



AEROSPACE STANDARD

AS53731

REV. A

Issued 1999-04
Stabilized 2014-12

Superseding AS53731

Fuse Holder, Block Type, Aircraft

FSC 5920

RATIONALE

The B committee has recommended stabilization of this document based on no QPL sources and no known usage. Any editorial or technical changes needed to align this document with similar currently published detail sheets shall be made at such time a potential source requests authorization to qualify to this document.

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NOTICE

This document has been taken directly from U.S. Military Specification MIL-F-5373D and contains only minor editorial and format changes required to bring it into conformance with the publishing requirements of SAE technical standards. The initial release of this document is intended to replace MIL-F-5373D. Any part numbers established by the original specification remain unchanged.

The original Military Specification was adopted as an SAE standard under the provisions of the SAE Technical Standards Board (TSB) Rules and Regulations (TSB 001) pertaining to accelerated adoption of government specifications and standards. TSB rules provide for (a) the publication of portions of unrevised government specifications and standards without consensus voting at the SAE Committee level, and (b) the use of the existing government specification or standard format.

Under Department of Defense policies and procedures, any qualification requirements and associated qualified products lists are mandatory for DOD contracts. Any requirement relating to qualified products lists (QPL's) has not been adopted by SAE and is not part of this SAE technical document.

1. SCOPE:

1.1 Scope:

This specification covers fuse holders for use in aircraft electric circuits in conjunction with MIL-F-5372 current limiter type fuses. These fuse holders are suitable for operation at -54° to 125°C.

1.2 Classification:

1.2.1 Style: A style of fuse holder block shall consist of all part numbers covered by one military standard (MS) or specification sheet. For example: all part numbers of MS24000 shall be the same style (see 6.3).

1.2.2 Poles: The number of individual circuits (poles) shall be 1, 2 or 3 as shown on the applicable military standard or specification sheet.

2. APPLICABLE DOCUMENTS:

2.1 Government documents:

2.1.1 Specifications and standards: The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

FEDERAL

QQ-S-365 Silver Plating, Electrodeposited; General Requirements for

MILITARY

MIL-M-14	Molding Compounds, Thermosetting
MIL-W-5086	Wire, Electric, Polyvinyl Chloride Insulated, Copper or Copper Alloy
MIL-F-5372	Fuse, Current Limiter Type, Aircraft
MIL-F-5373/1	Fuse Holder, Receptacle, Limiter Type, 1-60 Amp
MIL-T-7928	Terminals, Lug & Splices, Conductor, Crimpstyle, Copper
MIL-E-17555	Electronic and Electrical Equipment, Accessories, and Provisioned Items (Repair Parts) Packaging of

2.1.1 (Continued):

STANDARDS

MILITARY

MIL-STD-202	Test Methods for Electronic and Electrical Component Parts
MIL-STD-454	Standard General Requirements for Electronic Equipment
MIL-STD-704	Aircraft Electric Power Characteristics
MIL-STD-831	Test Reports, Preparation of
MIL-STD-889	Dissimilar Metals
MIL-STD-970	Standards and Specifications, Order of Preference for the Selection of
MIL-STD-45662	Calibration System Requirements
MS20659	Terminal, Lug, Crimp Style, Copper, Uninsulated, Class 1 Ring Tongue, Type I, Class 1 for 175°C Total Conductor Temperature
MS24000	Fuse Holder, Block Type, 1, 2 and 3 Pole, 1 to 30 Ampere, Aircraft
MS24001	Fuse Holder, Block Type, 1, 2 and 3 Pole, 35 to 60 Ampere, Aircraft

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from DODSSP, Standardization Document Order Desk, 700 Robbins Avenue, Bldg. 4D, Philadelphia, PA 19111-5094.)

2.2 Non-government publications:

The following document forms a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

ASTM B194-88	Plate, Copper Beryllium Alloy, Sheet, Strip, and Rolled Bar
ASTM D635-88	Plastics, Self-supporting in a Horizontal Position, Rate of Burning and/or Extent of Time of Burning Of

(Application for copies should be addressed to the American Society of Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1137.)

2.3 Order of precedence:

In the event of a conflict between the text of this document and the references cited herein (except for related associated detail specifications, specification sheets or military standards), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS:

3.1 Specification sheet and military standard (MS):

The individual item requirements shall be as specified herein and in accordance with the applicable specification sheet or military standard (MS). In the event of any conflict between the requirements of this specification and the specification sheet or military standard, the latter shall govern (see 6.2).

3.2 Qualification:

The fuse holders furnished under this specification shall be products which are authorized by the Qualifying Activity for listing on the applicable Qualified Products List at the time of award of the contract (see 6.5).

3.3 Materials:

The material shall be as specified herein. However, when a definite material is not specified, a material shall be used which will enable the fuse holders to meet the performance requirements of this specification. Recovered material shall be used to the maximum extent possible.

3.3.1 Fungus: Materials used shall not be nutrients for fungus as specified in MIL-STD-454, Requirement 4.

3.3.2 Plastic material: Plastic material shall be in accordance with MIL-M-14, as indicated on the applicable military standard or specification sheet. Plastic material shall not emit toxic or noxious gases when subjected to electrical arcing. Plastic material containing cellulose fillers shall not be used. Plastic materials shall be certified to exhibit a minimum ignition time of 90 seconds and a maximum extinguishing time of 90 seconds when tested for flammability in accordance with ASTM D635-88.

3.3.3 Metal: All metals used in the construction of the fuse holders shall be corrosion resistant or shall be suitably protected to resist corrosion. The use of dissimilar metals, especially contacts between brass, copper, or steel and aluminum or magnesium alloys, shall be avoided. Where contact between dissimilar metals is unavoidable, the metals shall be protected against electrolytic corrosion. Dissimilar metals are defined on MIL-STD-889.

3.3.4 Protective coating: The use of any protective coating that will crack, chip, or scale will not be permitted.

3.3.5 Selection of materials: Specifications and standards for all materials, parts and Government certification and approval of processes and equipment, which are not specifically designated herein and which are necessary for the execution of this specification, shall be selected in accordance with MIL-STD-970.

- 3.3.5.1 Standard parts: Standard parts (MS or AN) shall be used wherever they are suitable for the purpose, and shall be identified on the drawing by their part numbers. Commercial utility parts, such as screws, bolts, nuts and cotter pins may be used, provided they possess suitable properties and are replaceable by the standard parts (MS or AN) without alteration, and provided the corresponding standard part numbers are referenced in the parts list and, if practicable, on the contractor's drawing. In the event there is no suitable corresponding standard part in effect on date of invitation for bids, commercial parts may be used provided they conform to all requirements of this specification.

3.4 Design and construction:

Fuse holders shall conform to MIL-F-5373/1, MS24000 or MS24001. The fuse holders shall be so designed and constructed so that no parts will work loose in service. They shall be built to withstand the strains, jars, vibrations, and other conditions incident to shipping, storage, installation, and service.

- 3.4.1 Weight and dimensions: The weight and dimensions shall be as shown on the applicable military standard or specification sheet.
- 3.4.2 Rejection: The fuse holder shall be so designed that it shall not be possible to insert fuse units which are outside the rating range of the block.
- 3.4.3 Mounting: The arrangement of mounting holes shall be as shown on the applicable military standard or specification sheet. The fuse holders shall be so arranged that they can be mounted in groups and conveniently interconnected to form buses.
- 3.4.4 Spring clips: Spring clips shall be of beryllium copper conforming to ASTM B194 and shall be silver plated in accordance with QQ-S-365, type III, grade A.
- 3.4.5 Spacing and creepage distances: The minimum clearance in air (phase-to-phase and phase-to-ground) shall be 0.125-inch. The minimum creepage distance on insulation surfaces shall be 0.250-inch.
- 3.4.6 Terminals: The fuse holders shall accommodate terminal lugs conforming to MS20659 of the proper size as determined by the fuse holder rating (see 4.7.3).
- 3.4.7 Interchangeability: All parts having the same manufacturer's part number shall be directly and completely interchangeable with each other with respect to installation and performance.
- 3.4.8 Screw: Screws shall be as specified on the applicable fuse holder military standard or specification sheet.

3.5 Performance:

Fuse holders shall meet the performance requirements of this specification and the applicable military standard or specification sheet when tested as specified in section 4.

- 3.5.1 Dielectric withstanding voltage: When fuse holders are tested as specified in 4.8.1, there shall be no breakdown, flashover, arcing, or current flow to ground in excess of 1 milliampere (mA).
- 3.5.2 Temperature rise:
 - 3.5.2.1 Cycling load: When tested as specified in 4.8.2.1, the temperature rise at any given point on the fuse holder during the 25th cycle shall not differ by more than 10 percent from the maximum temperature rise measured on the same point during the first cycle.
 - 3.5.2.2 Steady state: When fuse holders are tested as specified in 4.8.2.2, the temperature rise of each fuse holder terminal shall not exceed 90°C (194°F).
- 3.5.3 Contact resistance: When fuse holders are tested as specified in 4.8.3, the contact resistance shall not exceed 0.005 ohms. Following the temperature cycling and moisture resistance tests, the contact resistance shall not exceed 0.010 ohms.
- 3.5.4 Moisture resistance: When fuse holders are tested as specified in 4.8.4, there shall be no breaking, cracking, spalling, or loosening of terminals.
- 3.5.5 Thermal shock: When fuse holders are tested as specified in 4.8.5, there shall be no breaking, cracking, spalling or loosening of terminals.
- 3.5.6 Salt spray: When fuse holders are tested as specified in 4.8.6, there shall be no evidence of excess corrosion. Excess corrosion is defined as that which interferes with the electrical or mechanical performance and, in the case of plated metals, corrosion which has passed through the plating and exposes the base metal. There shall be no warping, cracking, or other damage.
- 3.5.7 Vibration: When fuse holders are tested as specified in 4.8.7, there shall be no breaking, cracking, loosening of either the terminals or the fuse blade in the spring clips.
- 3.5.8 Random drop: When fuse holders are tested as specified in 4.8.8, there shall be no breaking, cracking or chipping. The limiter shall not dislocate from the fuse holder.
- 3.5.9 Acceleration: The fuse holder shall be tested as specified in 4.8.9. The limiter shall not dislocate from the fuse holder.
- 3.5.10 Mechanical shock: The fuse holder shall be tested as specified in 4.8.10. The limiter shall not dislocate from the fuse holder.