



AEROSPACE INFORMATION REPORT

AIR4487™**REV. B**

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Superseding AIR4487A

(R) Investigation of Silver-Plated Conductor Corrosion (Red Plague)

RATIONALE

AIR4487 was initially published in 1992 to provide references on silver plated conductor red plague. The document has been updated by removing old reference documents which are no longer available; new information and reference documents were added based on recent studies.

1. SCOPE

This SAE Aerospace Information Report (AIR) shall be limited to information about a specific corrosion mechanism of silver-plated conductors that produces cuprous/cupric oxide deposits (Red Plague). It examines some possible causes and some recommendations to minimize the possibility of its occurrence. It also provides a number of reference documents that describe the corrosion in detail, methods to determine conductor damage, methods to produce the corrosion, and other investigative reports of this phenomena and their conclusions.

1.1 Purpose

This document provides some brief information about silver-plated conductor corrosion and a list of reference documents that can be used for more detailed information.

2. APPLICABLE DOCUMENTS

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 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.

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Documents
Document Sharing Hub

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AIR5717	Mitigating Wire Insulation Damage During Processing and Handling
ARP6229	Fluoride Offgassing in Fluoropolymer Insulations
ARP6400	Recommended Practice for Processing and Handling Wire and Cable with Silver Plated Conductors and Shields
AS22759	Wire, Electrical, Fluoropolymer-Insulated, Copper or Copper Alloy
AS29606	Wire, Electrical, Stranded, Uninsulated Copper, Copper Alloy, or Aluminum, or Thermocouple Extension, General Specification for

2.2 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.

ASTM B961	Standard Specification for Silver Coated Copper and Copper Alloy Stranded Conductors for Electronic Space Application
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2.3 IPC - Association Connecting Electronics Industries Publications

Available from IPC, 3000 Lakeside Drive, 309 S, Bannockburn, IL 60015, Tel: 847-615-7100, www.ipc.org.

IPC-WP-113	Guidance for the Development and Implementation of a Red Plague Control Plan (RPCP)
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2.4 U. S. Government Publications

Copies of these documents are available online at <https://quicksearch.dla.mil>.

MIL-STD-889B	Military Standard Dissimilar Metals
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2.5 Other Publications

1. "Corrosion of Silver-Plated Copper Conductors," B. D. Dunn, A. de Rooij, and D. S. Collins, ESA Journal, 1984, Vol. 8, <http://nepp.nasa.gov/docuploads/97164203-A4FB-479A-A075C918D51DD81E/ESA%20Red%20Plague.pdf>.
2. "Red Plague," P. L. Anthony and O. M. Brown, Materials Protection, Volume 4, No. 3, 8-18, 3-65, <http://nepp.nasa.gov/DocUploads/16F59745-C53E-49B2-AFCDF883CFE54D64/RED%20PLAGUE%20mtrls%20protection%20pub.pdf>.
3. "Determination of the Susceptibility of Silver-Plated Copper Wire and Cable to "Red-Plague" Corrosion" ECSS Secretariat ESA-ESTEC Requirements & Standards Division Noordwijk, The Netherlands, <http://esmat.esa.int/ecss-q-st-70-20c.pdf>.
4. "Red Plague Control Plan" Robert Wm Cooke, <http://ntrs.nasa.gov>.
5. "Effect of Insulation on Red Plague Corrosion in Silver-Plated Wire," Steven Gullerud, SAE AE-8 Committee Aerospace Electrical Interconnect System Symposium (AEISS), Oct 2011.
6. "Development of Low Fluoride Evolution Fluoropolymer Wiring Materials for Aerospace Systems," Bob Kauffman, SAE AE-8 Symposium, Aerospace Electrical Interconnect System (AEISS), Tampa FL, October 2013.