



SOLDERON™ BHT-350 Bright Tin

For Electronic Finishing Applications

Regional Product Availability

- North America
- Europe, Middle East and Africa
- Latin America
- Asia-Pacific

Description

SOLDERON™ BHT-350 Bright Tin is a high speed, sulphonate-based tin electroplating product formulated for continuous electroplating of wire and connector strip in reel-to-reel machines. The SOLDERON BHT-350 Bright Tin electrolyte is free of volatile aldehydes and may be operated at temperatures up to 50°C.

The SOLDERON BHT-350 Bright Tin electrolyte provides bright deposits over a wide current density range. Its propriety formulation controls both grain size and carbon content in deposits which results in a very ductile bright deposit. SOLDERON™ BHT-350 Bright Tin products do not contain methanol ensuring a more environmentally friendly electrolyte compared to other conventional bright tin processes. Analytical procedures are available for all bath components.

Advantages

- High operating temperature enabling high plating rates and reducing volume increase
- Excellent brightness and solderability over a broad current density range
- Low carbon content in the deposit
- High ductility of the deposit
- Low foaming electrolyte
- Consistent and stable surface morphology

Operating Parameters

Parameter	Range	Recommended
Tin (II)	50–70	60 g/l
SOLDERON Acid HC	210–275 ml/l	250 ml/l
SOLDERON™ BHT-350 Additive	30–60 ml/l	40 ml/l
SOLDERON BHT-350 Carrier	65–95 ml/l	80 ml/l
SOLDERON AO-52 Solution	5–15 ml/L	10 ml/L
Temperature	30–50°C	40°C
Cathode Current Density	5–50 A/dm ²	Dependent upon equipment design and production requirements
Anode to Cathode Ratio	1 : 1 minimum	
Agitation	Moderate to high solution agitation	
Cathode Efficiency	80–100% (30–5 ASD), depends on chemical conc. in bath	
Deposition Rate	~ 4.3 microns per minute at 10 A/dm ²	

Deposit Data

Structure/Appearance: Fine grained, bright deposit
Carbon Content: Less than 0.2 wt.% (up to 40 ASD)
Ductility: > 11% (According to ASTM 489)

Bath Make-up for One Litre

Chemicals Required	5–30 A/dm ²
Deionised (D.I.) Water	500 ml
SOLDERON™ Tin Concentrate (300 g/l Tin)	205 ml
SOLDERON Acid HC	125 ml
SOLDERON BHT-350 Additive	40 ml
SOLDERON BHT J350 Carrier	80 ml
SOLDERON AO-52 Solution	10 ml

Make-up Procedure

- 1) Add D.I. water to the tank.
- 2) Add SOLDERON™ Acid HC and mix thoroughly.
- 3) Add SOLDERON Tin Concentrate and mix thoroughly.
- 4) Add SOLDERON BHT-350 Carrier and mix thoroughly.
- 5) Add SOLDERON BHT-350 Additive and mix thoroughly.
- 6) Add SOLDERON AO-52 Solution and mix thoroughly.
- 7) Dilute to final volume with D.I. water.

Equipment

Tanks: Temperature-stabilised translucent white polypropylene
Heaters: PVDF-clad panel heaters or titanium with thermostatic control
Coolers: PTFE or titanium coils
Filtration: Preferably continuous using 5 microns woven polypropylene cartridges. Flow rate at least three times tank volume/hour
Electrical: Up to 12 volts stabilised DC supply with preference for stepless control supply and ampere-minute/hour meter
Extraction: Recommended
Anodes: Soluble Tin anode

Equipment Preparation

Tanks

Prior to make-up, the process tank and ancillary equipment should be thoroughly stripped and conditioned according to the procedure outlined below.

I. Cleaning Solution

Trisodium Phosphate 15 g/l
Sodium Hydroxide 15 g/l

II. Leaching Solution

SOLDERON™ Acid HC 70 ml/l

III. Procedure

- a) Thoroughly wash down the tank and ancillary equipment with clean water.
- b) Recirculate water throughout the complete system to remove water soluble materials.

Equipment Preparation (Continued)

- c) Discard water.
- d) Add cleaning solution to the tank. Heat to 55–60°C and recirculate through the complete system for approximately 3 hours.
- e) Discard cleaning solution.
- f) Recirculate water through the complete system.
- g) Add leaching solution to the plating tank and recirculate through complete system.
- h) Allow leaching solution to condition the tank for a minimum of 8 hours.
- i) Recirculate the leaching solution through the complete system.
- j) Discard conditioning solution.
- k) Recirculate water through the complete system.
- l) Discard water.

Solution Maintenance

SOLDERON™ Tin Concentrate

To increase the tin concentration by 1 g/l, add 3.3 ml/l of SOLDERON Tin Concentrate 300 g/l. With the addition of 1 ml/l SOLDERON Tin Concentrate 300 g/l, the SOLDERON Acid HC content will be increased by 0.6 ml/l.

SOLDERON BHT-350 Additive

To increase Additive by 1 ml/l, add 0.29 ml/l SOLDERON BHT-350 Replenisher. Typical consumption rate of SOLDERON BHT-350 Replenisher is about 1200 ml/1000 Amp.hr., which may vary with actual plating conditions.

SOLDERON™ BHT-350 Carrier

Replenish by adding SOLDERON BHT-350 Carrier. Typical consumption rate of Carrier is about 150 ml/1000 Amp.hr. Replenishment depends on the drag-out rate and the actual plating conditions.

General Bath Maintenance

Keep bath circulated with the filter. No chiller is required with normal operations.

List of Products

SOLDERON™ BHT-350 Additive
SOLDERON BHT-350 Carrier
SOLDERON Tin Concentrate 300 g/l
SOLDERON Acid HC
SOLDERON BHT-350 Replenisher
SOLDERON AO-52 Solution

Handling Precautions

Before using this product, consult the Material Safety Data Sheet (MSDS)/Safety Data Sheet (SDS) for details on product hazards, recommended handling precautions and product storage.

CAUTION! Keep combustible and/or flammable products and their vapors away from heat, sparks, flames and other sources of ignition including static discharge. Processing or operating at temperatures near or above product flashpoint may pose a fire hazard. Use appropriate grounding and bonding techniques to manage static discharge hazards.

CAUTION! Failure to maintain proper volume level when using immersion heaters can expose tank and solution to excessive heat resulting in a possible combustion hazard, particularly when plastic tanks are used.

Storage

Store products in tightly closed original containers at temperatures recommended on the product label.

Disposal Considerations

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Technical Representative for more information.

Product Stewardship

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