

ACCU-LABS INC.

4831 S. Whipple Avenue
Chicago IL 60632
Phone: 773.523.3100 Fax: 773.523.4008
www.accu-labs.com

A2LA Accredited ISO/IEC 17025:2005 Certificate # 2558.01

517-Z TRIVALENT CHROMATE FOR ZINC & ZINC ALLOYS

GENERAL DESCRIPTION:

- **ACCU-LABS 517-Z** is a new trivalent chromium passivate for zinc alloy and zinc electroplate, and zinc die-cast.
- **ACCU-LABS 517-Z** produces an iridescent coating on electroplated zinc, zinc-nickel, and zinc-iron and zinc-iron-cobalt surfaces. **ACCU-LABS 517-Z** is provided as a single component liquid concentrate and contains trivalent chromium for easier waste treatment. **The ACCU-LABS 517-Z** solution is easy to control, has a long bath life, and is completely free of hexavalent chrome. It has an excellent tolerance to the drag-in of iron, nickel, cobalt, zinc and tin, and an inherent ability to form strong bonds with subsequent sealer, topcoats, lacquers and paints. **ACCU-LABS 517-Z** is extremely useful for providing excellent corrosion protection on a variety of zinc and zinc alloy deposits, 150-300+ hours of salt spray to white rust per ASTM B 117 have been consistently achieved. Additional corrosion protection can be gained by using Accu-Labs' **KSN** post dip sealer.

ADVANTAGES:

- Excellent corrosion resistance to meet new hex chrome free specifications.
- Coating can be applied to a wide variety of zinc and zinc alloy deposits.
- Provides a superior base for paints and sealers on zinc alloy, zinc and zinc diecast.
- Long solution life and easy to control single component process.
- Fresh coatings can be heated without loss of corrosion protection.
- Coating process can be operated at elevated or room temperature ranges.
- Iridescent color prevents confusion with other coatings.

SOLUTION COMPOSITION:

	<u>Optimum</u>	<u>Range</u>
517-Z	15% by volume	12-18% by volume

A fresh, or half-fresh, make up of the 517-Z solution will require PH adjustment with liquid caustic soda to raise the PH to the proper working range. See the makeup procedure section.

OPERATING CONDITIONS:

	<u>For Use Over Zinc, Zinc-Iron & Zinc-Iron-Cobalt</u>	<u>For Use Over Zinc-Nickel</u>
Temperature-	80-130°F	90-145°F
pH-	1.7-2.2	1.3-2.4
Immersion Time	30-90 sec.	60-120 sec.
Agitation-	Mild air; mechanical agitation is adequate	
Drying Temperature-	Not critical, but less than 140°F	

EQUIPMENT:

Tank -	Koroseal, PVC, or polyethylene
Heaters-	PTFE-coated stainless steel (type 302, 304)
Racks -	Polymer-coated

MAKEUP PROCEDURE:

1. Fill tank to 50% of final operating level with water.
2. Add the required amount (15%) of **ACCU-LABS 517-Z**.
3. Neutralize the excess acid present in the fresh tank makeup. While mixing the tank solution, add 0.15 gallons (560 mls) of liquid caustic soda for each 1 gallon of 517-Z used. (Do not premix or add caustic soda directly to the 517-Z concentrate. This will cause extreme heat and fumes.)
4. Fill tank with water to its final operating level.
5. Mix until uniform. Check pH using a pH meter or pH papers. Adjust pH to proper range. Make small additions of dilute liquid caustic soda or nitric acid (or 517-Z) as required to raise or lower the pH respectively.

SOLUTION OPERATION & CONTROL:

- The pH and trivalent chromium content are maintained with additions of **ACCU-LABS 517-Z** concentrate that can be determined by analysis or by observing the work being processed. Factors such as temperature, immersion time, volume of dragged-in contaminants, volume of solution dragged out, etc., will affect the rate of usage of this system. Therefore, the addition of **ACCU-LABS 517-Z** will differ from one processing line to another.
- The pH of the bath should be checked after making maintenance additions of **ACCU-LABS 517-Z**. The pH of the solution will normally be maintained using **ACCU-LABS 517-Z**. However, if rinsing of the work is less than adequate, the pH can rise and an imbalance of trivalent chromium to acid can result. The pH of the solution can be adjusted with small additions of dilute nitric acid or liquid caustic soda, to respectively, lower or raise the pH. (Test pH strips colorphast pH 0-2.5 from EMD Chemicals Inc. or similar test papers can be used.)

ANALYSIS PROCEDURE:

- Reagents Required:
 - Sodium hydroxide, 10%
 - Hydrogen peroxide, 35%
 - Hydrochloric acid, concentrated
 - 10% nickel sulfate or nickel chloride solution
 - Sodium thiosulfate solution, 0.1N
 - Starch solution, 1%
 - Ammonium bifluoride
 - Potassium iodide
- Procedure:
 1. Pipette a 10 ml sample of solution into a 250 ml volumetric flask.
 2. Add 20 ml of 1.0 N (40 g/l) sodium hydroxide solution and 50 ml of DI or distilled water.
 3. Add 0.50-0.75 ml of 35% hydrogen peroxide and gently boil for 45 minutes. Maintain volume of solution with deionized or distilled water. During this boiling period allow the flask solution to boil down to near dryness at least once. This will ensure that all excess peroxide is removed.
 4. Add 1 ml of 10% nickel sulfate or nickel chloride solution and boil for an additional 15 minutes.
 5. Cool to room temperature.

6. Add 25 ml of concentrated hydrochloric acid.
7. Add 1 g of ammonium bifluoride and dissolve.
8. Add 10 ml of 10% potassium iodide solution.
9. Add 1 ml of starch indicator and titrate with 0.1 N sodium thiosulfate to the disappearance of the blue-black color (light green).
10. Calculate the concentration of **ACCU-LABS 517-Z**.
 (% by vol.) = ml of sodium thiosulfate x 0.69
 (ml/l) = ml of sodium thiosulfate x 6.90

SAFETY:

Always wear proper personal protective gear when working with or handling this product; this includes eye protection. Read MSDS prior to using this product.

DISCLAIMER:

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