

# Sterling Silver

## Metallic Solderability Preservative Handling and Storage of Sterling Plated Boards

### A. Handling Recommendations:

It is recommended that clean, dry, gloves be used for handling panels/boards prior to Sterling application and during all post-Sterling process steps. Salts/acids/oils from fingerprints will enhance the tarnishing of the finish and be detrimental to its solderability.

### B. Routing Recommendations:

Routing followed by a high-pressure rinse, prior to Sterling application, is the preferred sequence. Should post-Sterling routing be performed, sulfur/acid-free cover and interleaf sheets should be used when routing panels, to prevent scratches in the Sterling surface.

### C. Board Cleaning/Washing Recommendations:

Surfactants and/or acid cleaners should not be used for boards with Sterling finish. Use high quality DI water washes or electrostatic cleaning only. Consult your MacDermid Technical representative when specific circumstances impose a more aggressive cleaning requirement.

A "dedicated-to-silver" dryer is required to prevent contamination of the Sterling deposit by other processes. Always use clean gloves when handling silver-plated parts.

### D. Packaging and Storage Recommendations:

After Sterling plating, while still in the manufacturing facility, the boards should be kept in a non-corrosive environment.

- Sterling plated boards should be packaged or transferred to QC as soon as possible after cooling to room temperature, this in order to prevent exposure to chlorides and sulfides in the plating area environment.
- Staging prior to QC before packaging and the QC itself should be in an environment not to exceed 86°F (30°C) & 75% RH; boards preferably covered with sulfur-free paper.
- Any material coming in contact with the boards during the QC procedure (gloves, desk surface, racks, etc.) should be chloride and sulfur-free.
- Use sulfur-free paper to wrap stacks of parts and then plastic wrap. Storage should be in sealed bags or sealed containers to eliminate direct contact with air. Do not allow plastic wrap to directly contact silver parts.
- Do not use desiccant in the package in direct contact with silver plated parts. Desiccants may contain sulfur compounds. If a desiccant should be used, use 2-ply plastic wrap and place the desiccant between the 2 plies.
- Adhesive tape, adhesive labels, ink stamping, ink marking and rubber bands are forbidden on silver boards and the sulfur-free paper. They all contain sulfur and/or sulfur-bearing compounds that will pass through the paper and tarnish the silver coating.
- Wrapped packages should be stored below 86°F (30°C).



## E. Assembly Recommendations:

When properly applied, handled and stored, the Sterling Silver finish shall maintain all functional and cosmetic properties for a minimum of 12 months.

- Once packages are opened for assembly, parts should be kept in an environment not to exceed 86°F (30°C) & 75% RH.
- Parts not intended for immediate assembly should be re-wrapped in sulfur-free paper and plastic and stored in the proper environment for silver finished boards.
- Boards should be processed through full assembly as soon as practically possible, taking into consideration the individual constraints and environmental circumstances of each and every assembly location.
- The precise mid-assembly shelf-life of a Sterling finished board is highly dependent on the specific environmental factors of the facility in question. The level of corrosive agents (sulfides, chlorides and other elements) in a factory environment can vary greatly depending on specific activities within the plant (proximity to other chemical processes, sources of contaminants, etc.) as well as air quality in the surrounding region. MacDermid has experienced cases of mid-assembly shelf life ranging from greater than one month, down to single days. The more common shelf-life is approximately 1 week. For this reason, assembly operations should identify the practically acceptable limits of mid-assembly shelf life. Boards stored until the next assembly step should be protected from direct air blast from air-con vents (on covered shelves), and if possible wrapped in sulfur-free packaging or in closed containers, all in a “not to exceed 86°F (30°C) & 75% RH” environment.

***Our recommendation, therefore, is for each and every location to perform multiple on-site evaluations of the acceptable mid-assembly lag between multiple assembly steps, taking in consideration seasonal variation in the outside air quality.***

## F. Baking Recommendations:

Effective stress relief requires the bake temperature to exceed the Tg of the laminate. If Sterling plated boards must be stress relieved for warp & twist problems, the boards should be tightly wrapped in aluminum foil to prevent oxidation of the silver and the dielectric material.

## G. Handling of Test Boards with Sterling Finish

To ensure optimum and accurate test results (SIR, solderability etc.) and to eliminate potential failures from tarnish/oxidation:

- 1. Handle parts with clean gloves at all times after the application of Sterling.***
- 2. Perform all routing, marking, cleaning of boards prior to the Sterling Silver process.***
- 3. Each individual board should be tightly wrapped in aluminum foil prior to shipping.***

