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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:

Accu-Labs 515-A	3-8% by volume (5% optimum)
Accu-Labs 515-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) **DO NOT EXCEED pH of 1.8** 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 ft² 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 is accordance with all applicable federal, state, and local regulations and permits. Consult the MSDS for additional regulatory information.

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