



PRODUCT INFORMATION

MARTRON INC.®; P O BOX 309; MONROE, NC 28111 PH: (704) 289-1934; FAX: (704) 283-7400

DATE: SEPTEMBER 6, 2016

Emergency - MARTRON 704-289-1934
CHEMTREC 800-424-9300

REF # - MFC-001536 and MFC-001537

MARTRON TRIBLACK 500 PROCESS

Trivalent Black Conversion Coating

Martron Triblack 500 is a unique easy to use all trivalent black conversion coating that can be applied to electrodeposited zinc and its various alloys.

Martron Triblack 500 is a two-part system with long bath life and easy control.

Martron Triblack 500 produces a comparable finish to hexavalent black conversion coatings when used in conjunction with **Martron Triblack Sealer III**, **Martron BLK3ZN Sealer** or **Martron WDL Water Soluble Lacquer**. For product information on **Martron BLK3ZN Sealer** and **Martron WDL**, contact Martron Inc. Also, to produce blacken finish use **Martron Triblack III**.

Martron Triblack 500 will exceed 120 hours of 5% neutral salt spray before the appearance of white corrosion products.

Martron Triblack 500 can be operated at ambient temperatures.

Section 1: OPERATING PARAMETERS

	RANGE	RECOMMENDED
Martron Triblack 500A	3-5% by volume	4% by volume
Martron Triblack 500B	3-5% by volume	4% by volume
pH	1.8-2.4	2.0
Immersion Time	15-50 seconds	40 seconds
Temperature	75 - 90°F (24 - 32°C)	80°F (26°C)

Section 2: SOLUTION MAKE UP

1. Be sure the tank being used is leached of all hexavalent chromium products before charging.
2. Fill tank to approximately 75% of final volume preferably with deionized water.
3. Add the required amount of **Martron Triblack 500A**
4. Add the required amount of **Martron Triblack 500B**
5. Bring tank to final working volume and check pH of the solution.
6. To raise the pH use dilute Sodium Hydroxide, and to lower the pH use Nitric Acid.

Section 3: PROCESSING CYCLE

- Zinc plate
- Rinse
- Activate in 0.5% by volume nitric acid
- Rinse
- **Martron Triblack 500**
- Sealer
- Dry

Section 4: ANALYTICAL PROCEDURE FOR MARTRON 500

1. Pipette a 10 ml sample of the operating solution into a 250 ml Erlenmeyer flask and add approximately 100 mls of DI water.
2. Adjust pH of the solution with dilute caustic soda to a pH of 10.0-11.0
3. Add 2 ml of 35% Hydrogen Peroxide
4. Boil the solution for approximately 15-30 minutes, until all of the peroxide is dissipated.
5. Cool the solution to Room Temperature and add 25-50 ml of DI water.
6. Add 10 ml of 50 % Sulfuric Acid
7. Add 10 ml of 10% Potassium Iodide solution
8. Titrate the brown solution to a straw yellow color with 0.1N Sodium Thiosulfate solution.
9. Add 1-2 ml of freshly prepared 1% starch solution and continue titrating with the Thiosulfate until the blue color disappears

CALCULATION:

ml of titrant x 0.25 = % by volume of **Martron Triblack 500A**

Section 5: ANALYSIS FOR MARTRON TRIBLACK 500B

PROCEDURE: DONE BY ATOMIC ABSORPTION SPECTROSCOPY:

CALCULATION:

mg/liter (from AA) should be maintained at 900-1200 mg/liter. The addition of 170 **Martron Triblack 500B** will raise the iron content by 300 mg/liter.

pH should be determined via calibrated pH meter. pH papers are not usually accurate.

Section 6: OPERATING NOTES

Routine additions via metering pump or regular "over the side" tank additions should be incorporated into the operating procedures. It is not wise to allow the solution to become almost depleted and "recharged" with large amounts of chemistry. Addition rate should be determined empirically through analysis of chromating bath with a correlation of the amount of work going through the line.

Section 7: WASTE TREATMENT

The addition of calcium chloride and an iron source such as Ferric Chloride or Ferrous Sulfate will help break the chromium complexes that exist in the product.

Section 8: TROUBLE SHOOTING GUIDE - MARTRON TRIBLACK 500

PROBLEM	POSSIBLE CAUSE	SOLUTION
Poor Corrosion Protection	pH is low	Measure pH, correct with Sodium Hydroxide
	Handling/scratching of film in barrel or basket	Limit barrel rotation, or basket shaking; basket. Increase pH and immersion time; or decrease concentration and increase immersion time. Check temperature of sealer. Barrel operation 55°C (130°F)
	Zinc level in chromate is > 15-20g/L	Dilute the chromate and make the necessary additions. The chrome level in the chromate should be at least 1.5 times the Zn level
	Work has yellow/green appearance	Martron Triblack 500B , is too low; adjust in 0.5% increments.
	Concentration or temperature of sealer low.	Check concentration and temperature
Parts are red/ green iridescent	Low Martron Triblack 500B	Check Martron Triblack 500B make proper additions.
	pH of chromate is high	Check Ph. Adjust pH with Martron Triblack 500B or Nitric Acid
	Dwell time is too low	Increase dwell time
	Temperature is too low	Check temperature, maintain at 21°C (70°F)
Parts are dull black, powdery white/black	pH is too low	Check and correct with dilute Sodium Hydroxide
	Martron Triblack 500B concentration is high	Correct with additions of Martron Triblack 500A in 0.5% increments; check pH and correct with dilute Sodium Hydroxide. It may be necessary to cut the bath 25-30% and make additions of Martron Triblack 500A in 0.5% increments; adjust pH with dilute Sodium Hydroxide
	Martron Triblack 500A concentration is low	Analyze Martron Triblack 500A and make the necessary additions.
Chromate is too aggressive the zinc/zinc alloy deposit is stripped back in areas; yellow/brown; or white color on edges.	Concentration of chromate is too high.	Decrease the concentration
	Temperature of chromate is too high.	Lower temperature to operating range.
	pH is too low.	Check pH and adjust with dilute Sodium Hydroxide