



# AEROSPACE RECOMMENDED PRACTICE

ARP6400™

Issued 2010-10  
Reaffirmed 2021-06

Recommended Practice for Processing and Handling Wire and Cable  
with Silver Plated Conductors and Shields

## RATIONALE

ARP6400 has been reaffirmed to comply with the SAE five-year review policy.

### 1. SCOPE

This ARP specifies the recommended methods of handling silver coated conductors and shield, by the conductor fabricator, wireinsulator, distributors, harness or assembly houses, and OEM's. Red Plague mitigation depends upon each link in the chain of supply handling the wire and cable properly.

### 2. REFERENCES

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of the other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

The following document provides further information which the user may find helpful in understanding cupous/cupric oxide corrosion of silver coated conductors and shields.

#### 2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), [www.sae.org](http://www.sae.org).

AIR4487A Investigation of Silver Plated Conductor Corrosion (Red Plague)

### 3. APPLICABLE DOCUMENTS

#### 3.1 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, [www.astm.org](http://www.astm.org).

ASTM D-5486 Standard Specification for Pressure-Sensitive Tape for Packaging, Box Closure, and Sealing

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**SAE WEB ADDRESS:**

Full document details: SAE ARP6400

For more information on this standard, visit  
<https://www.sae.org/standards/content/ARP6400/>

Documents  
Document Sharing Hub

### 3.2 U.S. Government Publications

Available from the Document Automation and Production Service (DAPS), Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, Tel: 215-697-6257, <http://assist.daps.dla.mil/quicksearch/>.

|               |                                                                                                                                  |
|---------------|----------------------------------------------------------------------------------------------------------------------------------|
| MIL-D-3464    | Desiccants, Activated, Bagged, Packaging Use and Static Dehumidification                                                         |
| MIL-DTL-29606 | Wire, Electrical, Stranded, Uninsulated Copper, Copper Alloy, or Aluminum, or Thermocouple Extension, General Specification for. |
| MIL-P-23242B  | Plastic Coating Compound, Strippable, for Electroplating                                                                         |
| MS20003       | Indicator, Humidity, Card, Three Spot, Impregnated Areas (Cobaltous Chloride)                                                    |

## 4. GENERAL DESIGN REQUIREMENTS

Silver coated wire and shields shall meet the requirements of MIL-DTL-29606.

## 5. PROCEDURES

### 5.1 General Environmental Conditions

- 5.1.1 Temperature and humidity conditions warrant attention. When humidity is high, a small temperature difference can cause condensation on conductor and insulation surfaces. Caution is therefore warranted when moving silver coated copper material to or through areas lacking adequate environmental controls. Bagging the material is useful for protecting against condensation while the wire or cable's temperature stabilizes.
- 5.1.2 Storage duration: Storage of wire or cable for longer than one (1) year should be minimized if at all possible, and good commercial practices of first in first out inventory management should be practiced. Material stored for longer than one (1) year should be examined for evidence of corrosion and if it is still acceptable, be repackaged with a new desiccant.
- 5.1.3 Storage Areas: Should be a dry area, and away from any possible exposure to water. Humidity controlled rooms with less than 50% humidity are recommended for long term storage where practical. If the storage area is not temperature/humidity controlled, then material should be stored in bags with dessicants. Bagging material, if used for packaging, should be polyethylene. Storage conditions for the desiccant (MIL-D-3464), Type II and determination of its use quantity per package should be in accordance with the desiccant manufacturer's instructions. Humidity indicator cards per MS20003-2 should also be placed in the bag and monitored to determine if the desiccant should be replaced.
- 5.1.4 Material movement: On-site material movement out of or into an air conditioned location, and off site transportation through variable environments, can cause moisture condensation. Therefore temperature and humidity conditions need be considered in preparation for these material movements. Sealed bags are useful for protecting against this condensation while the wire is allowed to temperature stablizes at the new location. Note: Some common packaging materials, such as paper wrapping, rubber bands, and cardboard boxes may contain and offgas small ammounts of sulfur which can attach the silver plating.

### 5.2 Conductor and Shield Manufacturers

- 5.2.1 Plating: The coating of the copper or copper alloy conductors is critical to the long term quality of the material. The plating thickness need be sufficiently thick, non-porous, and unpitted to avoid exposure of the underlying copper. Therefore platers need ensure that the coating is applied with best commercial practices.
- 5.2.2 Drawing: Silver coating damage may occur during the drawing process. The conductor manufacturer needs to have good quality controls to verify that this process in no way damages the plating. A die inspection plan should be implemented to ensure that dies are replaced if damaged which can cause reductions in silver coating thickness or exposed copper.