

Dow Electronic Materials

Electroplating Technology Making New Connections

Adding Value, Improving performance, Reducing Environmental Impact



New Electroplating Technology

Electronic Finishing markets are experiencing many forces for change, being driven by performance, cost and legislation. Dow has responded to such drivers to create unique electroplating products for diverse applications, to offer users measurable value. In this brochure we highlight tin, silver, silver alloy, gold and masking products developed to provide valuable solutions for changing market requirements.

White Bronze

RONALLOY[™] GT-250 Cyanide Free White Bronze AQUALLOY[™] GT-640 Cyanide Free White Bronze

Tin

SOLDERON[™] BHT-350 Bright Tin SOLDERON[™] ST-300T Matte Tin

Silver SILVERON[™] GT-101 Bright Silver SILVERON[™] GT-820 Silver Tin

Gold RONOVEL[™] CS-200 Electrolytic Gold

Masking LITHOJET[™] 200 Series Inks

Post Treatment

NO TARN PM-3 Post Treatment PORE BLOCKER 200 Post Treatment NO TARN SN-2 Post Treatment SOLDERGUARD[™] 100 Post Treatment





Cyanide and Lead Free White Bronze

RONALLOY[™] GT-250 White Bronze is a cyanide, lead and cobalt free acidic bronze product producing bright, white, copper-tin deposits which provide corrosion and tarnish resistance. RONALLOY[™] GT-250 White Bronze deposits are suitable for finishing as well as for under layers, making it a first choice as nickel replacement in both decorative and functional applications. Long term tarnish resistance is improved using over plate with silver, palladium, chromium or a combination thereof.

AQUALLOY[™] GT-640 White Bronze has been designed and developed specifically for the replacement of nickel in the sanitary ware markets, where drinking water regulation restricts the use of nickel for such sanitary ware applications

- Free of cyanide, lead and cobalt
- Mirror-like, bright, white Cu / Sn alloy deposit
- Sulfate-based, acidic electrolyte with organic additive system
- Suitable for rack and barrel plating (CD range: 1–5 ASD)
- Deposition rate higher than bright nickel processes
- Used with soluble bronze anodes
- Corrosion resistant deposit, especially with top coat layer.
- Compatible with acid copper and Tri-Chrome



Process	µm/min.
Conventional Bright Nickel Process	0.6 µm/min. at 3 ASD
RONALLOY [™] & AQUALLOY [™] White Bronze	0.75 µm/min. at 3 ASD
Conventional CN-based White Bronze	0.3 μm/min. at 2 ASD

Deposit	Hardness (HV)
RONALLOY [™] & AQUALLOY [™] White Bronze	~ 400 HV
Ni Ref. 1	~ 530 HV
Ni Ref. 2	~ 400 HV
Ni Ref. 3	~ 630 HV



SOLDERON[™] ST-300T High Speed Matte Tin

SOLDERON[™] ST-300T Matte Tin is an organic sulfonate electroplating product for the high-speed deposition of uniform, matte tin deposits over a wide current density range. It is specifically designed for use in high-speed magazine-to-magazine and reel-to-reel electroplating equipment, where the process versatility is particularly well-suited for semiconductor leadframe application.

- Uniform matte tin deposit
- Anti-burn agent prevents burning in high CD areas
- Single additive system, easy to control
- Wide current density range
- Excellent thickness distribution
- Excellent solderability performance



SOLDERON™ ST-300T Uniform High Speed Matte Tin





SOLDERON[™] BHT-350 High Speed Bright Tin

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.

- Fully bright deposit over the whole current density range
- Low Carbon-content in the deposit (< 0.2 % up to 40 ASD)
- High deposit ductility (> 11%)
- Very low whisker growth tendency
- Low degree of reflow discoloration
- Operating temperature up to 50°C: no cooling system required
- High plating current density: 5 40 ASD
- Easy bath control and fully analyzable components
- Low foaming electrolyte: suitable for high speed applications
- No black foam line: suitable for selective plating and full strip plating
- Also suited to low speed rack and barrel applications





SILVERON[™] GT-101 Bright Cyanide Free Silver

SILVERON[™] GT-101 Bright Silver is an alkaline non-cyanide pure silver electroplating product designed to produce bright silver deposits for various applications. The product can be used in conventional plating equipment and high speed reel-to-reel, jet or wire plating equipment. The silver deposits can be applied to both copper and nickel alloy substrates.

- Cyanide-free electrolyte, pH 9–10
- Chemically stable solution
- White, bright silver deposit over a broad CD range (0.5–15 ASD)
- Cathode efficiency ca. 100%
- Excellent adhesion over copper or copper alloys
- Plating over nickel requires a strike layer
- No metallic additives
- Deposit composition: ca. 100% silver
- Matte deposit possible (optional)
- Suitable for electrical/electronic and decorative applications
- Excellent contact resistance and solderability
- Harder than cyanide silver deposits, especially after annealing at 155°C













SILVERON[™] GT-820 Cyanide Free Silver Tin

SILVERON[™] GT-820 SILVER-TIN is an acidic non-cyanide silver-tin electroplating product designed to deposit bright silver-tin alloy for electrical applications. The product can be used in conventional plating equipment at low speed and high speed. The silver-tin alloy can be applied to both nickel and copper or copper alloys. The electroplated silver-tin alloy contains 19–23% of tin, the remaining fraction is silver

- Cyanide-free electrolyte
- Replacement for Tin for whisker control on press fit connectors
- Chemically stable solution without metallic additives
- White, bright silver deposit over a broad CD range
- (0.5–15 ASD)
- Cathode efficiency ca. 100%
- Excellent adhesion over copper or copper alloys
- Plating over nickel requires a strike layer
- Deposit composition: ca. 80% silver
- Suitable for electrical/electronic applications
- Excellent contact resistance and solderability











RONOVEL[™] CS-200 Low Bleed Gold For Connector Plating

RONOVEL[™] CS-200 is a cobalt-alloyed gold plating product designed for high speed selective plating, achieving a uniform appearance over a wider current density range and minimizing gold bleed plating, saving money.

- Minimized bleed gold deposition
- Improved deposition rate
- Improved bath stability
- Minimized immersion deposition of Au on Ni
- Maintains deposit performance of conventional products



LITHOJET[™] 200 Series Inks

Selective Metallisation or etching can be realised by using LITHOJET[™] 200 Series Inks in single or multiple selective plating applications. Digital off contact masking allows for rapid design change or prototyping as well as shorter processes and higher yields.

- Compatible with plating chemistries.
- Designed to mask areas for high resolution plating
- Very high chemical resistance to alkali and acid solutions
- UV curable
- Alkaline Strippable





Post Treatment Products

NO TARN PM-3 Post Treatment

- Immersion passivation treatment
- Protects silver from tarnishing
- Tarnish protection for copper, palladium and thin gold layers
- No adverse effect on resistance, solderability or bondability
- No impact on brightness or colour

NO TARN SN-2 Post Treatment

- Post treatment for tin to provide uniform grain structure
- Reduces oxide layer formation
- Enhances solderability
- Reduces discolouration after heat treatment

PORE BLOCKER 200 Post Treatment

- Immersion passivation treatment
- Short Immersion treatment
- Corrosion protection of under layer through pores
- No adverse effect on resistance, solderability or bondability
- No impact on brightness or colour

SOLDERGUARD[™] 100 Post Treatment

- Creates a hydrophobic surface on tin deposits repelling moisture
- Protects against corrosion and discolouration after reflow
- Enhances solderability
- Protection against whisker formation



SOLDERGUARD[™] 100 Treatment Before Heat Treatment



No SOLDERGUARD[™] 100 Treatment After 1 hour @ 155°C



With SOLDERGUARD[™] 100 Treatment After 1 hour @ 155°C



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