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AEROSPACE STANDARD

SAE AS81824

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Submitted for recognition as an American National Standard

Splices, Electric, Permanent, Crimp Style, Copper, Insulated, Environment Resistant

FSC 5940

NOTICE

This document has been taken directly from U.S. Military Specification MIL-S-81824, Amendment 3 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-S-81824, Amendment 3. 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 technical report.

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1. SCOPE:

1.1 Scope:

This specification covers environment resistant, permanent crimp type, splices having a heat shrinkable insulating sleeve and meltable environmental seals. They may be used with tin plated and silver plated conductors in applications where the total temperature of the wire insulation does not exceed 150°C.

1.2 Classification:

The splices covered by this specification shall be either of the following Classes as specified (see 6.3):

Class 1 - Insulated permanent crimp type splices which conform to all of the requirements of this specification when installed with the crimping tool and heat source shown on the applicable specification sheet.

Class 2 - Insulated permanent crimp type splices which conform to the material and marking requirements of this specification, are replaceable with Class 1 splices, and conform to the performance requirements of this specification when installed with a crimping tool having crimping dies and motion conforming to the splice manufacturer's control drawing required by 3.6 and the splice manufacturer's recommended heat source (see 6.1.2). Military part number will not be applied to Class 2 splices. Class 2 items shall not be procured, stocked or issued by the Department of Defense for stock or issue to the Military Services.

2. APPLICABLE DOCUMENTS:

2.1 Issues of documents:

The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

SPECIFICATIONS

Federal

L-P-378	Plastic Sheet and Strip, Thin Gauge, Polyolefin
UU-B-36	Bags, Paper, (Grocers)
WW-T-775	Tube, Copper, Seamless, (for Refrigeration and General Use)
PPP-B-566	Boxes, Folding, Paperboard
PPP-B-636	Boxes, Fiberboard
PPP-B-665	Boxes, Paperboard, Metal Stayed (Including Stay Material)
PPP-B-676	Boxes, Set-Up
PPP-T-60	Tape, Pressure-Sensitive Adhesive, Waterproof for Packaging
PPP-T-76	Tape, Pressure-Sensitive Adhesive Paper (for Carton Sealing)

2.1 (Continued):

QQ-C-502	Copper Rods and Shapes; and Flat Products With Finished Edges (Flat Wire, Strips and Bars)
QQ-C-576	Copper Flat Products With Slit, Slit and Edge-Roller, Sheared, Sawed or Machined Edges, (Plate, Bar, Sheet, and Strip)

Military

MIL-P-116	Preservation, Methods of
MIL-H-5606	Hydraulic Fluid, Petroleum Base, Aircraft, Missile and Ordnance
MIL-T-5624	Turbine Fuel, Aviation, Grades JP-4 and JP-5
MIL-L-7808	Lubricating Oil, Aircraft Turbine Engine Synthetic Base
MIL-T-7928	Terminals, Lug: Splices, Conductor: Crimp Style, Copper, General Specification for
MIL-A-8243	Anti-Icing and Deicing/Defrosting Fluid
MIL-T-10727	Tin Plating, Electrodeposited or Hot-Dipped, for Ferrous and Nonferrous Metals
MIL-F-22191	Films, Transparent, Flexible, Heat Sealable, for Packaging Applications
MIL-C-22520	Crimping Tools, Terminal, Hand, Wire Termination General Specification for
MIL-W-22759	Wire, Electric, Fluorocarbon-Insulated, Copper and Copper Alloy
MIL-I-23053	Insulation Sleeving, Electrical, Heat Shrinkable, General Specification for
MIL-L-23699	Lubricating Oil, Aircraft Turboprop and Turboshaft Engines, Synthetic Base
MIL-C-25769	Cleaning Compound, Aircraft Surface, Alkaline Water Base
MIL-D-26937	Detergent, Synthetic, Anionic (Alkyl Benzene Sulfonate)
MIL-STD-45662	Calibration System Requirements

Specification Sheets

MIL-W-22759/11	Wire, Electric, Fluorocarbon Insulated, Extruded Tfe, Silver Coated Copper Conductor, 600 Volt
MIL-I-23053/8	Insulation Sleeving, Electrical, Heat Shrinkable, Polyvinylidene Fluoride, Semi Rigid, Crosslinked
MIL-S-81824/1	Splice, Electric, Permanent, Crimp Style Copper, Insulated, Environment Resistant, Class 1

STANDARDS

Military

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129	Marking for Shipment and Storage
MIL-STD-202	Test Methods for Electronic and Electrical Component Parts

(Copies of specifications and standards required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications:

The following document forms a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

American Society for Testing and Materials

ASTM B 75-68 Seamless Copper Tube

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

3. REQUIREMENTS:

3.1 Detail requirements:

Detail requirements or exceptions applicable to particular splices shall be as specified on the applicable specification sheet. In the event of conflict between this specification and the requirements of the applicable specification sheet, the requirements of the specification sheet shall govern.

3.2 Qualification:

The splices furnished under this specification shall be a product which has passed the qualification tests specified herein, and has been listed on, or approved for listing on, the applicable Qualified Products List (QPL) at the time set for opening of bids (see 4.1 and 6.4). The provisions for periodic qualification reevaluation are included in this specification (see 4.5.6).

3.3 Materials:

The materials used shall be specified herein:

3.3.1 Metals: The metal crimp splice shall be fabricated from copper conforming to WW-T-775 or ASTM B 75-68 or QQ-C-502 or QQ-C-576.

3.3.2 Plating: Unless otherwise specified, the metal crimp splice shall be tin-plated or silver plated over its entire surface in accordance with MIL-T-10727 and QQ-S-365 respectively. Mercury shall not be used in the fabrication of the metal crimp splice.

3.3.3 Sealing sleeve:

3.3.3.1 Insulation material: The insulation sleeve shall be transparent, heat shrinkable, cross-linked polyvinylidene fluoride in accordance with the performance requirements of MIL-I-23053/8.

3.3.3.2 Sealing material: The sealing material shall be a thermally stabilized thermoplastic, homogeneous and essentially free from flaws, defects, pinholes, seams, cracks, and inclusions. The material shall have a melt viscosity suitable to meet the performance requirements when using the recommended heat source.

3.4 Design and construction:

Unless otherwise specified, the splice assembly shall consist of a sealing sleeve and a metal crimp splice. The sealing sleeve shall be heat shrinkable and shall contain the insulation sleeve and the sealing material. The splice shall conform in all respects to the design, dimensions, and construction specified herein and on the applicable specification sheet. Each splice size shall be designed for attachment to the wire size range specified on the applicable specification sheet by having the metal crimp splice reshaped around the conductor and the sealing sleeve recovered over the spliced assembly. For Class 1, it shall be possible to perform these operations by means of MIL-C-22520 tooling specified on the applicable specification sheet. For Class 2, it shall be possible to perform the installation operations by means of tooling described on the manufacturer's control drawing. The metal crimp splice shall be capable of being crimped in any radial plane and shall exhibit no evidence of fracturing, spalling, or protruding sharp edges as a result of the reshaping operation.

3.4.1 Wire acceptance: Each size splice shall be designed for attachment to the conductor diameter range specified on the applicable specification sheet. The wire insertion shall be facilitated by bell mouth or chamfer on the metal splice barrel.

3.4.2 Insulation: The sealing sleeve shall exhibit no evidence of splitting as a result of the heating operation.

3.5 Performance:

The splice shall conform to the following requirements:

3.5.1 Sealing sleeve: The sealing sleeve component of the splice assembly shall conform to the dimensions of the applicable specification sheet and the copper mirror corrosion, and fungus resistance requirements of MIL-I-23053. For the copper mirror corrosion test, the sealing sleeve shall be noncorrosive when conditioned at 175 ±3°C for 16 ± .5 hours.

3.5.2 Splice assemblies: The splice assemblies shall conform to the following requirements when attached to each of the specified wire sizes with the applicable tooling specified (see 3.4).

3.5.2.1 Voltage drop: The millivolt drop across the splice shall not exceed the millivolt drop of an equivalent length of wire by more than the value specified in Table I (see 4.8.1).

3.5.2.2 Current cycling: The voltage drop shall be as specified in 3.5.2.1 (see 4.8.2).

3.5.2.3 Insulation resistance: The insulation resistance shall be not less than 5000 megohms (see 4.8.3).

3.5.2.4 Dielectric withstanding voltage: The splice shall show no evidence of damage, arcing, or breakdown and the leakage current shall be less than 2 milliamperes (see 4.8.4).

3.5.2.5 Tensile strength: The wire shall not break or separate from the splice to which it is attached, nor shall the splice break before the minimum tensile strength specified in Table I is reached (see 4.8.5).

TABLE I. Test requirements

Wire size (nominal)	Test current (amperes)	Tensile strength pounds (minimum)	Maximum voltage drop (mV) Millivolt drop of equivalent length of wire plus	
			Initial	after test
26	3	7	6	10
24	4.5	10	4	8
22	9	15	2	4
20	11	19	2	4
18	16	38	2	4
16	22	50	2	4
14	32	70	2	4
12	41	110	2	4

3.5.2.6 Environmental conditioning: Splice assemblies shall meet the applicable performance requirements listed, when tested in groups and sequences shown in Table III. Discoloration of the sealing sleeve materials during these tests shall not be cause for rejection (see 4.8.6).

3.5.2.7 Flammability: The splice shall be self-extinguishing within 5 seconds after removal from the flame (see 4.8.7).

3.5.2.8 Blocking: The individual splices in the test bundle shall not stick together (see 4.8.8).

3.6 Manufacturer's control drawing:

The splice manufacturer shall prepare a control drawing for the crimping dies used to crimp his Class 2 splice for the applicable tests. The control drawing shall specify the critical dimensions and motion of the dies and shall also specify the acceptance and in-service gaging requirements. The splice manufacturer shall certify to the equipment manufacturer that the equipment manufacturer's dies are in accordance with the control drawing and shall furnish to the equipment manufacturer the acceptance and in-service gaging requirements (see 4.5.2).

3.7 Identification of product:

The splice shall be color coded in accordance with the applicable specification sheet for identification purposes. Color coding shall be readily discernible after installation.

3.8 Workmanship:

The metal crimp splice shall be free from blistering, pitting, or peeling of plating, cracks, and other defects which may affect serviceability. Slight burr is permitted on parted surfaces. Integral inserts of the sealing sleeve, if used, shall be held within the sleeve with sufficient force to withstand dislodging during normal installation.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for inspection:

Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specifications where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Inspection equipment and facilities: Inspection equipment and facilities shall be established and maintained in accordance with MIL-C-45662.

4.2 Classification of inspection:

The examination and testing of splices shall be classified as follows:

(a) Component-materials inspection (see 4.3).
(b) Qualification inspection (see 4.5).
(c) Quality conformance inspection (see 4.6).

4.3 Component-materials inspection:

Component-materials inspection shall consist of verification that the component materials listed in Table II used in fabricating the splices are in accordance with the applicable specification or requirements prior to such fabrication.

TABLE II. Component-materials inspection

Component material	Requirement paragraph	Applicable specification or requirement
Metals	3.3.1	WW-T-775, ASTM B 75-68 or QQ-C-502.
Insulation materials	3.3.3	MIL-I-23053
Sealing inserts	3.3.4	As listed

4.4 Inspection conditions:

Unless otherwise specified herein, all inspections shall be made at ambient temperature, and humidity as specified in the general requirements of MIL-STD-202.

4.4.1 Assembly to conductors: The splices shall be attached on wire, conforming to MIL-W-22759/11 by the testing activity using the specified tooling (see 3.4). The specified number of sample units for testing shall be selected and divided between the minimum and the maximum wire size within the wire range listed on the applicable specification sheet for the size splice to be qualified. Unless otherwise specified, the leads shall be at least 12 inches in length.

4.4.2 Temperature stabilization: Voltage drop measurements shall be made after the temperature of the wire has stabilized. Temperature stabilization shall be determined by 3 consecutive readings within ±1°C at intervals of 3 minutes each. All tests performed after exposure to high or low temperature shall be conducted after splices have been conditioned for at least 1 hour at the inspection conditions specified (see 4.4).

4.4.3 Water bath: Unless otherwise specified in the applicable test method, a water bath containing 0.5% of an anionic wetting agent (MIL-D-26937) and 5.0% sodium chloride shall be used whenever immersion is specified. Free ends of lead shall be a minimum of 4 inches from top surface of water.

4.5 Qualification inspection:

Qualification inspection shall be performed at a laboratory designated by the Government (see 6.4), for Class 1 and Class 2 splices.

4.5.1 Samples: Samples for each part number shall be separately packaged and forwarded to the activity responsible for qualification as designated in the letter of authorization (see 6.4). Each sample shall be identified by marking each package with the following information:

Sample for qualification
Specification MIL-S-81824
Part number _____
SPLICE, ELECTRIC, PERMANENT, CRIMP STYLE, COPPER, INSULATED, ENVIRONMENT RESISTANT
Class _____
Name of supplier
Supplier's part number
Submitted (date) under authorization (reference letter authorizing the inspection)

4.5.2 Test reports: The supplier shall furnish the activity responsible for qualification with a certified test report, in duplicate, showing quantitative results for Class 1 or 2 splices as required by this specification and further certified in the forwarding letter by an officer of the supplier. The report shall designate the equivalent part number of the Class 1 splice which will replace the Class 2 splice submitted. The report shall also include the manufacturer's control drawings specified and the part numbers of the tool and die used to perform the qualification tests (see 3.6).

4.5.3 Sample: Twenty-seven splices for each size of each specification sheet (see 3.1) for which qualification is sought shall be submitted for qualification testing. Twenty-seven additional splices shall be submitted to the activity responsible for qualification for any additional testing deemed necessary. The sample size shall be the same for Class 1 and Class 2 splices.

4.5.4 Test routine: Sample units shall be subjected to the qualification inspection specified in Table III in the order shown. All sample units shall be subjected to the inspection of Group I. The sample shall then be divided into Groups II through VIII as shown in Table III and subjected to the inspection for their particular Group.

4.5.5 Failures: Any failure shall be cause for refusal to grant qualification.

4.5.6 Retention of qualification: To retain qualification, the supplier shall forward at 36 month intervals to the activity responsible for qualification a summary of the results of Group A and B tests, indicating as a minimum the number of lots which passed and the number which failed, and a summary of the results of Group C tests, including the number and type of any part failures. The summary shall include those tests performed during that 36 month period. If the summary of the test results indicates nonconformance with specification requirements, action shall be taken to remove the failing product from the Qualification Products List. Failure to submit the summary shall result in loss of qualification for that product. In addition to the periodic submission of inspection data, the supplier shall immediately notify the activity responsible for qualification at any time during the 36 month period that the inspection data indicates failure of the qualified product to meet the requirements of the specification.

4.6 Quality conformance inspection:

4.6.1 Inspection of product for delivery: Inspection of product for delivery shall consist of Group A inspection. Except as specified in 4.6.3.2.4, delivery of products which have passed Group A inspection shall not be delayed pending the results of Groups B and C inspection.

4.6.1.1 Inspection lot: An inspection lot, as far as practicable, shall consist of all splices of a single Class, size, and composition, manufactured under essentially the same conditions and offered for inspection at one time.

4.6.2 Group A inspection: Group A inspection shall consist of the examination and test specified in Table IV and shall be made on the same set of sample units, in the order shown. After the visual examination, the lot shall be divided and tensile strength tests performed on both the minimum and maximum gage wire within the accommodated size range.

4.6.2.1 Sampling plan: The procedure for continuous production sampling is to select a sampling plan from MIL-STD-105 for normal inspection, based on the specified Acceptance Quality Level (AQL) in Table IV. Classification of defects shall be as specified in MIL-STD-105 and Table VI. A manufacturer's normal quality control tests and production tests may be used to fulfill Group A inspection, provided they at least equal the quality required by Table IV.

4.6.2.2 Rejected lots: If an inspection lot is rejected, the supplier shall withdraw the lot and may then rework it to correct the defects or screen out the defective units. Such lots shall be kept separate from new lots and shall be reinspected. Such lots shall be reinspected using tightened inspection.

TABLE III. Qualification inspection

Examination or test	Requirement paragraph	Test method paragraph
Group I (27 uninstalled splices)		
Visual and dimensional examination	3.4 and 3.5.1	4.7.1 and 4.6.3.2.1*
Group II (3 uninstalled sealing sleeves)		
Unrestricted recovery	3.5.1	4.6.3.2.2*
Longitudinal change	3.5.1	4.6.4*
Group III (1 uninstalled sealing sleeve)		
Copper mirror corrosion	3.5.1	4.6.10.2*
Group IV (4 splice assemblies)		
Voltage drop (initial)	3.5.2.1	4.8.1
Current cycling	3.5.2.2	4.8.2
Voltage drop (after test)	3.5.2.1	4.8.1
Group V (4 splice assemblies)		
Environmental conditioning	3.5.2.6	4.8.6
Altitude immersion (3 cycles)	-	4.8.6.1
Insulation resistance	3.5.2.3	4.8.3
Immersion	-	4.8.6.2
Altitude immersion (1 cycle)	-	4.8.6.1
Insulation resistance	3.5.2.3	4.8.3
Temperature cycling	-	4.8.6.3
Altitude immersion (1 cycle)	-	4.8.6.1
Insulation resistance	3.5.2.3	4.8.3
Moisture resistance	-	4.8.6.4
Vibration	-	4.8.6.6
Altitude immersion (1 cycle)	-	4.8.6.1
Insulation resistance	3.5.2.3	4.8.3
Heat aging	-	4.8.6.7
Altitude immersion (1 cycle)	-	4.8.6.1
Insulation resistance	3.5.2.3	4.8.3
Dielectric withstanding voltage	3.5.2.4	4.8.4
Voltage drop (after test)	3.5.2.1	4.8.1
Tensile strength	3.5.2.5	4.8.5
Group VI (2 splice assemblies)		
Flammability	3.5.2.7	4.8.7
Group VII (6 splice assemblies)		
Fluid immersion	-	4.8.6.5
Altitude immersion (1 cycle)	-	4.8.6.1
Insulation resistance	3.5.2.3	4.8.3
Dielectric withstanding voltage	3.5.2.4	4.8.4
Group VIII (7 splice assemblies)		
Blocking	3.5.2.8	4.8.8

* Test method paragraphs of MIL-I-23053

TABLE IV. Group A inspection

Examination or test	Requirement paragraph	Method paragraph	AQL (% defective)		Sampling plan
			Major	Minor	
Visual and dimensional examination	3.4	4.7.1	1.0	4.0	S-4
Tensile strength	3.5.2.5	4.8.5	accept. #0		S-1

4.6.3 Periodic inspection: Periodic inspection shall consist of Groups B and C inspection.

4.6.3.1 Group B inspection: Group B inspection shall consist of the tests specified in Table V. Group B inspection shall be made on splices selected from inspection lots which have passed Group A inspection.

TABLE V. Group B inspection

Test	Requirement paragraph	Method paragraph
Altitude immersion (1 cycle)	3.5.2.6	4.8.6.1
Insulation resistance	3.5.2.3	4.8.3
Dielectric withstanding voltage	3.5.2.4	4.8.4
Voltage drop	3.5.2.1	4.8.1

4.6.3.1.1 Sampling plan: Fifteen splices shall be selected from those covered by a single specification sheet and having the same size, 6 months after the date of notification of qualification, and after each subsequent 6 month period. A manufacturer's normal quality control tests and production tests may be used to fulfill all or part of Group B inspection; however, all of the Group B inspection shall be completed as specified.

4.6.3.1.2 Failures: If 1 or more units fail to pass Group B inspection, the sample shall be considered to have failed.

4.6.3.1.3 Disposition of samples: Samples which have been subjected to Group B inspection shall not be delivered on the contract or order.

4.6.3.2 Group C inspection: Group C inspection shall consist of the examinations and tests specified in Table III in the order shown.

4.6.3.2.1 Sampling plan: As specified in 4.5.3, 27 sample units of each size and type shall be selected from production lots 36 months after the date of notification, and after each subsequent 36 month period.

4.6.3.2.2 Failures: If 1 or more units fail to pass Group C inspection, the sample shall be considered to have failed.

4.6.3.2.3 Disposition of samples: Splices, which have been subjected to Group C inspection, shall not be delivered on the contract or order.

4.6.3.2.4 Noncompliance: If a sample fails to pass Group B or Group C inspection, the supplier shall take corrective action on the materials or process, or both, as warranted and on all units of product which are considered subject to the same failure. Acceptance of the product shall be discontinued until corrective action, acceptable to the Government, has been taken. After the corrective action has been taken, Group B or Group C inspection, as applicable, shall be repeated on additional units (all inspection, or the inspection which the original sample failed, at the option of the Government). Group A inspection may be reinstituted in the event of failure of Group B inspection. Final acceptance shall be withheld until the Group B or Group C reinspection, as applicable, has shown that the corrective action was successful. In the event of failure after reinspection, information concerning the failure and corrective action taken shall be furnished to the cognizant inspection activity and the qualifying activity.

4.6.4 Inspection of preparation for delivery: The sampling and inspection of the preservation-packaging and interior package marking shall be in accordance with the group A and B quality conformance inspection requirements of MIL-P-116. The sampling and inspection of the packing and marking for shipment and storage shall be in accordance with the quality assurance provisions of the applicable container specification and the marking requirements of MIL-STD-129.

4.7 Examinations:

4.7.1 Visual and dimensional examination: Splices shall be examined to verify that the materials, design, construction, and physical dimensions are in accordance with this specification and the applicable specification sheet. Dimensions shall conform to those specified on the manufacturer's drawing for Class 2, and to the applicable specification sheet for Class 1. Classification of defects for visual and dimensional examination shall be as specified in Table VI.

TABLE VI. Classification of defects

Examination of product	Major	Minor
Dimensions		
Overall length of metal crimp splice	X	
Outside diameter of metal crimp splice	X	
Inside diameter of sealing sleeve	X	
Location of sealing material	X	
All other dimensions		X
Materials	X	
Workmanship and marking		
Missing components	X	
All other criteria		X

4.8 Test methods:

4.8.1 Voltage drop: Splices shall be tested as follows:

(a) Test points: Measurements shall be made by puncturing the insulation of the current carrying conductor on each end of the splice 1/16 inch back from the ends of the sealing sleeve. The distance between the 2 test points shall be noted. Measurement of the current carrying conductor shall be made by puncturing the conductor insulation the same distance between test points as that noted for the splice measurement. The millivolt drop of the equivalent length of wire may be determined by averaging 4 readings taken on 10 inch lengths of wire selected at random throughout the supply of wire to be used for subsequent tests.

(b) Measurements: The millivolt drop through the crimp termination and the current carrying conductor shall be measured while the specified test current (see Table I) is being applied, and after the temperature of the wire has stabilized (see 4.4.2).

4.8.2 Current cycling: Test samples attached to 3 foot lengths of the largest accommodated wire shall be subjected to 50 current cycles. Each cycle shall consist of 30 minutes at 125% of the test current specified in Table I, followed by 15 minutes at no load. Voltage drops shall be measured at test current specified in Table I after the test assembly has returned to room temperature.

4.8.3 Insulation resistance: Splices shall be tested in accordance with Method 302 of MIL-STD-202. The following details shall apply:

(a) Test condition: A.
(b) Conditioning of splices: Splices shall be immersed as specified for at least 1 hour (see 4.4.3).
(c) Points of measurement: Between splice leads and water bath.
(d) Electrification time: 1 minute.

4.8.4 Dielectric withstanding voltage: Splices shall be tested in accordance with Method 301 of MIL-STD-202. The following details shall apply:

(a) Conditioning of splices: Splices shall be immersed as specified (see 4.4.3).
(b) Magnitude and nature of potential: 2,500 volts (RMS).
(c) Points of measurement: Between splice leads and water bath.

4.8.5 Tensile strength: The splice shall be placed in a standard tensile-testing machine so that the splice is centered between, and at least 3 inches from the jaws. Sufficient force shall be applied to pull the wire out of the splice or break the wire or the splice. The travel speed of the head shall be 1 inch per minute. The clamping surfaces of the jaws may be serrated to provide sufficient force.

4.8.6 Environmental conditioning: The splices shall be exposed to each of the conditions in the sequence shown in Table III.

4.8.6.1 Altitude immersion: The splices, immersed as specified shall be placed in a suitable chamber, the free ends shall be within the chamber and shall not be sealed (see 4.4.3). The chamber pressure shall be reduced to 75,000 ft. (26.78 mm of Hg) and maintained for 30 minutes. The chamber shall then be returned to ambient pressure (see 4.4). This shall constitute 1 cycle. A total of 3 cycles shall be run. The insulation resistance shall be measured after the third cycle.

4.8.6.2 Immersion: The splices shall be tested in accordance with Method 104, test condition C, of MIL-STD-202.

4.8.6.3 Temperature cycling: The splices shall be tested in accordance with Method 102, test condition C, of MIL-STD-202 except that the temperature for step 3 shall be 150 +3-0°C.

4.8.6.4 Moisture resistance: The splices shall be tested in accordance with Method 106 of MIL-STD-202 except subcycle 7b shall not be required.

4.8.6.5 Fluid immersion: The splices shall be immersed in the fluids specified in Table VII at the temperature and time period listed. A separate splice shall be immersed in each of the required fluids. All fluid immersion samples shall be subjected to the subsequent tests.

4.8.6.6 Vibration: Splices shall have terminal lugs conforming to MIL-T-7928 attached to the ends of the leads. One terminal shall be rigidly mounted to a test fixture, 1 inch in height, securely fastened to the vibrating platform. The opposite end of the assembly shall be clamped to a stationary support so that the center of the splice is 6 inches from the vibrating platform and all slack or tension is removed from the wire. The splices shall be vibrated in accordance with Method 201 of MIL-STD-202 for 18 hours on each of 2 axes mutually perpendicular to each other and to the axis of the wire.