



Technical Bulletin

ZS 100

Zincate Strip

1. DESCRIPTION

ZS 100 is a mildly acidic zincate strip powder that is used to remove zincate coatings in metal finishing applications. ZS 100 is typically used between the first and second zincate coating steps. Striping and applying a second zincate coating enhances adhesion of the coating.

ZS 100 is a powder product which allows the user to control the concentration as desired. ZS 100 powder is stable indefinitely and does not loose active oxygen like liquid microetch products.

ADVANTAGES:

- Room temperature operation.
- Replenishable through AOC (Active Oxygen Content) analysis
- No surface scum and relatively simple waste treatment
- Contains no chelating agents.
- Very soluble in water. Dissolves easily and rinses cleanly.

II. OPERATING PARAMETERS

Makeup:	See section IV. Control Procedures below.
Temperature:	Ambient
Time:	30 sec to 1 min
Equipment	Polyethylene or polypropylene containers and Teflon heaters should be used.
Ventilation	Strongly recommended

III. PHYSICAL PROPERTIES

Specific gravity	N/A
Appearance	White, free-flowing granular crystals
pH (1% solution)	Approximately 2
Odor	None
Flash Point	> 200 °F

IV. CONTROL PROCEDURES

Dip Immersion Makeup

Parameter	Zincate Strip
ZS 100	0.5 lb/gal

Sulfuric acid	1 - 2% vol
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Dip Application Make-up

1. Thoroughly rinse tank before adding components. Check tank for cleanliness, cracks and integrity of any tank linings used.
2. Fill the tank 3/4 full with DI water.
3. Add the required amount of ZS 100 powder to tank and mix until dissolved.
4. Slowly add required amount of sulfuric acid. Note that the specific gravity of sulfuric acid is 1.84. Use only electrolytic or reagent grade sulfuric acid.
5. Fill the tank to its operating level with de-ionized water.

V. ANALYSIS PROCEDURES

Analysis for ZS 100 Content

Reagents and Equipment:

0.1 N Sodium thiosulfate solution	250 ml Erlenmeyer flask, 100 ml grad. cylinder
Potassium iodide/EDTA solution	50 ml burette with stand, 1000 ml. volumetric flask
Starch indicator solution	2 and 10 ml. volumetric pipette
Ammonium hydroxide	Analytical balance, magnetic stirrer, dropper with bulb
One liter plastic bottle	

Reagent Preparation:

Potassium iodide / EDTA solution:

Accurately weight 100 g of potassium iodide and 20 g of EDTA and dissolve in 100 ml. of DI water using a 1000-ml volumetric flask. Add 1 drop of concentrated ammonium hydroxide to the solution and fill the flask to 1000 ml with DI water. Mix well and store in a plastic bottle.

Procedure:

1. Pipette 2.0 ml of bath solution into a 250 ml. Erlenmeyer flask
2. Add 100 ml of DI water
3. Add 20 ml of potassium iodide/EDTA solution and mix well. The solution will change to a rust color.
4. Titrate with 0.1N sodium thiosulfate to a pale yellow green color.
5. Add 5-10 ml. of standard starch indicator solution. The solution will now be black-purple.
6. Titrate to a colorless end point.
7. Calculations:

$$\text{Concentration ZS 100 (lb./gal.)} = (\text{ml thiosulfate}) \times (\text{N thiosulfate}) \times 0.7$$

$$\text{AOC (g/L)} = (\text{ml thiosulfate}) \times (\text{N thiosulfate}) \times 4.0$$

Analysis for Sulfuric Acid (H₂SO₄)

Reagents and Equipment:

1.0 N Sodium Hydroxide (NaOH)	250 ml Erlenmeyer flask, 100 ml grad. cylinder
0.1% Methyl Orange Indicator	50 ml burette with stand, 5 ml volumetric flask
	Magnetic stirrer and dropper with bulb

Procedure:

1. Pipette 5.0 ml. of bath solution into a 250 ml Erlenmeyer flask.
2. Add 50-75 ml of DI water.
3. Add 5 drops of methyl orange indicator and mix well. The solution will turn orange.
4. Titrate with 1.0N sodium hydroxide to a very pale yellow/green end point.
5. Calculations:

$$\text{Sulfuric Acid (\% volume)} = (\text{ml NaOH}) \times (\text{N NaOH}) \times 0.53$$

VI. SAFETY

Please refer to the MSDS for detailed safety, handling and storage information. ZS 100 is a chemical etch powder and working solutions are corrosive and have acidic and oxidizing properties. Always wear safety goggles, rubber gloves and protective clothing when handling ZS 100. Provide adequate ventilation and avoid breathing dust.

Store ZS 100 only in upright original container in a dry area at 50-90F. Store away from chlorides, organics, and oxidizable materials. Do not store in sunlight and store away from heat and sources of ignition. Keep container sealed when not in use.

VII. WASTE TREATMENT

ZS 100 contains no chelating agents. Spent solutions are acidic, oxidizing solutions which contain zinc salts. Use disposal procedures in accordance with Federal, State and local regulations. Lime is not recommended as a large amount of precipitate of Calcium sulfate will be generated.

VIII. MISCELLANEOUS

Available in 50 pound pails.

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