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TRIVECTA® BLACK 1400

TRIVALENT BLACK LIQUID CHROMATE

8-23-16

TRIVECTA® BLACK 1400

- TRIVECTA® BLACK 1400 is an easy to use trivalent black process.
- TRIVECTA® BLACK 1400 provides a consistent black appearance.
- TRIVECTA® BLACK 1400 works well over acid chloride zinc (both ammoniated and non-ammoniated systems), cyanide zinc, alkaline cyanide zinc free and zinc-iron/cobalt alloy deposits.

SOLUTION MAKEUP:

	<u>Range</u>	<u>Optimum</u>
TRIVECTA BLACK 1411	3-7% by volume	5%
TRIVECTA BLACK 1421	6-10% by volume	8%
pH	1.8-2.4	2.2
Temperature	85° - 115°F/30° - 45°C	115°F/40°C
Dip Time	40 to 90 seconds	60
Agitation	Air	

SOLUTION MAKEUP PROCEDURE:

- 1) Fill tank with water to 35% of final volume.
- 2) Add 5%/volume of the TRIVECTA BLACK 1411 and stir.
- 3) Add water to 75% of final volume.
- 4) Add 8%/vol of the TRIVECTA BLACK 1421 and stir.
- 5) Adjust to final volume with water and stir.
- 6) Check pH, if it is not in range then raise with dilute sodium hydroxide or lower with hydrochloric acid.

SOLUTION MAINTENANCE:

Replenishment Additions:

TRIVECTA BLACK 1411: Add back at approximately 0.5 - 2.0 ml/sq.ft.

TRIVECTA BLACK 1421: Add back at approximately 5.0 - 10.0 ml/sq.ft.

pH:

High pH - slowly adjust with Hydrochloric within optimum range.

Low pH - slowly adjust with Caustic Soda Liquid 50% within optimum range.

.ADDITIONAL OPERATING INSTRUCTIONS**NITRIC ACID PRE-DIP**

A nitric acid pre-dip of 0.2% to 0.4% by volume is recommended prior to the working TRIVECTA BLACK 1400 chromate to polish the zinc deposit and to extend the life of the chromate solution.

ANALYTICAL PROCEDURE: TRIVECTA BLACK 1411

The use of X-Ray Fluorescence or Atomic Absorption analysis is recommended to determine the working concentration of TRIVECTA BLACK 1411. TRIVECTA BLACK 1411 is the chrome component in the TRIVECTA BLACK 1400 process. If X-Ray Fluorescence or Atomic Absorption are not available then Procedure 2 can be used to titrate for the working concentration of TRIVECTA BLACK 1411.

Procedure 1

Using standard X-Ray Fluorescence or Atomic Absorption techniques, determine g/L of chrome in the working chromate solution.

CALCULATION: Atomic Absorption Only

$\text{g/L chrome} \times 1.36 = \% \text{ TRIVECTA BLACK 1411}$

Procedure 2

- 1.) *Pipette a 10 ml sample of the Trivecta Black 1400 working solution into a 100 ml volumetric flask and dilute to volume.*
- 2.) *Pipette 10 ml of the above dilution into a 250 ml Erlenmeyer Flask and dilute to 100 ml with Deionized water.*
- 3.) *Add 5 ml of 20% Sodium Hydroxide and 1 ml of 35% Hydrogen Peroxide.*
- 4.) *Boil solution for 5 minutes.*
- 5.) *Slowly add 1 ml of 10% nickel chloride solution and continue boiling 2 minutes.*
- 6.) *Cool Solution to room temperature.*
- 7.) *With stirring add 10ml Concentrated Hydrochloric Acid, 1 g Ammonium Bifluoride, 10 ml 10% Potassium Iodide and 2 ml Starch Indicator.*
- 8.) *Titrate with 0.01N Sodium Thiosulfate from a blue to a clear-green endpoint.*

Factor = ml of 0.01N Sodium Thiosulfate X 0.205= %/volume Trivecta Black 1411

ANALYTICAL PROCEDURE: TRIVECTA BLACK 1421

The use of X-Ray Fluorescence or Atomic Absorption analysis is recommended to determine the working concentration of TRIVECTA BLACK 1421. TRIVECTA BLACK 1421 contains cobalt in the blackening component in the TRIVECTA BLACK 1400 process.

Procedure

Using standard X-Ray Fluorescence or Atomic Absorption techniques, determine g/L of cobalt in the working chromate solution.

CALCULATION: Atomic Absorption Only

$\text{g/L cobalt} \times 5.6 = \% \text{ TRIVECTA BLACK 1421}$

Reminder: $\text{ppm} \div 1,000 = \text{g/L}$

NON-WARRANTY

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