



AEROSPACE STANDARD

AS4461™

REV. D

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Superseding AS4461C

Assembly and Soldering Criteria for High Quality/High Reliability
Soldering Wire and Cable Termination in Aerospace Vehicles

RATIONALE

Fusible alloy thermal indicator acceptable and unacceptable limit photographs are added.

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1. SCOPE

1.1 Applicability

This standard is applicable to manual soldering and machine soldering processes utilizing controlled soldering devices, for electrical connections for wiring and cabling used in aerospace vehicles. Description of a component or device herein is not to be construed as authorizing the use of the component or device.

1.1.1 Safety Considerations

This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of users of this standard to comply with appropriate safety and health practices and regulatory limitations.

1.1.2 Strain Relief

The use of solder devices for wire or cable terminations in aircraft requires strain relief in all applications or designs with no strain on the solder terminations. Soldered wire or cable terminations may separate under physical load. The separation time is function of the ambient and electrical temperatures.

1.1.3 Solder Joint Protection

Sealing protection for solder terminations is recommended when a potential electrical overload could cause the solder to melt and short adjacent terminations.

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 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.

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.

AIR5444 Investigation of Whisker Formation on Tin Plated Conductors

ARP1931 Glossary of Terms with Specific Reference to Electrical Wire and Cable

AS5768 Tool, Stripper, Electrical Insulation, General Specification for

AS81824 Splice, Electric, Crimp, Copper, Environment Resistant,

AS83519 Shield Termination, Solder Style, Insulated, Heat-Shrinkable, Environment Resistant, General Specification for

2.2 IPC - Association Connecting Electronics Industries Publications

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

J-STD-001 Requirements for Soldered Electrical and Electronic Assemblies

J-STD-004 Requirements for Soldering Fluxes

J-STD-005 Soldering Pastes Requirements for

J-STD-006 Requirements for Electronic Grade Solder Alloys and Fluxed and Non-Fluxed Solid Solders for Electronic Soldering Applications

2.3 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 D235 Specification for Mineral Spirits (Petroleum Spirits) (Hydrocarbon Drycleaning Solvents)

ASTM D471 Standard Test Method for Rubber Property-Effect of Liquids

ASTM D1007 Specification for Sec-Butyl Alcohol

ASTM D1193 Standard Specification for Reagent Water

ASTM D3622 Specification for n-Propyl Alcohol (1-Propanol)

2.4 U.S. Government Publications

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

2.4.1 Specifications

2.4.1.1 Federal

O-M-232 Methanol (Methyl Alcohol)

2.4.2 Standards

2.4.2.1 Military

MIL-STD-202 Test Methods for Electronic and Electrical Component Parts

MIL-STD-1686 Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices)

2.4.3 Handbooks

2.4.3.1 Military

MIL-HDBK-263 Electrostatic Discharge Control Handbook for Protection of Electrical and Electronic Parts, Assemblies, and Equipment (Excluding Electrically Initiated Explosive Devices)

2.4.4 Federal Regulations

Copies of these documents are available online at <https://govinfo.gov>.

27 CFR 20.112 Alcohol, Denatured

27 CFR 20.113 Alcohol, Denatured

27 CFR 21.35 Alcohol, Denatured