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PERFORMANCE SPECIFICATION

FUSEHOLDERS, EXTRACTOR POST TYPE, BLOWN FUSE, INDICATING AND NONINDICATING, GENERAL SPECIFICATION FOR

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers the general requirements and test procedures for enclosed, panel mounted, extractor post type electrical fuseholders, both blown fuse indicating and nonindicating.

1.2 Classification. Fuseholder types will be of the following characteristics, construction, enclosures, and styles as specified below.

1.2.1 Part or Identifying Number (PIN). The PIN designation should be in the following form:

FH	L	17	G	I
Component	Characteristic (see 1.2.2)	Structure (see 1.2.3)	Enclosure (see 1.2.4)	Style (see 1.2.5)

The component is identified by the two-letter symbol “FH” and covers all fuse-holder types under this specification.

1.2.2 Characteristic. The characteristic is identified by a single letter “L” or “N” which signify the following:

L - Indicating (blown fuse indication feature)
N - Nonindicating.

1.2.3 Structure. The structure is identified by a two-digit number and indicates the design and physical dimensions of a particular holder as prescribed by a specific performance specification sheet.

Comments, suggestions, or questions on this document should be addressed to: DLA Land and Maritime, ATTN: DLA Land and Maritime-VAT, Post Office Box 3990, Columbus, Ohio 43218-3990 or emailed to CircuitProtect@dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at https://assist.dla.mil.

1.2.4 Enclosure. The degree of enclosure is indicated by a single or double letter which denotes the following:

U - Unsealed
G - Dripproof
S - Splashproof
W - Watertight
WS - Watertight with EMI/RFI shielding
WB - Watertight and body sealed
WBS - Watertight and body sealed with EMI/RFI shielding

1.2.5 Style. When more than one style of fuseholder is provided within a single type and rating, each style is designated by a single number. When only one style is provided, the style number is omitted from the type designation.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract (see 6.2).

FEDERAL STANDARDS

FED-STD-H28 - Screw-Thread Standards for Federal Services.

FED-STD-H28/2 - Screw-Thread Standards for Federal Services Section 2, Unified Inch Screw Threads - UN and UNR Thread Forms.

FED-STD-595/26307 - Gray, Semigloss.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-PRF-15160 - Fuses, Instrument, Power, and Telephone, General Specification for.
MIL-PRF-23419 - Fuse, Cartridge, Instrument Type, General Specification for.

(See supplement 1 for list of associated specifications.)

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-108 - Definitions of and Basic Requirements for Enclosures for Electric and Electronic Equipment.

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

MIL-STD-1285 - Marking of Electrical and Electronic Parts.

(Copies of these documents are available online at http://quicksearch.dla.mil or https://assist.dla.mil or from DLA Document Services, Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094). Special notice: Copies of FED-STD-595/26307 for non-DoD organizations can be obtained only by calling (215) 697-6396, or by faxing (215) 697-9398 for ordering instructions and current price.

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract (see 6.2).

INTERNATIONAL ORGANIZATION FOR STANDARDS (ISO)

ISO 10012 - Measurement Management Systems - Requirements for Measurement Processes and Measuring Equipment.

ISO/IEC 17025 - General Requirements for the Competence of Testing and Calibration Laboratories.

(Copies of these documents are available online at http://www.iso.org/iso/home.html or from the American National Standards Institute (ANSI), 1899 L Street, NW, 11th Floor, Washington, DC 20036-3801).

UNDERWRITERS LABORATORIES, INCORPORATED (UL)

UL 94 - Safety Tests for Flammability of Plastic Materials for Parts in Devices and Appliances, Standard For.

(Copies of this document are available online at http://www.ul.com or from the Underwriters Laboratories Incorporated, 2600 N. W. Lake Road, Camas, WA 98607-8542).

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of conflict between the text of this document and the references cited herein (expect for related specification sheets), 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 sheets. The individual item requirements shall be as specified herein and in accordance with the applicable specification sheet. In the event of any conflict between the requirements of this specification and the specification sheet, the latter shall govern (see 6.2).

3.2 Qualification. Fuseholders furnished under this specification shall be products that are authorized by the qualifying activity for listing on the applicable qualified products list at the time of award of contract (see 4.4 and 6.3).

3.3 Materials. Materials shall be as specified herein. However, when a definite material is not specified, a material shall be used which will enable the fuseholders to meet the performance requirements of this specification. Acceptance or approval of any constituent material shall not be construed as a guaranty of the acceptance of the finished product.

3.3.1 Restricted materials.

3.3.1.2 Flammable material. Material used shall be fire retardant and have a minimum flammability rating of UL 94HB.

3.3.1.3 Toxic and hazardous material. Flammable or explosive material, or material which can produce toxic, suffocating or corrosive fumes, which would be detrimental to the performance of the equipment or health of personnel, shall not be used in construction of the fuseholders.

3.3.2 Plastic material.

3.3.2.1 Body molding. Plastic materials used for the body and carrier moldings shall be selected to enable the fuseholder to meet the performance requirements of this specification (see 6.6). Plastic materials shall be non-fungus nutrient or shall be treated to resist fungus growth. The color of plastic moldings, except transparent caps, shall approximate a light gray semigloss 26307 of FED-STD-595 or equivalent, or black as approved by the qualifying activity.

3.3.2.2 Caps (see 3.4.3).

3.3.3 Metals. Metals shall be of a corrosion-resistant type or shall be treated to resist corrosion.

3.3.3.1 Finish, fuse mating surface. Unless otherwise specified (see 3.1), current carrying fuse mating contact surfaces shall be silver plated. Finishes shall provide a good electrical contact to meet the performance requirements of this specification. For guidance on these finishes, see 6.5.1.

3.3.3.2 Finish, non-mating surfaces. Unless otherwise specified (see 3.1), surfaces which do not contact the fuse shall meet the performance requirements of this specification. For guidance on these finishes, see 6.5.2.

3.3.4 Gaskets. Gaskets, when required (see 3.1), shall be furnished with the fuseholder.

3.3.5 Indicator lamps. Unless otherwise specified (see 3.1), glow lamps, incandescent lamps, or white light emitting diodes (LED) shall be used provided they meet the performance requirements specified herein. For guidance on glow and incandescent indicator lamps, see 6.8.

3.3.6 Resistors. Resistors used with indicating lamp type fuseholders shall be as specified in the applicable specification sheet (see 3.1).

3.4 Interface and physical dimensions. Fuseholders shall be of the interface and physical dimensions specified (see 3.1 and 4.6).

3.4.1 Extractor post type. Extractor post type shall be for panel mounting and shall consist of a tubular body or other enclosure and a removable cap assembly which together encloses the fuse and provides for ready removal and replacement of the fuse from the front of the panel.

3.4.2 Indicating type. Indicating fuseholders shall be of the lamp or mechanical type (see 3.1). Lamp type fuseholders shall have an indicator lamp which lights when the fuse has blown. Mechanical type shall be provided with clear caps to permit visual examination of the fuse indicator.

3.4.3 Caps. Caps for fuseholders with indicator lamps shall be made from plastic (see 6.7). Plastic material used for the caps shall be selected to enable fuseholders to meet the performance requirements of this specification. Caps containing neon lamps or mechanical indicators shall be clear, and essentially colorless. Caps containing incandescent lamps or LED indicators shall be clear or amber color.

3.4.4 Ground test point. Ground test points shall be provided when required (see 3.1). The test points shall be in electrical contact with the associated load terminals of the fuseholders. The circuits shall be independent of fuses, resistors and indicator lamps. Unless otherwise specified, the test point contact shall be recessed a minimum of .125 inch (3.18 mm) from the outer surface of the cap. The test point holes shall accommodate a test prod .080 inch ±.001 inch (2.03 mm ±0.03 mm) in diameter and shall facilitate insertion of the test prod. Test point contacts accessible from the extension of assembled fuseholders (caps in place) shall be recessed .062 inch to .375 inch (1.57 mm to 9.53 mm) within the test point holes. The degree of enclosure requirement shall not be diminished by the test point provision.

3.4.5 Extraction of fuses. Unless otherwise specified (see 3.1), fuses shall be extracted from the fuseholder body, captive with the cap assembly. Fuses shall be removable from the cap assembly without use of any tools.

3.4.6 Mounting hardware. Unless otherwise specified (see 3.1), fuseholders shall be provided with mounting hardware. Mounting hardware shall be a corrosion-resistant metal or shall be a metal treated to resist corrosion (see 6.9). Unless otherwise specified (see 6.2), mounting hardware, including flat gaskets and sealing washers if applicable, and the terminal hardware shall be assembled on the fuseholder or placed in a sturdy bag attached to the fuseholder. Where mounting nuts or plates are used, a threaded metal insert may be used.

3.4.7 Threaded parts. Unless otherwise specified (see 3.1), threaded terminals and mounting screws shall be in accordance with FED-STD-H28 and FED-STD-H28/2, coarse thread series, except plastic threads around the body of a fuseholder designed for single hole mounting need not comply, but shall match the threads of the engaging nuts.

3.4.8 Butt contacts. The fuse contacting surface of butt type contacts shall have a diameter not less than 75 percent of the nominal diameter of the ferrule of the specified test fuse (see 3.1).

3.4.9 Solder-lug terminals. Unless otherwise specified (see 3.1), solder-lug terminals shall be treated to facilitate soldering. Coatings such as hot dip or pre-plating are acceptable (see 4.6.3.1, 4.6.21, 6.5).

3.4.10 Riveting. Rivets shall be properly set, flanged, or rolled, with no evidence of fatigue imposed upon the rivets. There shall be no evidence of cracking, chipping, peeling, denting, or other deformation of the material riveted. Riveted electrical joints shall be soldered after riveting.

3.5 Performance.

3.5.1 Enclosure. The degree of fuseholder enclosure seal shall be in accordance with MIL-STD-108, or equivalent test methods as approved by the qualifying activity, and shall be as specified in 3.5.1.1 through 3.5.1.5 (see 3.1 and 4.6.16).

3.5.1.1 Unsealed. Unsealed fuseholders shall not be required to meet an enclosure requirement.

3.5.1.2 Dripproof. Dripproof fuseholders shall seal against leakage into the fuseholder or into the enclosure upon which it is mounted (see 4.6.16.2).

3.5.1.3 Splashproof. Splashproof fuseholders shall seal against leakage into the fuseholder or into the enclosure upon which it is mounted (see 4.6.16.3).

3.5.1.4 Watertight. Watertight fuseholders shall seal against leakage into the fuseholder or into the enclosure upon which it is mounted (see 4.6.16.4).

3.5.1.5 Watertight and body sealed. Watertight and body sealed fuseholders shall seal against leakage into the fuseholder or into the enclosure upon which it is mounted (see 4.6.16.5).

3.5.2 Terminal strength. When fuseholders are tested as specified in 4.6.3, the terminals shall not break or loosen and there shall be no damage to the fuseholder body.

3.5.3 Torque strength of inserts, threaded terminals, and molded threads. Inserts and threaded terminals shall not loosen , strip, or deform the threads (see 4.6.20). Fixed terminals shall not rotate. Single hole mounted fuseholders shall not break, strip threads, rotate or pull through the mounting holes. Gaskets shall not be damaged and fuseholder caps shall not bind. Fuseholders shall not depend upon gaskets or O-rings to serve as mounting flanges.

3.5.4 Dielectric withstanding voltage. There shall be no breakdown, flashover, arcing, or current flow in excess of 1 milliampere (mA) (see 4.6.4).

3.5.5 Dielectric withstanding voltage (reduced barometric pressure). When specified (see 3.1), fuseholders shall be tested as specified in 4.6.5. There shall be no breakdown, flashover, arcing, or current flow in excess of 1 mA.

3.5.6 Insulation resistance. Insulation resistance shall be not less than 1,000 megohms (see 4.6.6).

3.5.7 Contact resistance. Contact resistance shall not exceed 0.005 ohms (see 4.6.7). Following the endurance and moisture resistance tests, the contact resistance shall not exceed 0.010 ohms.

3.5.8 Overload. There shall be no damage and the fuseholders shall be mechanically and electrically operative (see 4.6.8).

3.5.9 Endurance. Fuseholders shall remain electrically and mechanically operative during and following the endurance test (see 4.6.9). Deposit of copper from dummy fuse on contacts of fuseholders shall not be considered failure. At completion of test, the contact resistance shall not exceed the value specified in 3.5.7.

3.5.10 Temperature rise. Temperature rise of each terminal shall not exceed 70 degrees Celsius (°C) (see 4.6.10).

3.5.11 Short circuit. There shall be no welding or sticking of contacts, mechanical failure, or damage to the fuseholder; provided however, that any failure may result from gases or from flames emanating from the fuse shall not constitute failure of the fuseholder (see 4.6.11).

3.5.12 Indicating lamp (indicating type fuseholders only). The indicating lamp shall remain operative and be clearly visible (see 4.6.12). No distortion of lens cap shall be permitted.

3.5.13 Vibration. Fuseholders shall remain mechanically and electrically operative and there shall be no opening of the fuseholder contacts in excess of 10 microseconds (μs) (see 4.6.13). Failure of the fuse shall not be considered as a failure of the fuseholder.

3.5.14 Mechanical shock. Fuseholders shall remain mechanically and electrically operative during the test and there shall be no damage (see 4.6.14). Momentary opening of contacts shall not exceed 20 milliseconds (ms). Failure of the fuse shall not be considered as failure of the fuseholder.

3.5.15 Moisture resistance. There shall be no breaking, cracking, spalling, or loosening of terminals (see 4.6.15). During the tenth cycle, at a relative humidity (RH) of 90 to 95 percent and a temperature of 23°C ±1°C, the insulation resistance shall be not less than 1 megohm. Following the 24-hour conditioning period, the insulation resistance shall be not less than 50 megohms; the contact resistance shall be as specified in 3.5.7.

3.5.16 Thermal shock. There shall be no breaking, cracking, spalling, or loosening of parts (see 4.6.17). Fuseholder caps shall be easily removed and replaced without tools (mittens excepted) when fuseholders are thermally stabilized at temperature of plus 85°C and minus 55°C. After the fuseholder has returned to thermal stability at room temperature following the final cycle, the insulation resistance shall be not less than 100 megohms.

3.5.17 Salt spray (corrosion). Fuseholders, including mounting hardware, shall show no evidence of excessive corrosion (see 4.6.18). Excessive 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 exposed the base metal. There shall be no warping, cracking, or other damage. Fuses shall be easily replaced when checked 24 hours after removal from the salt spray chamber.

3.5.18 EMI/RFI shielding (when specified, see 3.1). When fuseholders are tested as specified in 4.6.19.1, screen to mounting surface resistance shall not exceed 1 ohm. When fuseholders are tested as specified in 4.6.19.2, the shielding attenuation shall be not less than 60 dB over the frequency range from 100 MHz to 1,000 MHz, unless otherwise specified (see 3.1).

3.6 Marking. Fuseholders shall be marked with the following:

a. PIN designation (see 1.2.1)

b. Manufacturer's name or code symbol in accordance with MIL-STD-1285.

c. Current and voltage ratings.

d. Additional markings shall be as shown in the applicable specification sheet.

The shape of the fuseholders, fuseholder caps and their markings are shown for information only (see 3.1). Slight deviations from the outline drawings and/or markings, which do not alter the functional aspect of the device are acceptable.

3.7 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.8 Workmanship. Fuseholders shall be manufactured and processed in such a manner to be uniform in quality and shall be free from any defects that will affect life, serviceability, or appearance.

4. VERIFICATION

4.1 Classification of inspection. The inspection requirements specified herein are classified as follows:

a. Qualification inspection (see 4.4).

b. Verification of qualification (see 4.4.4).

c. Conformance inspection (see 4.5).

d. Periodic inspection (group C inspection, see 4.5.5).

4.2 Inspection conditions.

4.2.1 Test fuse. Test fuses required in some tests herein shall be standard fuses meeting the requirements of MIL-PRF-15160 or MIL-PRF-23419 for the types and ratings indicated in the specification sheets for fuseholders. Unless otherwise specified herein, inspection conditions shall be in accordance with the GENERAL REQUIRMENTS of MIL-STD-202.

4.2.2 Copper dummy fuse. Copper dummy fuses required in some tests herein shall consist of copper bars, cylinders, or rods having the length and diameter or terminal dimensions required by MIL-PRF-15160 and MIL-PRF-23419 for corresponding standard fuses.

4.2.3 Test equipment and inspection facilities. The manufacturer shall establish and maintain a calibration system in accordance with ISO/IEC 17025, ISO 10012, or equivalent system as approved by the qualifying activity.

4.3 Warning. Potentially hazardous situations could develop in some of the test methods specified in this specification. Precautions should therefore be taken to ensure that test personnel are adequately protected and observe the necessary safety measures at all times.

4.4 Qualification inspection. Qualification inspection shall be performed at a laboratory acceptable to the Government (see 6.3). Qualification inspection shall consist of the examination and tests shown in table I.

TABLE I. Qualification inspection.

Examination or test	Requirements	Test method
Group I - All samples		
Visual and mechanical examination	3.1, 3.3 and 3.4	4.6.2
Indicating lamp (characteristic L) as for group A tests	3.5.12	4.6.12
Insulation resistance	3.5.6	4.6.6
Contact resistance	3.5.7	4.6.7
Enclosure (sealed types only)	3.5.1	4.6.16
Group II - Two samples		
Thermal shock	3.5.16	4.6.17
Terminal strength	3.5.2	4.6.3
Moisture resistance	3.5.15	4.6.15
Salt spray (corrosion)	3.5.17	4.6.18
Dielectric withstanding voltage	3.5.4	4.6.4
Group III - Two samples		
Solderability	3.4.9	4.6.21
Overload	3.5.8	4.6.8
Temperature rise	3.5.10	4.6.10
Endurance	3.5.9	4.6.9
Dielectric withstanding voltage	3.5.4	4.6.4
Group IV - Two samples		
Vibration	3.5.13	4.6.13
Mechanical shock	3.5.14	4.6.14
Indicating lamp	3.5.12	4.6.12
Dielectric withstanding voltage (see 3.1)	3.5.4 and 3.5.5	4.6.4 and 4.6.5
RFI/EMI Shielding (when specified in 3.1)	3.5.18	4.6.19
Group V - Two samples		
Torque strength of inserts, threaded terminals, and molded threads	3.5.3	4.6.20
Dielectric withstanding voltage	3.5.4	4.6.4
Group VI - Two samples		
Short circuit	3.5.11	4.6.11
Dielectric withstanding voltage	3.5.4	4.6.4

4.4.1 Samples for qualification. Samples submitted for qualification approval shall be representative of the contractor's normal production and shall be taken, preferably, from a current production lot. Ten specimens of each type for which approval is requested shall be submitted for qualification approval. However, when a contractor's design for a particular type is basically the same in various current or voltage ratings, one set of specimens may be submitted for approval of that design. For this case, approval shall be extended to all units submitted by the same contractor of the same design of lower current or voltage rating. Qualification approval of a type listed in column I of table II shall be extended to the type shown opposite in column II except for visual and mechanical examination and the tests listed in column III. Two samples of each fuseholder listed in column II shall be submitted for visual and mechanical examination. Samples for tests listed in column III shall be tested as specified in the applicable group in table I.

TABLE II. Extended approval.

Column I Approved type	Column II Extend approval to	Column III Except for visual and mechanical examination and the following tests.
FHL10U FHL12U	FHL11U, FHL29G, FHL30G, FHL10G FHL12G	Mechanical shock, vibration, endurance, indicator light, and enclosure.
FHL14G	FHL13G	Mechanical shock, vibration, endurance, indicator light, and enclosure.
FHL17G1 FHL17G2	FHL18G1 FHL18G2	Enclosure, mechanical shock, vibration, indicator light.
FHN19W	FHN26W	Enclosure, temperature rise, and short circuit.
FHN26G1 FHN26G2	FHN31G1 FHN31G2	Enclosure
FHL34W	FHL33W	Temperature rise, short circuit
FHL35W	FHL32W	Temperature rise, short circuit
FHN41WB	FHN28WB FHN28W 1/ FHN41W 1/	Enclosure, temperature rise, body insert, and terminal strength.
	FHN46WB FHN46W 1/	Enclosure, temperature rise, mechanical shock, vibration, body insert, and terminal strength.
	FHN47WB FHN47W 1/	Enclosure, temperature rise, mechanical shock, vibration, body insert, and terminal strength.
FHL44G FHL57G	FHL45G FHL58G	Enclosure, mechanical shock, vibration, indicator light. Mechanical shock, vibration, endurance, indicator light, and enclosure.

1/ Type “W” fuseholders are qualified when the associated “WB” types have passed satisfactory testing.

4.4.2 Inspection routine. Sample fuseholders shall be subjected to the qualification inspection specified in table I in the order shown. After completion of the group I examination and tests, the specimens shall be divided into the remaining groups shown in table I and subjected to the tests for their particular group.

4.4.3 Failure. Failure in any of the examinations or tests shall be cause for refusal to grant qualification approval.

4.4.4 Verification of qualification. To retain qualification, the manufacturer shall provide verification to the qualifying activity for the following items at 36-month intervals:

a. Design of the fuseholders has not changed.

b. Verification that the conformance inspections have been performed on inspection lots supplied to the requirements of this specification (group A and B).

c. Verification that the periodic inspection, (group C), has been performed as applicable. If there is an indication of nonconformance with specification requirements, and corrective action acceptable to the qualifying activity has not been taken, action may be taken to remove the failing product from the qualified products list.

Failure to provide verification of the product within 60 days after the end of each 36-month period may result in loss of qualification for the product. The contractor shall immediately notify the qualifying activity at any time during the 36-month period that verification indicates failure of the qualified product to meet the requirements of this specification.

In the event that no production occurred during the reporting period, the contractor shall verify to the qualifying activity that the capability to manufacturer and test QPL fuseholders still exists and that the contractor wants to remain on the QPL. If during two consecutive reporting periods there has been no production, the manufacturer may be required, at the discretion of the qualifying activity, to submit a representative product of each style, voltage rating, and current rating to testing in accordance with the qualification inspection requirements.

4.5 Conformance inspection. Conformance inspection shall consist of the tests and examination specified in 4.5.1 through 4.5.5.4, inclusive.

4.5.1 Indicating fuseholders. For indicating fuseholders, all lamp circuit assemblies shall be inspected for a blown fuse indication either during the manufacturing process or prior to delivery. Any convenient voltage that will cause the lamp to illuminate may be used.

4.5.2 Inspection lot. An inspection lot shall consist of all fuseholders of the same type, produced under essentially the same conditions, and offered for inspection at one time. The lot may include the entire contract quantity, or it may be the production of any convenient time period.

4.5.3 Group A inspection.

4.5.3.1 Sampling plan. Group A inspection shall be on an inspection lot basis. Samples shall be selected in accordance with table III, based on the inspection lot. If there are one or more failures, the inspection lot shall be considered to have failed.

TABLE III. Group A, zero defect sampling plan.

Lot size	Sample size
1 - 13	100 percent
14 - 150	13
151 - 280	20
281 - 500	29
501 - 1,200	34
1,201 - 3,200	42
3,201 - 10,000	50
10,001 - 35,000	60
35,001 - 150, 000	74
150,001 - 500,000	90
500,001 and up	102

4.5.3.2 Rejected lots. If an inspection lot is rejected, the supplier may rework it to correct the defects or 100 percent inspect the lot and remove all defective parts. Reworked lots shall be resubmitted for inspection. Such lots shall be separated from new lots and shall be clearly identified as reinspected lots. If one or more defects are found in this second sample, the lot shall be rejected and shall not be supplied to this specification.

TABLE IV. Group A inspection.

Examination or test	Requirement	Test method
Visual and mechanical examination	3.1	4.6.2
Dielectric withstanding voltage	3.5.4	4.6.4
Contact resistance	3.5.7	4.6.7

4.5.3.3 Test routine. All fuseholders in the sample shall be subjected to the tests specified in table IV.

4.5.4 Group B inspection.

4.5.4.1 Sampling plan. Group B inspection shall be made on sample units which have been subjected to and have passed group A inspection. Five sample fuseholders from each inspection lot, shall be selected for group B inspection.

4.5.4.2 Test routine. All fuseholders in a sample shall be subjected to the tests specified in table V in the order shown.

TABLE V. Group B inspection.

Examination or test 1/	Requirement	Test method
Enclosure (sealed types only)	3.5.1	4.6.16
Insulation resistance	3.5.6	4.6.6
Solderability 2/	3.4.9	4.6.21

1/ If the manufacturer can demonstrate that these tests have been performed ten consecutive times with zero failure, the frequency of these tests, with the approval of the qualifying activity, can be performed on a quarterly basis. If the design, material, construction, or processing of the fuseholder is changed or if there are any quality problems or failures, the qualifying activity may require resumption of the original test frequency. Regardless of reduction of tests, the manufacturer shall supply product capable of passing these prescribed tests. (NOTE: If there is no production of a given fuseholder type in the quarter, the manufacturer is not required to perform group B quality testing.)

2/ Solderability shall only be performed on fuseholders with pre-plated terminals.

4.5.4.3 Disposition of sample units. Sample units which have passed the group B inspection may be delivered on the contract.

4.5.5 Group C inspection.

4.5.5.1 Sampling for group C inspection. Two sample fuseholders of each type shall be randomly selected for group C inspection at the end of each 36-month period following qualification approval. In the event the contractor has had no production of a fuseholder type in the 36-month period, samples shall be selected from the first production following this period. Table II, pertaining to extension to qualification approval, is not applicable to group C sampling; however, where a fuseholder type provides several discrete voltage ratings, the two test samples may be selected from any of the ratings.

4.5.5.2 Test routine. Group C inspection shall be conducted as specified in table VI in the order shown.

TABLE VI. Group C inspection.

Examination or test	Requirement	Test method
Group I - one sample		
Enclosure (sealed types only)	3.5.1	4.6.16
Contact resistance	3.5.7	4.6.7
Terminal strength	3.5.2	4.6.3
Solderability	3.4.9	4.6.21
Endurance	3.5.9	4.6.9
RFI/EMI Shielding (when specified 3.1) 1/	3.5.18	4.6.19
Dielectric withstanding voltage	3.5.4	4.6.4
Group II - one sample		
Vibration	3.5.13	4.6.13
Mechanical shock	3.5.14	4.6.14
Salt spray (corrosion)	3.5.17	4.6.18
Torque strength of inserts threaded terminals, and molded threads	3.5.3	4.6.20
Indicating lamp (as for group A tests)	3.5.12	4.6.12
RFI/EMI Shielding (when specified 3.1) 1/	3.5.18	4.6.19
Dielectric withstanding voltage	3.5.4	4.6.4

1/ The shielding efficiency test is not required provided the manufacturer has not made any changes in the design, construction, or material of the fuseholder since the last EMI/RFI shielding efficiency group C inspection or initial qualification (which ever came later).

4.5.5.3 Disposition of sample units. Sample units which have passed the group C inspection may be delivered on the contract or order.

4.5.5.4 Extension of group C inspection. Group C inspection testing may be extended to other fuseholder types provided they comply with table VII. If group C inspection is performed on the fuseholder type specified in column I, the group C inspection requirement may be granted to the fuseholder types specified in column II, provided that qualification inspection was previously obtained on the fuseholders specified.

TABLE VII. Extension approval for group C inspection.

Column I: Performance of group C inspection on:	Column II: Will extend group C inspection to:
FHL10G	FHL10U, FHL11U, FHL11G, FHL29G1 through FHL29G6, FHL30G1 through FHL30G6
FHL12G	FHL12U
FHL14G	FHL13G
FHL16G	FHL15G
FHL17G1	FHL18G1-01 through FHL18G1-09
FHL17G2	FHL18G2-01 through FHL18G2-09
FHN23W	FHL22W
FHN26W	FHL19W
FHN26G1	FHN31G1, FHN55W
FHN26G2	FHN31G2
FHL34W-12	FHL34W-01 through FHL34W-11, FHL33W-01 through FHL33W-11
FHL35W-12	FHL35W-01 through FHL35W-11, FHL32W-01 through FHL32W-11
FHN41WB	FHN41W, FHN28WB, FHN28W
FHN47WB	FHN47W, FHN46W, FHN46WB
FHL44G-6	FHL44G-1 through FHL44G-5, FHL45G
FHL57G	FHL58G

4.6 Methods of examination and tests.

4.6.1 Preparation of samples. For all tests requiring passage of current with fuses inserted, the fuseholders shall be provided with one conductor on each terminal. The conductors shall have a length of 24 inches ±2 inches (609.6 mm ±50.8 mm) and shall have a current rating equal to the maximum current rating of the fuseholder. During shock and vibration tests, the leads shall be secured to the fuseholder mounting plate approximately 6 inches (152.4 mm) from the fuseholder.

4.6.2 Visual and mechanical examination. Fuseholders shall be examined to verify that the materials, structure, physical dimensions, marking, and workmanship are as specified herein (see 3.1).

4.6.3 Terminal strength. Fuseholders shall be secured by their normal mounting means on a 1/16-inch (1.59 mm) thick panel and shall be tested in accordance with method 211 of MIL-STD-202, test condition A, except as specified in 4.6.3.1 and 4.6.3.2 (see 3.5.2).

4.6.3.1 Solder-lug terminals. Solder-lug terminals for line and load wire connections shall be subjected to a 5-pound pull in each of the three mutually perpendicular directions for at least 1 minute.

4.6.3.2 Stud and screw lug terminals. Stud and screw lug terminals shall be subjected for at least 1 minute to the specified pull, directly away from the fuseholder body, in each of the following directions (see 3.1):

a. Parallel to the long axis of the terminal.

b. Perpendicular to the long axis of the terminal.

4.6.4 Dielectric withstanding voltage. Fuseholders shall be tested in accordance with method 301 of MIL-STD-202 (see 3.5.4). The following details shall apply.

a. Mounting - Fuseholders shall be mounted in the specified mounting holes on an uninsulated metal panel of the maximum specified thickness and with all specified mounting hardware and gaskets.

b. A test fuse (see 3.1 and 4.2.1) with open fuse element shall be assembled in the fuseholder.

c. Test voltage - The test voltage shall be alternating (60 hertz (Hz)) and shall be twice the fuseholder voltage rating plus 1,000 V.

d. Points of application - Test voltage shall be applied between all mutually insulated parts, current-carrying parts, and exposed or grounded parts including mounting panel.

e. Measurements and examination - Current flow between points of voltage application shall be measured. After the test, fuseholders shall be examined for evidence of arcing, flashover, breakdown of insulation, or other damage.

4.6.5 Dielectric withstanding voltage (reduced barometric pressure) (see 3.5.5). Fuseholders shall be tested in accordance with method 105 of MIL-STD-202. The following details and exceptions shall apply:

a. Test condition letter - C

b. Test voltage - The test voltage shall be as specified (see 3.1).

c. Mounting - As specified in 4.6.4a and 4.6.4b.

d. Measurements and examination - As specified in 4.6.4d and 4.6.4e.

4.6.6 Insulation resistance (see 3.5.6). Fuseholders shall be tested in accordance with method 302 of MIL-STD-202. The following details shall apply:

a. Test condition letter - A.

b. Points of measurement - Between mutually insulated parts.

c. Caps of indicating fuseholders shall be removed and only the fuseholder bodies tested.

4.6.7 Contact resistance (see 3.5.7). The contact resistance between the fuseholder terminals with an appropriate copper dummy fuse shall be measured in accordance with method 307 of MIL-STD-202. The following details shall apply:

a. Test current - 1 ampere.

b. Maximum open circuit test voltage - 3 V direct current (dc)

c. Fuseholders with axial, contact pressure springs in the caps shall be fitted with a copper dummy fuse having maximum ferrule diameter and minimum overall length. The fuse shall be inserted into the cap so as to fully depress the spring. Insertion force shall be released gradually, allowing the fuse to reposition in the cap by spring force only. The cap, with fuse, shall then be assembled to the fuseholder body.

4.6.8 Overload. With an appropriate copper dummy fuse, the fuseholder shall be subjected to a current equal to 150 percent of the maximum fuse rating which the fuseholder accommodates. The test current shall be applied continuously for a period of 1 hour. All sections of multisection fuseholders shall be tested simultaneously (see 3.5.8).

4.6.9 Endurance. With an appropriate copper dummy fuse in the fuseholder cap, the fuseholder cap shall be inserted in the fuseholder and then removed for a total of 100 operations. Operation is defined as insertion and withdrawal of the dummy fuse and cap within the fuseholder body, locking in place, unlocking, and withdrawal of the dummy fuse and fuseholder cap. The fuseholder shall not be energized during this test. Only one section of a multisection fuseholder shall be tested (see 3.5.9).

4.6.9.1 Insertion and withdrawal test. Where the fuse is retained in pressure or spring clips in the fuseholder cap or body, the fuse shall be inserted in the clips and removed for a total of 100 operations. One operation is defined as the insertion and removal of the fuse. This test may be performed independently or as part of the operational sequence of 4.6.9.

4.6.9.2 Performance after endurance test. Upon completion of the tests in 4.6.9 or both 4.6.9 and 4.6.9.1, contact resistance shall be measured in accordance with 4.6.7.

4.6.10 Temperature rise. A test fuse shall be inserted in the fuseholder, and a thermocouple of No. 28 to No. 32 AWG shall be placed on each fuseholder terminal as close to the fuseholder body as practicable. The fuseholder shall be energized at the maximum current rating of the fuse and at any voltage within the fuseholder rating. Temperature rise shall be measured when a constant temperature has been reached, as indicated by three successive readings taken at 10 minute intervals and differing by not more than plus or minus 1°C. All sections of multisection fuseholders shall be tested simultaneously (see 3.5.10). Accuracy of the indicating device shall be within plus or minus 2°C.

4.6.11 Short circuit. A test fuse as specified (see 3.1) shall be assembled in the fuseholder. The fuseholder shall be inserted in a single-phase circuit and subjected to the short circuit test in accordance with MIL-PRF-15160 or MIL-PRF-23419, as applicable, for the test fuse. Only one section of a multisection fuseholder need be tested (See 3.5.11).

4.6.12 Indicating lamp. With the fuseholder energized at maximum rated voltage, the indicating lamp shall properly indicate a “blown” fuse for 100 hours. Observations shall be made from a distance of 10 feet in any direction up to 45 degrees from the mounting axis of the fuseholder and in an ambient illumination of 50 foot-candles. For groups A and C examination and tests, fuseholders shall be energized at highest and lowest voltages only long enough to show that the “blown fuse” indicator circuit is operating. For group C tests, the indicating lamp test shall be conducted on samples previously submitted to the shock and vibration tests. A “blown fuse” may be assembled into the fuseholder if necessary to complete the indicating circuit (see 3.5.12).

4.6.13 Vibration (see 3.5.13). Unless otherwise specified (see 3.1), fuseholders shall be tested in accordance with method 201 of MIL-STD-202. The following details shall apply:

a. Fuseholder shall be assembled with a test fuse.

b. The fuseholder shall be rigidly mounted by its normal mounting means.

c. Monitor with either circuit specified in method 310 of MIL-STD-202 or with an equivalent circuit capable of indicating a 10 μs opening of contacts. All fuseholders vibrated simultaneously may be connected in series and monitored simultaneously. In the event of opening of contacts in excess of 10 μs fuseholders shall be removed from the circuit until the defective one is found and removed. All others shall be reinserted and the test continued.

d. Fuses which open during this test shall be replaced and the test continued.

4.6.14 Mechanical shock (see 3.5.14). Fuseholders shall be tested in accordance with method I (see 4.6.14.1) or method II (see 4.6.14.2), as specified (see 3.1). Contact opening shall be monitored with a relay calibrated to drop on a 0.020-second interruption to its coil supply or by an equivalent timing device.

4.6.14.1 Method I. Fuseholders shall be tested in accordance with method 207 of MIL-STD-202. The following details shall apply:

a. Mounting fixture shall be in accordance with figure 207-4A of MIL-STD-202.

b. Fuseholders shall be assembled with test fuses and shall be energized with any voltage and current within their rating.

c. Each fuseholder shall be monitored to note any opening or chatter of contacts.

d. Fuses which open during this test shall be replaced and the test continued.

4.6.14.2 Method II. The fuseholders shall be tested in accordance with method 213 of MIL-STD-202. The following details shall apply:

a. Test condition I shall apply except that nominal duration shall be 10 ms ±2 ms.

b. Fuseholders shall be mounted by their normal mounting means.

c. Fuseholders shall be assembled with test fuses and shall be energized with any voltage and current within their rating.

d. Each fuseholder shall be monitored to note any opening or chatter of contacts.

e. Fuses which open during this test shall be replaced and the test continued.

4.6.15 Moisture resistance (see 3.5.15). The fuseholder shall be tested in accordance with method 106 of MIL-STD-202. The following details and exceptions shall apply:

a. A test fuse with open fuse element shall be installed if required to effect proper seal between fuseholder cap and body.

b. Mounting - by normal means on a corrosion-resistant metal panel positioned 15 degrees from the vertical.

c. Polarization - During step 1 to step 6 inclusive, a dc potential of 100 V shall be applied between current-carrying parts and mounting hardware. Negative polarity shall be applied to mounting panel.

d. Vibration, step 7b, shall be omitted.

e. Final measurements - During tenth cycle, insulation resistance measurements shall be made as specified in 4.6.6. Following a 24 hour period at 23°C ±1°C and 50 percent ±5 percent RH, insulation resistance and contact resistance shall be measured as specified in 4.6.6 and 4.6.7, respectively.

4.6.16 Enclosure (see 3.5.1). In tests requiring a fuseholder to be mounted, the mounting panel thickness shall not exceed the maximum specified (see 3.1). Screw type caps shall be hand tight.

4.6.16.1 Unsealed. No test required.

4.6.16.2 Dripproof. The fuseholder containing a test fuse shall be mounted, with fuseholder cap exposed, on one face of a watertight enclosure. The test shall be made in accordance with the accelerated dripproof test for parts as specified in MIL-STD-108 or other equivalent test methods as approved by the qualifying agency. The water flow through a domestic type shower head shall be not less than 2 gallons per minute (g/min) (see 3.5.1.2).

4.6.16.3 Splashproof. The fuseholder containing a test fuse shall be mounted, with fuseholder cap exposed, on one face of a watertight enclosure. The test shall be made in accordance with MIL-STD-108 or other equivalent test methods as approved by the qualifying agency (see 3.5.1.3).

4.6.16.4 Watertight. The fuseholder containing a test fuse shall be mounted, with fuseholder cap exposed, on one face of a watertight enclosure. The test shall be made in accordance with MIL-STD-108 or other equivalent test methods as approved by the qualifying agency (see 3.5.1.4).

4.6.16.5 Watertight and body sealed. The fuseholder shall be subjected to the watertight test as specified in 4.6.16.4. The fuseholder shall then be removed from the test panel and the cap removed from the body. A cap which has been drilled through the metal insert at the test probe hole and fitted with a sealed tube for adaption to a source of compressed air shall then be assembled to the fuseholder body. The complete fuseholder shall then be immersed in fluid such as tap water, and a differential of 15 pounds per square inch (lb/in^2) gauge shall be applied for a period of 1 minute. No air bubbles shall appear (see 3.5.1.5).

4.6.17 Thermal Shock (see 3.5.16). Fuseholders shall be tested in accordance with method 107 of MIL-STD-202. The following details and exceptions shall apply:

a. Test condition letter - A, except as otherwise specified (see 3.1).

b. Measurements after cycling - Fuseholders shall be examined for evidence of physical damage.

4.6.18 Salt atmosphere (corrosion) (see 3.5.17). Fuseholders shall be tested in accordance with method 101 of MIL-STD-202. The following details and exceptions shall apply:

a. Test condition letter - A or B, as specified (see 3.1).

b. Special mounting and details - Test fuses shall be assembled into each fuseholder if required to effect proper seal between fuseholder cap and body.

After the test, fuseholders shall be visually examined for evidence of excessive corrosion or mechanical damage.

4.6.19 EMI/RFI shielding (when specified, see 3.1).

4.6.19.1 EMI/RFI shielding case grounding (when specified, see 3.1) (see 3.5.18). The fuseholder shall be mounted by its normal mounting means to an electrically conductive panel. The resistance shall be measured from the RFI shielding on the fuseholder (plated surface) to the mounting panel. The measurement shall be made using an open circuit voltage of 6 V dc ±1 V dc and a maximum current of 100 mA ±10 mA.

4.6.19.2 Shielding efficiency (when specified (see 3.1 and 3.5.18). Fuseholders shall be tested utilizing a test setup (or equivalent) as shown in figure 1. Measurements shall be made as follows:

a. With the door open and the antennas in the “initial setup” position, establish a test level over the 200 MHz to 1 GHz range such that the received signal level is at least as many dB above the RF ambient level as that of the shielded enclosure attenuation.

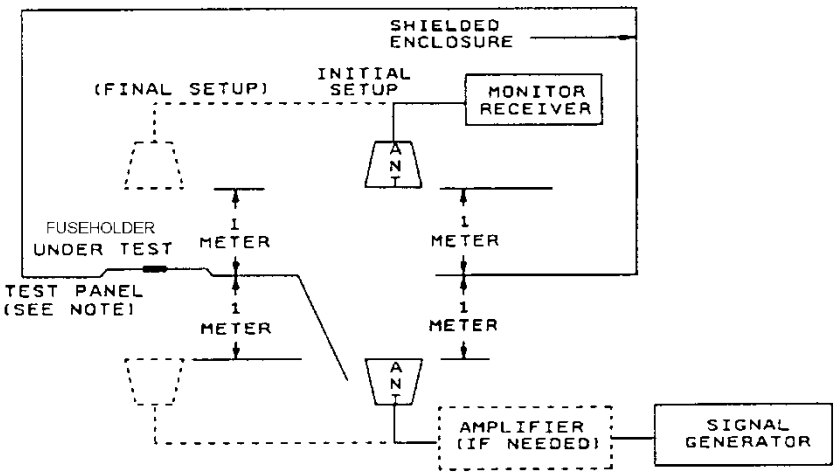
b. Record the received signal level and the signal generator output level. Repeat measurements at 200 MHz, 400 MHz, 600 MHz, 800 MHz and 1,000 MHz.

c. Move the antennas to the final test positions, close the door and with an RF-tight blank panel between the antennas, measure the integrity of the enclosure by setting the signal generator to the same output and record the received signal level for each frequency used in 4.6.19.2b. The shielded enclosure attenuation is then calculated using the following equation:

$$\text{Attenuation (dB)} = 20 \log \frac{E1}{E2}$$

Where E1 is the receiver reading in paragraph 4.6.19.1 and E2 is the receiver reading in paragraph 4.6.19.2.

d. Mount the test fuseholder in the blank panel with the rear of the fuseholder outside of the shielded enclosure (toward the signal generator antenna). The fuseholder shall be mounted as it would be for normal installation using the mounting hardware supplied or recommended. Repeat the measurements of 4.6.19.2 above and calculate the shielding attenuation of the fuseholder using the new receiver readings.



NOTE: Test panel shall be located in the chamber wall at least 1 meter from any corner and at least 1 meter from floor and ceiling.

FIGURE 1. Block diagram of switch shielding efficiency test.

4.6.20 Torque strength of inserts, threaded terminals, and molded threads.

4.6.20.1 Fuseholder caps. Fuseholder caps containing molded-in threaded metal inserts for attachment to fuseholder bodies shall be assembled to the fuseholder body and subjected to the specified torque (see 3.1 and 3.5.3).

4.6.20.2 Threaded terminals. The specified torque shall be applied to each terminal screw and to a nut on each terminal stud (see 3.1 and 3.5.3).

4.6.20.3 Mounting. Single mounting hole fuseholders with required mounting hardware shall be mounted on a 1/16 inch (1.59 mm) thick metal panel and the specified torque shall be applied to the mounting nut (see 3.1 and 3.5.3).

4.6.21 Solder-lug terminals. Solder-lug terminals shall be tested in accordance with method 208 of MIL-STD-202 (see 3.4.9) for solderability.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. Extractor post type fuseholders are used to fully enclose electrical fuses and are designed for panel mounting. The fuseholders covered by this specification are unique due to the fact that these devices must be able to operate satisfactorily under the following demanding conditions: Vibration, 100 g's of shock, hours of salt spray, and thermal shock from -55°C to +85°C. In addition, these requirements are verified under a qualification system. Commercial components are not designed to withstand these environmental conditions.

6.2 Acquisition requirements. Acquisition documents must specify the following:

a. Title, number, date of the specification, applicable specification sheet, and the complete type designation or PIN (see 3.1).

b. The specific issue of individual documents referenced, if required. If not otherwise specified, the versions of the individual documents referenced will be those in effect on the date of release of the solicitation (see 2.2 and 2.3).

c. Mounting hardware (see 3.4.6).

d. Requirements for packaging (see 5.1).

6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Products List whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from the DLA Land and Maritime, ATTN: DLA Land and Maritime-VQH, 3990 E. Broad Street, Columbus, OH 43213-1199, or by e-mail: vqh.chief@dla.mil. An online listing of products qualified to this specification may be found in the Qualified Products Database (QPD) at http://www.landandmaritime.dla.mil/programs/qmlqpl/. (see 4.4).

6.3.1 Provisions Governing Qualification. Copies of SD-6, "Provisions Governing Qualification" may be obtained from the DLA Document Services, Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.), online at http://quicksearch.dla.mil or https://assist.dla.mil.

6.4 Circuit design. Fusing circuits using extractor post fuseholders should have a fuse current rating of approximately 120 percent of the circuit current rating. Ordinarily this will provide adequate protection and will avoid needless blowing of fuses.

6.5 Finishes.

6.5.1 Finish, fuse mating surface. Based on past experience, silver plating in accordance with ASTM B700, with a .0003 inch (0.008 mm) minimum thickness, has been used successfully for current carrying fuse mating contact surfaces to meet the performance requirements of this specification. The silver plating used has been 99.9 percent pure silver and not coin silver.

6.5.2 Finish, solder-lug terminals,and non-mating surfaces. It is recommended that the following finishes be considered for meeting the performance requirements of this specification:

a. Nickel plating with a minimum thickness of .0002 inch (0.005 mm).

b. Bright alloy plating with a minimum thickness of .0002 inch (0.005 mm) and the following composition:

Copper	-	50 to 60 percent
Tin	-	25 to 28 percent
Zinc	-	14 to 18 percent

c. Tin lead plating in accordance with SAE-AMS-P-81728.

d. Hot-solder dip (60-40 tin lead) in accordance with IPC J-STD-006.

6.5.3 Tin whisker growth. The use of alloys with tin content greater than 97 percent, by mass, may exhibit tin whisker growth problems after manufacture. Tin whiskers may occur anytime from a day to years after manufacture and can develop under typical operating conditions, on products that use such materials. Conformal coatings applied over top of a whisker-prone surface will not prevent the formation of tin whiskers. Alloys of 3 percent lead, by mass, have shown to inhibit the growth of tin whiskers. For additional information on this matter, refer to ASTM B545 (Standard Specification for Electrodeposited Coatings of Tin).

6.6 Body molding. Based on past experience, type MAI-60, SDG-F or GDI-30F of ASTM D5948 has been used successfully, for meeting the body and carrier molding material requirements of this specification. Optional body molding materials are acceptable as long as they enable fuseholders to meet the performance requirements of this specification.

6.7 Caps. Based on past experience, ASTM D3935 has been used successfully as guidance in the use of this material.

6.8 Indicator lamps.

6.8.1 Glow lamps. It is suggested, based on past experience, that industry type A9A or equal be considered for use in characteristic L fuseholders, to meet the performance requirements specified herein.

6.8.2 Incandescent lamps. It is suggested, based on past experience, that industry number 1764, or equivalent, be used in characteristic L fuseholders where the fuseholder rating is less than 90 volts (V). It is also suggested that incandescent lamps which are captive within the fuseholder cap assembly be cemented or encapsulated in place.

6.9 Mounting hardware. It is recommended that ASTM B633 be used for guidance on plating. ASTM B633, type II, class Fe/Zn12 plating has been used successfully in the past.

6.10 Environmentally preferable material. Environmentally preferable materials should be used to the maximum extent possible to meet the requirements of this specification. As of the dating of this document, the U.S. Environmentally Protection Agency (EPA) is focusing efforts on reducing 31 priority chemicals. The list of chemicals and additional information is available on their website at http://www.epa.gov/osw/hazard/wastemin/priority.htm. Included in the list of 31 priority chemicals are cadmium, lead, and mercury. Use of the materials on the list should be minimized or eliminated unless needed to meet the requirements specified herein (see section 3).

6.11 Types FHL10U and FHL29G. The types FHL10U and FHL29G fuseholders are dual fuseholders which may be mounted tandem with types FHL11U or FHL30G fuseholders respectively, for banks of fuseholders requiring an odd number of fuse carriers.

6.12 Subject term (key word) listing.

Dripproof
Fuseclip
Gasket, O-ring
Resistor
Surfaces, metallic, mating
Surfaces, metallic, non-mating

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6.13 Changes from previous issue. The margins of this specification are marked with vertical lines to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

Custodians:
Army - CR
Navy - SH
Air Force - 85
DLA - CC

Preparing activity:
DLA - CC

(Project 5920-2012-045)

Review activities:
Army - AR, AT, CR4, MI
Navy - AS, EC, MC, OS
Air Force - 19, 70, 71, 84, 99

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