



# ZINCOBRITE ZS 69

## ZINC SULPHATE PLATING

### INTRODUCTION

Zincobrite ZS 69 is a single additive bright acid zinc sulphate system designed for the plating of steel wire and reel to reel applications. It has good throwing power and has a uniform and glossy appearance.

### BENEFITS

- Wide operating temperature range
- No foam
- Highly ductile deposit
- Good throwing power
- Uniform and bright deposit.

### SOLUTION MAKE -UP

|                  |        |
|------------------|--------|
| Zinc Sulphate    | 400g/L |
| Boric acid       | 25g/L  |
| Zincobrite ZS 69 | 20ml/L |

It is essential that the tanks to be used for Zincobrite ZS 69 are thoroughly cleaned and leached before any product is introduced.

If in any doubt as to the cleaning procedure please contact PMD Technical Department.

1. Fill the tank to 2/3 volume with deionised water and heat to 60 - 70°C
2. Add the zinc sulphate and stir until dissolved.
3. Add the boric acid and stir until dissolved.
4. Filter solution.
5. Add the Zincobrite ZS 69 and stir.
6. Check pH and adjust if required.

### OPERATING DATA

|                                |                          |
|--------------------------------|--------------------------|
| <b>Zinc sulphate</b>           | 300- 500g/L              |
| <b>Boric Acid</b>              | 20-30g/L                 |
| <b>Zinc</b>                    | 68- 113g/L               |
| <b>ZS 69</b>                   | 15 - 25ml/L              |
| <b>pH</b>                      | 2.0 – 3.0                |
| <b>Temperature</b>             | 10 – 50°C                |
| <b>Cathode Current density</b> | 10– 100A/dm <sup>2</sup> |
| <b>Cathode efficiency</b>      | >95%                     |



## EQUIPMENT

|                   |                                                     |
|-------------------|-----------------------------------------------------|
| <b>Tanks</b>      | PVC, polypropylene                                  |
| <b>Heaters</b>    | Teflon, Titanium                                    |
| <b>Filtration</b> | Continuous filtration 6-10 bath turnovers per hour. |
| <b>Anodes</b>     | Pure zinc in polypropylene anode bags.              |

## MAINTENANCE AND CONTROL

The solution should be analysed regularly and replenished as necessary. (See analysis methods).

pH should be checked on a frequent basis and corrected with either 10% sulphuric acid or 10% sodium hydroxide solution.

Zincobrite ZS 69 consumption is dependent on drag out. As a guide replenishment, add 1500 – 2500 ml of Zincobrite ZS 69 additive when producing 1MT (metric tonne) of wire. Frequent small additions should be made to maintain performance.

## ANALYSIS METHODS

### 1. Zinc

#### Reagents

0.1M EDTA

Eriochrome Black T indicator

Chloral hydrate

Ammonium chloride buffer solution -Dissolve 54gm ammonium chloride in 500ml deionised water. Add 350ml 0.88 S.G. ammonia and make up to 1 litre.

#### Method

1. Pipette a 2ml sample of the plating solution into a 500ml conical flask.
2. Add 25ml buffer solution
3. Add 25ml deionised water
4. Add 1gm chloral hydrate.
5. Add a trace of Eriochrome Black T indicator and titrate with 0.1M EDTA to a blue end point.
6. Record titre = t mls.

#### Calculation

$$t \times 3.27 = \text{g/L zinc}$$

For every 1g/L of zinc low, add 4.4g/L of zinc sulphate.



## 2. Boric Acid

### Reagents

0.1N Sodium Hydroxide  
Mannitol AR Grade  
Bromocresol purple indicator solution

### Method

1. Pipette a 2 ml sample of plating solution into a 100 ml beaker
2. Add sufficient Mannitol to form a thick slurry.
3. Add several drops of Bromocresol purple indicator solution and titrate with stirring with 0.1 N sodium hydroxide solution until a purple end point.
4. Record titre = t mls

### Calculation

$t \times 3.08 = \text{g/L boric acid}$

## DISPOSAL

Dispose of in accordance with local authority requirements.

## PRODUCT FAMILIES

The following products are referred to in this data sheet.

| PRODUCT NAME     | PRODUCT NUMBER |
|------------------|----------------|
| Zincobrite ZS 69 | 581004         |

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