

## TECHNICAL DATA SHEET

### TECH BRIGHT AZ 2018

#### (BORIC FREE CHLORIDE ZINC PROCESS)

Tech Bright AZ 2018 is a modern high efficiency **boric free** chloride zinc plating process. The process produces brilliant, levelled, ductile deposits over a wide current density range. Tech Bright AZ 2018 can be used for rack, barrel, wire and strip operations.

#### SALIENT FEATURES:

- This process provides improved yellow chromate adhesion due to excellent solubility of addition agents.
- This process provides excellent throwing power and can work trouble free even in higher bath temperatures.
- This process has an improved yellow chromate adhesion due to excellent solubility of additives and brightener in the bath.
- Due to the wide current density plating range the process can plate easily complex shapes with both high and low current density areas on vats and also in barrels.

#### SOLUTION MAKE - UP:

To make up the 100 ltrs.of operating solution using Tech Bright 2018 process chemicals proceed as follows:

1. Add 50 liters of warm water to the tank.
2. Add 17-19 kgs of Tech Bright B with stirring continue the stirring till the salts are completely dissolved.
3. Add 10 ltrs of Tech Bright A liquid.
4. Pack the filter with activated Carbon and filter the solution to remove any insoluble impurities.
5. Check the pH of the solution and adjust if necessary to 5.2-0 5.8 with CP grade hydrochloric acid to lower the pH or potassium hydroxide to raise the pH.
6. Add 3-4 ltrs of Tech Bright 2018 M and 80 ml of Tech Bright 2018 R with stirring.
7. Add sufficient water to bright the solution to final operating level. Now the plating path is ready for use.

**MAKE UP CONCENTRATION:**

	<b>Optimum</b>	<b>Range</b>
Tech Bright A	100 ml/l	90-120 ml/l
Tech Bright B	180 gm/l	170-190 gm/l
Tech Bright 2018 M	40 ml/l	30-50 ml/l
Tech Bright 2018 R	0.4 ml/l	0.2-0.6 ml

**BATH PARAMETERS:**

	<b>Vat</b>	<b>Barrel</b>
Zinc metal	25-40 gm/l	25-40 gm/l
Total chloride	100-140 gm/l	100-160 gm/l
pH (electrometric)	5.2-5.8	5.2-5.8
Voltage	2-6 V	6-12 V

**OPERATING PARAMETERS:**

Cathode current density	0.5-6 Amp/sqs.dm (VAT & BARREL)
Filtration	2-3 turnover / hour
Agitation	Air or Mechanical
Anodes	Pure zinc 99.99%
Temperature	20-40°C

**FUNCTION OF SOLUTION COMPONENTS:**
**ZINC METAL:**

The recommended range should be maintained in order to get desired optimum results. Weekly analysis of zinc metal should be made and the necessary daily additions to be done based on this analysis. Metal content can be increased by the addition of Tech Bright 2010 A liquid.

**TOTAL CHLORIDE:**

The chloride content increase by addition Tech Bright 2010 A & Tech Bright 2018 B Salt Routine analysis and daily additions are necessary to maintain the total chloride within the recommended range.

**TECH BRIGHT AZ 2018 M (make- up):**

Tech Bright AZ 2018 M is used generally for make up as well as for replenishment. Addition of brightener is normally controlled by the Hull Cell test. The consumption of Tech Bright AZ 2018 M is 100-300 ml / 1000 Amp.

**TECH BRIGHT 2018 R:**

It is mainly responsible for getting the overall brightness and this gives the desired results in combination with Tech Bright 2018 M. Addition of brightener Tech Bright 2018 R is normally controlled by the Hull Cell test. The consumption of Tech Bright 2018 R is 100-300 ml/1000 Amp.

**pH:**

The optimum pH of the bath is 4.8 and should be checked and corrected daily. After additions of the chloride, the pH should be checked. Low pH below 4.5 is usually a result of adding an excess of acid, and will result in misplating and matt deposits. High pH causes burning and dull deposits.

**CURRENT DENSITY:**

The recommended current density range for barrel plating is 0.2-2.5 amps per square mm and Voltage range is 2-10 vols. For rack plating, the average current density is 2.7 amps per square d. With rack plating, sufficient air agitation is necessary to plate at higher current densities without burning.

**AGITATION:**

Agitation for rack plating can be supplied with cathode rod, air, or solution circulation via filter pump. For rack plating cathode rods movements should be at a range of 4-10 feet per minute. Low pressure, clean filtered air from an air pump, not a compressor is recommended. Too high air agitation will cause excess forming but insufficient agitation will result in burning at the high current density areas.

**TANKS:**

Acid resistant plastic lined tanks, such as polypropylene or polyethylene are suitable. Rubber lined tanks are not suitable for bright chloride zinc solution.

**ANODES:**

The anodes should be 99.99% zinc. When using zinc slabs, titanium is used for anode hooks. Anode area should be at least 1.5-2 times as compared to cathode area.

**COOLING:**

Cooling coils of titanium or Teflon are recommended. Making the titanium coil slightly anodic is recommended to avoid dissolution under the influence of cathodic current.

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