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A2LA Accredited ISO/IEC 17025:2005 Certificate # 2558.01

ACCU-LABS 633 Black Trivalent Chromate Coating for Zinc-Iron

Accu-Labs 633 is a single dip black trivalent conversion coating for electroplated zinc-iron surfaces. **Accu-Labs 633** is a totally trivalent chromate specifically formulated for use on **alkaline zinc-iron** plating deposits. **Accu-Labs 633** coatings can produce over 200 hours of salt spray protection to white rust (ASTM B-117) when sealed with **Accu-Labs KSN Sealer**

Solution Make-up

Fill tank approximately $\frac{3}{4}$ full with water and add the **Accu-Labs 633** required to make a 10% by volume solution. Adjust the pH up to the working range, pH 1.7 – 2.2. Slowly add, while mixing, Liquid Caustic Soda 50% while checking the pH. For each 1 gallon of **Accu-Labs 633** used for make-up, about 300 mls of Liquid Caustic will be needed. Once the pH is adjusted add water up to the full working tank level.

Operating Guidelines

Accu-Labs 633	8 – 12% by volume
PH	1.7 – 2.2
Temperature	65 – 110 °F
Time	15 – 60 seconds
Agitation	Recommended

Process Cycle

1. Zinc-Iron Plate (minimum 0.0002”)
2. Water Rinse
3. Dilute Acid Dip, 0.2% Nitric Acid (optional)
4. **Accu-Labs 633** Trivalent Black
5. Water Rinse
6. Dip in **Accu-Labs KSN Sealer** 2 – 4% by volume, 5 – 20 seconds, 70 – 90°F
7. Hot Air Dry

Solution Maintenance

Accu-Labs 633 solutions are easy to control by visual inspection or pH measurement. Make 0.5 – 1.0 % additions of **Accu-Labs 633** as needed to maintain the pH within the working range. If the control analysis shows the concentration of **Accu-Labs 633** to be within the working range, then small additions of sulfuric acid, or dilute sulfuric acid, can be added to maintain the pH of the **Accu-Labs 633** black solution.

Test Procedure

1. Add exactly 30 ml of the **Accu-Labs 633** Solution to a 250 ml flask.
2. Add 50 – 70 ml of DI water.
3. Add 10 ml of 10% Sodium Hydroxide Solution, or add 25 ml 1N Sodium Hydroxide Solution.
4. Add ½ ml of 30% Hydrogen Peroxide Solution.
5. Heat Solution to boiling and boil for 60 minute. Avoid boiling to dry crystals by adding DI water as needed. After 60 minutes boiling, add 1 ml of 10% nickel sulfate solution and continue boiling for 10 – 15 minutes.
6. Cool to room temperature and add DI water to raise volume to 100 ml.
7. Add 30 mls of 50% Hydrochloric Acid.
8. Add 2 grams of Ammonium Bifluoride.
9. Add 10 mls of 10% Potassium Iodide Solution.
10. Add 2 – 4 mls of Starch Indicator Solution.
11. Titrate immediately with 0.1 N Sodium Thiosulfate Solution to a dark purple to clear end point. Record MLS.

Calculations: $MLS \times 0.58 = \% \text{ by volume } \textit{Accu-Labs 633}$

Equipment

Polypropylene, Polyethylene, PVC or stainless steel tanks are satisfactory.

Safety

Accu-Labs 633 solutions are strong acids. Wear protective gear; avoid contact with skin and eyes. Read and follow the information contained in the Material Safety Data Sheets (MSDS) for **Accu-Labs 633** and all chemicals used before handling or use.

Disclaimer

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