ACCU-LABS INC.
4831 South Whipple Street
Chicago, IL 60632
www.accu-labs.com
Ph. 773-523-3100 F. 773-523-4008

546

YELLOW-IRIDESCENT TRIVALENT PASSIVATE FOR ZINC

Accu-Labs 546 is a new generation two-component, single dip, trivalent passivate which produces a true iridescent yellow coating on electroplated zinc. Accu-Labs 546 is a totally trivalent RoHS compliant product. It contains no hexavalent chromium, no dye colorants and no metal complexing compounds. The absence of dye colorants means the protective yellow finish won't "rub off" and the 546 finish is UV stable.

Accu-Labs 546 can be used in rack or barrel zinc plating applications, the iridescent coatings produced will look like traditional "hex-yellow" coatings and have excellent corrosion protection properties equal to or exceeding "old hex chrome" style chromates.

MAKE UP AND OPERATING RANGES:

Water	60% by volume
Accu-Labs 546-A	8-16% by volume (10-12% optimum)
Accu-Labs 546-B	0.5-2.0% by volume (0.8-1.5% optimum)
Water	Balance of make up
Temperature	70-115°F
Immersion Time	30-120 sec (60-90 sec optimum)
pH	1.6-2.6 (1.8- 2.4 optimum)
Agitation	Mild air or mechanical

The pH of a newly made up solution will required the addition of dilute liquid caustic soda or dilute nitric acid to adjust the pH (up or down respectively) to the desired working range. Always use a properly calibrated pH meter.

TYPICAL OPERATING SEQUENCE:

1. Zinc Electroplate, 0.0003" minimum
2. Cold water rinse
3. Cold water rinse
4. Dilute acid activate (0.2—0.5% nitric acid)
5. Cold water rinse
6. Accu-Labs 546 Iridescent Yellow
7. Cold water rinse
8. Cold water rinse
9. Sealer or torque tension coating (optional)
10. Dry

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EQUIPMENT:

Tanks:	Rubber lined steel or a tank (or liner) made of polyethylene or polypropylene, PVC, PVC/Polyester reinforced material
Ventilation:	Recommended
Agitation:	Air or mechanical recommended
Filtration:	Recommended
Heating:	Immersion heaters, PTFE, Teflon coated stainless steel

NOTE: The use of fluoride resistant circulation and feed pumps, and pH control equipment is recommended for optimum process control.

GENERAL OPERATING INSTRUCTIONS:

Accu-Labs 546 yellow solutions are best maintained by proportional additions of 546-A and 546-B products. One gallon of 546-A will typically process 3000-5000 square feet of zinc plated work. And, for every 1% of 546-A added to maintain the passivate solution an addition of 0.1 to 0.3% of 546-B will be required to maintain the desired yellow color. The pH can be maintained with small additions of dilute nitric acid when the concentration of Accu-Labs 546-A is in the working range (see analysis procedure).

A low concentration of Accu-Labs 546-A may cause dark stains.

A high concentration of Accu-Labs 546-A may not cause any problems other than a reduction of the iridescence of the finished yellow coating.

A low concentration of Accu-Labs 546-B will results in a pale yellow color.

An excess of 546-B may produce irregular dark stained passivate films. This may be corrected by a temporary increase in the concentration of 546-A.

CAUTION: DO NOT MIX THE 546-A AND 546-B CONCENTRATES in their concentrate form. Always add as separate chemical additions to the passivate solution.

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ANALYSIS PROCEDURE:

• Reagents Required:

Sodium Hydroxide, 1N	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 5 ml sample of solution into a 250 ml volumetric flask.
2. Add 20 ml if 1.0 N (40 g/l) sodium hydroxide solution and 50 ml of Dl 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 15 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 546-A**
    % by vol. = ml of sodium thiosulfate x 0.81

Alternate analytical test methods can be used, AA or spectrophotometric procedures; contact Accu-Labs for alternate test method information.

SAFETY

Accu-Labs 546 products and solutions are strong acid solutions which contain nitric acid fluorides and selenium. Use proper protective gear to protect eyes and skin. Read and follow Material Safety Data Sheet (MSDS) before using any chemical used for the process. Ventilation is recommended for removal of any vapors or mist generated during the use of these chemical products and materials.