treatment for iron contamination. Information is available in COLDIP IRON CONTROL Technical Data Sheet. Ion Exchange Resin Filtration can also be used to remove iron. Contact a Columbia Chemical Technical Service Representative for further information.

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.