

# Accu-LABS INC.

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**A2LA Accredited ISO/IEC 17025:2005 Certificate # 2558.01**

## 515 TRIVALENT BLACK FOR ZINC

**Accu-Labs 515** is a trivalent chromium containing solution that is completely free of hexavalent chromium and is easy to waste treat. **Accu-Labs 515** produces a uniform black passivation film on zinc deposits plated from alkaline non-cyanide, acid chloride or cyanide zinc plating solutions.

### SOLUTION MAKE-UP:

<b>Accu-Labs 515-A</b>	3-8% by volume (5% optimum)
<b>Accu-Labs 515-B</b>	3-8% by volume (5% optimum)
Phosphoric Acid (85%)	0.4% by volume (used on makeup only)
Water	89.6% by volume (balance of makeup)

The pH of a newly made up solution will typically be 1.0-1.2 and will require the addition of 10% liquid caustic soda to adjust upwards. **ADD 10% LIQUID CAUSTIC SODA INCREMENTALLY; DO NOT OVERSHOOT pH.**

### Procedure

- Fill a suitable, properly prepared tank about 80% full with water
- Add the required amount of **Accu-Labs 515-A** and mix thoroughly
- Add the required amount of **Accu-Labs 515-B** and mix thoroughly
- Add the required amount of 85% Phosphoric Acid & mix thoroughly
- Bring the solution level to its final volume with water & mix thoroughly
- Adjust pH to 1.6 with 10% caustic soda. **DO NOT OVERSHOOT pH**
- Bring solution to operating temperature (80°F) prior to using

### OPERATING GUIDELINES:

Temperature:	70-90°F (80°F optimum)
pH:	1.50-1.70 (1.60 optimum) <b>DO NOT EXCEED pH of 1.8</b> Always use a properly calibrated pH meter with temperature compensation. Automatic pH monitoring and replenishment is recommended.
Dwell Time:	35-50 seconds (45 seconds optimum)
Transfer Time:	20-30 seconds

## 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 should be made of PTFE or hard porcelain. Heat exchangers should be made of stainless steel or titanium.

## PROCESS SEQUENCE (for maximum cosmetics & corrosion protection)

- 1.) Zinc plate 0.0002" minimum
- 2.) Water Rinse
- 3.) Water Rinse
- 4.) Bright dip in 0.3% nitric acid (or 0.5% HCl)
- 5.) Water Rinse
- 6.) Immerse in **Accu-Labs 515** Black Passivate
- 7.) Water Rinse (triple rinsing strongly recommended)
- 8.) Drain rinse water thoroughly (60 seconds typical)
- 9.) Dry parts (to maintain integrity of **KSN** Seal bath)
- 10) Dip in **KSN** Seal (see notes below)
- 11) Dry at >140°F
- 12) Dip in **XT Blacquer** (optional see notes below)
- 13) Dry at >140°F

**Note:** Additional corrosion protection can be achieved by processing dried parts in Accu-Labs **KSN** Sealer at 3-5% by volume, at 70-90°F, 5-15 seconds, re-dry and re-dip in **KSN** Sealer and dry. If additional cosmetic gloss is desired process in **XT Blacquer** at 33-100% by volume, ambient temperature, 5-15 seconds, DRAIN THOROUGHLY, and final warm air dry (warm spin dry preferred).

## SOLUTION MAINTENANCE

**Cr (111) Content** of a new **515** solution is 0.13 oz/gal (1.0 g/l) when calculated as Trivalent Chromium Cr (111) or 5% by volume (50 ml/l) when calculated as **515-A** concentration. This can be monitored by analysis and should be maintained between 0.12-0.17 oz/gal (0.9-1.3 g/l). To increase the Cr (111) content by 0.013 oz/gal (0.1 g/l) add 0.5% by volume (5 ml/l) **515-A**. The consumption of **515-A** and **515-B** is strongly dependent on drag-out. Under typical operating conditions, the working **515** solution should be replenished based on the area of parts processed as follows: 1.0-3.0 fluid ounces of **515-A** and **515-B** per 100 ft<sup>2</sup> of work processed. The Cr (111) content should not exceed 2.6 oz/gal (2.0 g/l). Additions of phosphoric acid must be avoided as an overdose will destabilize and decrease the life of the passivate solution.

The **pH** of the **515** working solution should be monitored regularly and maintained between **1.5-1.7**. Under normal operating conditions the pH will tend to increase and should be readjusted with sulfuric acid if chromium content is within range.

If the **pH** of the **515** solution is operated greater than **1.8** for extended periods of time, a gray-iridescent film will develop; resulting in destabilization and ultimately a reduction in the life of the solution. **EXCEEDING a pH 2.0** may cause a complete breakdown of the solution and require discarding the bath and making a new **515** bath. Automatic or frequent pH monitoring and replenishment is strongly advised.

## **SAFETY**

**Accu-Labs 515** solutions are acidic. Avoid contact with skin and eyes and wear protective gear. Read the Material Safety Data Sheet for all chemical products before use.

## **WASTE DISPOSAL**

Dispose of spent material in accordance with all applicable federal, state, and local regulations and permits. Consult the MSDS for additional regulatory information.

## **Notice of Disclaimer:**

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