

FED. SUPPLY CLASS

5940

1. SCOPE

1.1 This specification covers conductor splices and shield terminations which reduce to predetermined diameters upon the controlled application of heat, providing uniform, insulated, soldered connections.

1.2 Classification

1.2.1 The splices shall be as specified in the applicable NAS Part Standard Drawing.

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issues in effect on the date of invitation for bid, form a part of this specification to the extent specified herein.

SPECIFICATIONS

Federal

QQ-S-571 Solder, Tin Alloy; Lead-Tin Alloy, and Lead Alloy

P-D-410 Dishwashing Compound, Hand, (Synthetic Detergent, Solid and Liquid Form)

SAE International

AS83519 Splice, Shield Termination, Solder Style, Insulated, Heat Shrinkable, Environment Resistant, General Specification For

Copies can be obtained from SAE International, 400 Commonwealth Dr., Warrendale, PA 15096-0001. www.sae.org

IPC Association Connecting Electronics Industries

J-STD-004 Requirements for Soldering Fluxes

J-STD-005 Requirements for Soldering Pastes

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

Copies can be obtained from IPC, 3000 Lakeside Drive, Suite 309 S, Bannockburn, IL 60015.

STANDARDS

Military

MIL-STD-129 Marking for Shipment and Storage

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

Copies can be obtained from the Department of Defense Single Stock Point (DODSSP). <http://dodssp.daps.dla.mil>

Aerospace Industries Association

NAS1744 Splice, Conductor, Solder Style, Hot Air or Infrared, Shrinkable, Insulated, Immersion Resistant

NAS1745 Splice, Shield Termination, Solder Style, Hot Air Shrinkable, Insulated, Moisture Resistant

NAS1746 Splice, Shield Termination, Solder Style, Infrared, Shrinkable, Insulated, Moisture Resistant

Copies can be obtained from the Aerospace Industries Association, 1000 Wilson Blvd., Suite 1700, Arlington, VA 22209. www.aia-aerospace.org

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THIRD ANGLE PROJECTION	CUSTODIAN NATIONAL AEROSPACE STANDARDS COMMITTEE	REVISION 5
PROCUREMENT SPECIFICATION NONE	TITLE SPLICE, CONDUCTOR AND SHIELD TERMINATION, SOLDER STYLE, HEAT SHRINKABLE, INSULATED, SPECIFICATION FOR	CLASSIFICATION SPECIFICATION NAS1747 SHEET 1 OF 10

AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC.
1000 WILSON BLVD.
ARLINGTON, VA 22209

THIS DRAWING SUPERSEDES ALL ANTECEDENT STANDARD DRAWINGS FOR THE SAME PRODUCT AND SHALL BECOME EFFECTIVE NO LATER THAN SIX MONTHS FROM THE LAST REVISION DATE.

FORM 09-01

REVISION DATE: MAY 31, 2012

ISSUE DATE: JANUARY 1969

American Society for Quality

ANSI/ASQ Z1.4 Sampling Procedures and Tables for Inspection by Attributes

Copies can be obtained from the American Society for Quality, 600 North Plankinton Ave., Milwaukee, WI 53203.

www.asq.org

3. REQUIREMENTS

3.1 Part Standard Drawings. The requirements for individual conductor splices under this specification shall be as specified herein and in accordance with the following Part Standard Drawings:

NAS1744	Splice, Conductor, Solder Style, Hot Air or Infrared, Shrinkable, Insulated, Immersion Resistant
NAS1745	Splice, Shield Termination, Solder Style, Hot Air Shrinkable, Insulated, Moisture Resistant
NAS1746	Splice, Shield Termination, Solder Style, Infrared, Shrinkable, Insulated, Moisture Resistant

3.2 Qualification. The splices furnished under this specification shall be products which have passed the qualification tests specified herein. The splice manufacturer shall be responsible for conducting the tests. Results of these tests shall be submitted upon application for qualification.

3.3 Materials. All materials used in the manufacture of splices shall be of the quality and form best suited for the purpose intended. Materials shall conform to the following requirements.

3.3.1 Solder Ring. The solder ring shall be as specified in the applicable Part Standard Drawing.

3.3.2 Flux. The flux shall be as specified in the applicable Part Standard Drawing.

3.3.2.1 Thermal Indicator. The flux, when specified in the applicable Part Standard Drawing, shall contain a thermochromic material which, by change of color, will give an indication that sufficient heat has been applied to cause soldering to occur under normal circumstances.

3.3.3 Shrinkable Sleeve. The sleeve shall be transparent, heat-shrinkable, radiation cross-linked polyvinylidene fluoride (or equivalent), homogeneous and essentially free from flaws, defects, pinholes, bubbles, seams, cracks and inclusions.

3.3.4 Sealing Ring. The rings shall be thermally stabilized thermoplastic (or equivalent), homogeneous and essentially free from flaws, defects, pinholes, bubbles, seams, cracks and inclusions.

3.4 Construction. The splices shall be heat-shrinkable insulation sleeves containing a preformed ring of fluxed solder and meltable thermoplastic rings to provide sealing and strain relief of the solder joint. The dimensions of splices shall be as specified in the applicable Part Standard Drawing.

3.4.1 Wire Acceptance. Each size device shall be designed for attachment to the cable diameter range specified on the applicable Part Standard Drawing.

3.4.2 Insulation. The insulation sleeve shall exhibit no evidence of splitting as a result of the heating operation. The termination shall extend at least .125 inches beyond the stripped section of the cable after installation.

3.4.3 Squirting. The solder shall not squirt or exude out of the insulation sleeve as a result of the heating operation. Wicking, the flow of solder along the shield or conductors shall not extend more than .125 inches beyond the length of the insulation sleeve.

3.4.4 Fillet Length. A solder fillet shall be clearly visible along at least one side of the ground lead. The length of the fillets shall be at least .150 inches.

3.4.5 Transparency of Insulation. The insulation sleeve shall remain transparent after the heating operation to permit visual inspection of the solder joint.

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- 3.4.6 **Thermal Indicator.** The specified color change of the thermal indicator shall be readily discernible during and after the heating operation. The thermal indicator is an installation aid and evidence of the color change shall not be used as the sole criterion for acceptance of terminated assemblies.
- 3.5 **Performance.** Splices shall conform to the requirements specified herein and the applicable Part Standard Drawing when tested in accordance with the procedures of 4.5.
- 3.5.2 **Sleeve Shrinkage.** The sleeve shall remain cylindrical and shall have an outside diameter as specified in Table II when tested in accordance with 4.5.1.
- 3.5.3 **Longitudinal Change.** The splices shall not change in length more than 10 percent when tested in accordance with 4.5.2.
- 3.6 **Workmanship.** Splices shall be of uniform quality and shall be finished in a workmanlike manner in accordance with high grade electrical manufacturing practices.
- 3.7 **Identification.** NAS1744 splices shall be marked with the applicable part standard number. Single digit dash numbers shall have a zero (0) added before the dash number.

In addition, all splices shall be color coded per the applicable Part Standard Drawing. See Table IV for complete color coding identification of the splices.

4. QUALITY ASSURANCE PROVISIONS

- 4.1 **Responsibility for Inspection.** The supplier is responsible for the performance of all inspection requirements specified herein. Except as otherwise specified, the supplier may utilize his own or any other inspection facilities and service acceptable to the buyer. Inspection records of the examination and tests shall be kept complete and available to the buyer as specified in the contract or order. The buyer reserves the right to perform any of the inspections set forth in this specification where such inspections are deemed necessary to assure that the splices conform to prescribed requirements.
- 4.2 **Qualification Test.** Qualification test shall consist of all of the tests of this specification.
- 4.2.1 **Qualification Sample.** The qualification sample shall consist of 25 splices of the type and size for which qualification is desired. The 25 sleeves shall be divided into eight groups of test specimens as shown in Table III. Each group of specimens shall be subjected to the series of tests indicated in the applicable column of Table III and the tests shall be performed, in the order of listing in Table III.
- 4.2.2 **Qualification Test Report.** The certified qualification test report shall be forwarded to the activity responsible for qualifications, plainly identified with the following information.

Qualification test report
SPLICE, CONDUCTOR/SHIELD TERMINATION, HEAT SHRINKABLE, SOLDER STYLE, INSULATED
NAS part number
Name of manufacturer
Manufacturer's part number

- 4.3 **Acceptance Test.** Acceptance test shall consist of the examinations and tests listed in Table I. Acceptance inspection shall be performed on every lot of splices procured under this specification. A lot shall consist of all splices of the same size and type made under essentially the same conditions and presented for inspection at the same time.

TABLE I – ACCEPTANCE TEST

PROPERTY OR TEST	REQUIREMENT	TEST METHOD
Construction	3.4	4.4
Workmanship	3.6	4.4

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