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Specification	**RT-1404**
This Issue:	ISSUE 9
Date:	April 20, 2000
Replaces:	ISSUE 8

SolderSleeve Insulated Electrical Termination Devices

1.0 INTRODUCTION

1.1 Scope

This specification covers the design, performance and qualification requirements for Raychem SolderSleeve electrical termination devices.

1.2 Description.

Raychem SolderSleeve termination devices covered by this specification consist primarily of heat-shrinkable insulating sleeving and one or more solder preforms. These devices reduce to predetermined diameters upon the proper application of heat, and form insulated, soldered connections between wire or cable conductors. These devices are heat-shrinkable solder devices as described in ANSI-J-STD-001.

1.3 Classification.

SolderSleeve devices shall be as specified on the applicable Raychem Specification Control Drawing (SCD).

1.4 Temperature Rating

The maximum continuous operating temperature for SolderSleeve devices shall be as specified on the applicable Raychem specification control drawing.

2.0 APPLICABLE DOCUMENTS

2.1 Issues of Documents

The latest issue of those specifications and standards referenced below or on the applicable Raychem specification control drawing shall form part of this document to the extent specified.

2.2 SPECIFICATIONS

Military

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
MIL-A-8243	Anti-Icing and Deicing/Defrosting Fluid
MIL-L-23699	Lubricating Oil, Aircraft Turboprop and Turboshaft Engines, Synthetic Base
MIL-C-25769	Cleaning Compound, Aircraft Surface, Alkaline, Water Base
MIL-S-81824	Splices, Electric, Permanent, Crimp Style, Copper, Insulated, Environment Resistant
MIL-S-83519	Shield Termination, Solder Style, Insulated, Heat- Shrinkable, Environment Resistant, General Specification for
MIL-STD-202	Test Methods for Electronic Component Parts
MIL-STD-45662	Calibration System Requirements

(Copies of Department of Defense documents may be obtained from the Standardization Document Order Desk, 700 Robbins Ave., Building 4, Section D, Philadelphia, PA 19111-5094.)

Other

ANSI-J-STD-001B	Requirements for Soldered Electrical and Electronic Assemblies
ANSI/ASQC Z1.4-1993	Sampling Procedures and Tables for Inspection by Attributes

3.0 REQUIREMENTS

3.1 Detail Requirements

Detail requirements or exceptions applicable to a particular style of SolderSleeve device shall be as specified on the applicable Raychem specification control drawing. In the event of any conflict between requirements of this specification and the specification control drawing, the latter shall take precedence.

3.2 Classification of Requirements

The requirements for SolderSleeve devices are classified herein as follows:

Requirement	Paragraph
Qualification	3.3
Materials	3.4
Design and Construction	3.5
Performance	3.6
Product Identification	3.7
Workmanship	3.8

3.3 Qualification

SolderSleeve devices furnished under this specification shall be products which are qualified to this specification by test or by similarity of design and materials.

3.4 Materials

The materials used in the manufacture of SolderSleeve devices shall be as specified on the applicable specification control drawing and shall conform to the requirements specified herein.

3.4.1 Insulation Sleeve. Insulation sleeves shall consist of heat- shrinkable tubing of the type and color specified on the applicable specification control drawing.

3.4.2 Solder Preform with Flux. Prefluxed solder preforms shall consist of the solder and flux types specified on the applicable specification control drawing.

3.4.3 Meltable Inserts. Meltable inserts shall consist of thermoplastic material as defined on the applicable specification control drawing.

3.4.4 Preinstalled Leads. Preinstalled leads shall be as defined on the applicable specification control drawing.

3.4.5 Thermal Indicator. Thermal indicating material shall provide a visual indication that sufficient heat has been applied to cause soldering under normal circumstances. The thermal indicator, when present, shall be in accordance with 3.4.5.1 or 3.4.5.2, as specified on the applicable specification control drawing.

3.4.5.1 Color Change Type. Color change type (thermochromic) thermal indicator material shall indicate sufficient heating by loss of color.

3.4.5.2 Thermally Fusible Ring Type. Thermal indicator consisting of a ring of fusible material shall indicate sufficient heating by melting and flowing.

3.5 Design and Construction.

SolderSleeve devices shall conform to the design, construction, and physical dimensions specified on the applicable specification control drawing.

3.6 Performance.
SolderSleeve devices shall conform to the requirements specified herein and on the applicable specification control drawing. Unless otherwise specified, room temperature shall be 25°C ± 5°C. Values given as "after conditioning" refer to requirements after any of the environmental exposures of Table I.

3.6.1 Voltage Drop. When installed shield terminations are tested as specified in 4.5.3.1, the voltage drop across the shield termination shall not exceed that of an equivalent length of the ground lead by more than 1.0 millivolt (before conditioning) and 1.5 millivolts (after conditioning). When installed conductor splices are tested in accordance with 4.5.3.3, the voltage drop shall not exceed that of an equivalent length of wire by more than 2.0 millivolts (before conditioning) and 2.5 millivolts (after conditioning).

3.6.2 Tensile Strength. When installed SolderSleeve devices are tested in accordance with 4.5.4, the tensile strength of the soldered connection shall be not less than that of the weakest soldered member or 110 pounds, whichever is less.

3.6.3 Dielectric Withstanding Voltage (SolderSleeve Device). When installed SolderSleeve devices are tested in accordance with 4.5.5, the insulation shall withstand the 2000 Vrms, 60 Hz potential for 60 seconds with no evidence of arcing or breakdown. Leakage current shall be 2.5 milliamperes maximum.

3.6.4 Dielectric Withstanding Voltage (Cable). When shielded or coaxial cables terminated with SolderSleeve devices are tested in accordance with 4.5.6, the cable primary insulation or dielectric shall withstand the voltage specified for the cable used with no evidence of arcing or breakdown.

3.6.5 Salt Spray (Corrosion). When installed SolderSleeve devices are subjected to 48-hour salt spray testing in accordance with 4.5.7, there shall be no evidence of corrosion, and the termination shall meet the voltage drop and tensile strength requirements specified in 3.6.1 and 3.6.2.

3.6.6 Vibration. When installed SolderSleeve devices are subjected to 15 *g* peak sine vibration in accordance with 4.5.8, there shall be no evidence of cracking, breaking or loosening of the SolderSleeve termination, and the termination shall meet the voltage drop and tensile strength requirements specified in 3.6.1 and 3.6.2.

3.6.7 Thermal Shock. When installed SolderSleeve devices are subjected to five thermal shock cycles between the maximum rated temperature and minus 65°C in accordance with 4.5.9, there shall be no evidence of damage to the SolderSleeve termination, and the termination shall meet the voltage drop and tensile strength requirements specified in 3.6.1 and 3.6.2. Discoloration of the SolderSleeve device insulation shall not be cause for rejection.

3.6.8 Heat Aging. When installed SolderSleeve devices are subjected to 96- hour heat aging at the maximum rated temperature in accordance with 4.5.10, the SolderSleeve terminations shall meet the subsequent performance requirements of Table I. Discoloration of the SolderSleeve device insulation shall not be cause for rejection.

3.6.9 Fluid Resistance. When installed SolderSleeve devices are exposed to any of the six test fluids in accordance with 4.5.11, the SolderSleeve terminations shall meet the dielectric withstanding voltage requirements specified in 3.6.3.

3.6.10 Flammability. (Applicable only to SolderSleeve devices having fluorocarbon-based insulation sleeves) When installed, horizontally suspended SolderSleeve devices are exposed to flame for 20 seconds in accordance with 4.5.12, the SolderSleeve insulation shall be self-extinguishing within 5 seconds after removal from flame.

3.6.11 Altitude Immersion. (Applicable only to SolderSleeve devices identified as "Environment Resistant" on the applicable Raychem specification control drawing) When installed SolderSleeve devices are subjected to three altitude immersion cycles between sea level and 70,000-foot altitude in accordance with 4.5.13, the insulation resistance shall be not less than 5000 megohms and the leakage current shall be not greater than 2.5 milliamperes.

3.6.12 Thermal Indicator Change. (Applicable only to SolderSleeve devices having thermal indicator) When SolderSleeve devices are installed and tested in accordance with 4.5.14, the applicable thermal indication for underheating shall be visible in underheated terminations, and the solder joint area shall be acceptable in accordance with MIL-S-83519 in terminations in which the thermal indicator has undergone the applicable transition to indicate completion of heating.

3.6.13 Copper Mirror Corrosion. When SolderSleeve devices are tested for 16 hours at 121°C in accordance with 4.5.15, copper removal shall not exceed 10 percent of the area of the mirror above the bottom 0.063 inch.

3.7 Product Identification.
Marking of SolderSleeve devices shall be in accordance with the applicable specification control drawing.

3.8 Workmanship.
SolderSleeve devices shall be uniform in quality and shall be free from defects detrimental to life, serviceability, or performance.

4.0 QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for performing the inspection tests specified herein. The supplier may utilize his own facilities or any suitable testing facility. Inspection records of the tests shall be kept complete and available to the buyer as specified in the contract or order.

4.1.1 Inspection Equipment and Facilities. Test and measuring equipment and inspection facilities of sufficient accuracy, quality, and quantity to permit performance of the required inspection shall be established and maintained by the supplier. A calibration system to control the accuracy of the measuring and test equipment shall be maintained in accordance with MIL-STD-45662.

4..2 Classification of Inspections. The examination and testing of SolderSleeve devices covered by this specification shall be classified as follows:
a. Qualification inspection (See Paragraph 4.3)
b. Quality conformance inspection (See Paragraph 4.4)

4.3 Qualification Inspection.
Qualification inspection shall consist of the tests in Table I in the order shown. All sample units shall be subjected to the inspection of Group A. The samples shall then be divided into Groups B through J, as shown in Table I, and subjected to the inspection for the particular groups.

4.3.1 Test Samples for Qualification Inspection. Test samples submitted for qualification inspection shall be produced using equipment and procedures normally used in production. Test samples shall be of the types listed in Table I.

4.3.2 Failures. One or more failures of the tests listed in Table I shall be cause for failure of qualification of the parts under test, with the exception of visual examination, where occurrence of one major defect or two minor defects shall be cause for failure of qualification. Major and minor defects shall be as defined in ANSI/ASQC Z1.4-1993.

4.3.3 Qualification Report. Qualification shall be documented in a report which shall be available to buyers.

4.3.4 Retention of Qualification. Qualification may remain in effect as long as the component design and manufacturing procedures remain essentially unchanged, and components meet quality conformance requirements.

4.3.4.1 Applicability of Routine Testing. Testing performed on production parts may be cited in support of continued qualification.

4.3.4.2 Applicability of Usage Experience. In-service performance of components and documented testing performed on components by users may be cited in support of continued qualification.

4.4 Quality Conformance Inspection.

4.4.1 Component Materials Inspection. Component materials inspection shall consist of verification that the component materials are in accordance with applicable specifications and requirements.

4.4.2 Inspection of Product for Delivery. Inspection of product for delivery shall consist of visual and dimensional examination in accordance with Paragraph 4.5.2. In-process examination may be used for quality conformance inspection. Statistical process control (SPC) may be substituted for lot acceptance inspection.

4.4.2.1 Inspection Lot. An inspection lot, as far as practicable, shall consist of all SolderSleeve devices of a single class, size, and composition, manufactured under essentially the same conditions and offered for inspection at one time.

4.4.2.2 Sampling Plan. Quality conformance sampling shall be in accordance with MIL-STD-105 for normal inspection. The inspection level shall be level I, and the acceptable quality level (AQL) shall be 4.0 for all defects.

4.4.2.3 Nonconforming Lots. Disposition of nonconforming lots shall be in accordance with ANSI/ASQC Z1.4-1993.

TABLE I. QUALIFICATION INSPECTION

	REQUIREMENT PARAGRAPH	METHOD PARAGRAPH
Group A (30 or 36[3] uninstalled devices)		
Visual and dimensional exam. as supplied	3.1, 3.4, 3.5,3.7, 3.8	4.5.2.1
Group B (3 uninstalled devices)		
Dimensional exam. after unrestricted recovery	3.5	4.5.2.2
Group C (4 installed devices)		
Voltage Drop	3.6.1	4.5.3
Thermal shock	3.6.7	4.5.9
Voltage Drop	3.6.1	4.5.3
Tensile Strength	3.6.2	4.5.4
Group D (4 installed devices)		
Salt spray (corrosion)	3.6.5	4.5.7
Voltage Drop	3.6.1	4.5.3
Tensile Strength	3.6.2	4.5.4
Group E (4 installed devices)		
Vibration	3.6.6	4.5.8
Voltage Drop	3.6.1	4.5.3
Tensile Strength	3.6.2	4.5.4
Group F (4 installed devices)		
Altitude Immersion[1]	3.6.11	4.5.13
Dielectric Withstanding Voltage (Cable)	3.6.4	4.5.6
Heat Aging	3.6.8	4.5.10
Dielectric Withstanding Voltage (Device)	3.6.3	4.5.5
Voltage Drop	3.6.1	4.5.3
Tensile Strength	3.6.2	4.5.4
Group G (6 installed devices)		
Fluid Resistance	3.6.9	4.5.11
Group H (3 installed devices)		
Flammability[2]	3.6.10	4.5.12
Group J (2 uninstalled devices)		
Copper mirror corrosion	3.6.13	4.5.15
Group K (6 uninstalled devices)[3]		
Thermal Indicator Change	3.6.12	4.5.14

Notes to Table I:
1 Applicable only to immersion resistant devices.
2 Applicable only to devices with fluorocarbon-based insulation sleeves.
3 Applicable only to devices with thermal indicator

4.5 Test Procedures.

4.5.1 Test Conditions. Unless otherwise specified herein, all inspection shall be made at ambient temperature, pressure, and humidity as specified in general requirements of MIL-STD-202.

4.5.1.1 Specimen Assembly. When installed SolderSleeve devices are specified for testing, the devices shall be installed in the mode of their primary function as specified on the applicable Raychem specification control drawing (e.g: shield termination, coaxial cable termination, or primary conductor splice).

4.5.1.1.1 Shield Terminations. SolderSleeve shield terminators shall be installed using the specified assembly procedure in the center, unless otherwise specified, of a 12-inch length of cable meeting the dimensional and material requirements specified in the applicable Raychem specification control drawing. Ground leads shall have the same plating and insulation as the cable and shall be at least 6 inches long.

4.5.1.1.2 Coaxial Cable Terminations. SolderSleeve coaxial cable terminators shall be installed using the specified assembly technique on a coaxial cable meeting the dimensional and material requirements specified on the applicable Raychem specification control drawing.

4.5.1.1.3 Conductor Splices. The test specimens shall be 1 to 1 in-line splices between wires of the same gauge size and material, assembled in accordance with the specified assembly technique. Wires shall meet the dimensional and material requirements of the applicable Raychem specification control drawing.

4.5.1.2 Temperature Stabilization. Voltage drop measurements shall be made after the temperature of the wire has stabilized. All tests performed after exposure to high or low temperature shall be conducted after assemblies have been conditioned for at least 1 hour at the inspection conditions specified in 4.5.1.

4.5.2 Visual and Dimensional Examination.

4.5.2.1 Visual and Dimensional Examination As Supplied (see 3.1, 3.4, 3.5, 3.7, 3.8). Devices shall be visually examined, and the as-supplied dimensions shall be measured in accordance with the applicable Raychem specification control drawing.

4.5.2.2 Dimensional Examination After Unrestricted Shrinkage (see 3.5). Devices shall be heated to cause unrestricted shrinkage in accordance with MIL-S-83519, and the after-shrinkage dimensions shall be measured in accordance with the applicable Raychem specification control drawing. Longitudinal change after shrinkage shall be calculated in accordance with MIL-S-83519.

4.5.3 Voltage Drop (see 3.6.1).

4.5.3.1 Voltage Drop of Shield Terminator. The voltage drop of the SolderSleeve termination shall be measured at a test current of 1 ampere dc, from a point on the ground lead immediately adjacent to the insulation sleeve to a point on the cable shield immediately adjacent to the opposite end of the insulation sleeve. The voltage drop shall then be measured across a length of ground lead equal to the distance between the points of measurement across the SolderSleeve terminator. The difference between the two measurements shall be recorded as the voltage drop result.

4.5.3.2 Voltage Drop of Coaxial Cable Terminators. The voltage drop across the shield termination of coaxial cable terminators shall be measured as described in 4.5.3.1. The voltage drop across the center conductor termination of coaxial cable terminators shall be measured as described in 4.5.3.3, except that the point of measurement on the cable shall be approximately 1/4 inch from the end of the coaxial cable terminator.

4.5.3.3 Voltage Drop of Conductor Splices. The voltage drop across the SolderSleeve splice shall be measured between points l/16 inch outside the ends of the insulation sleeve at both ends of the splice. The distance between the two points shall be noted. Test current shall be in accordance with Table I of MIL-S-81824. The voltage drop shall then be measured across a length of conductor equal to the distance between the points of measurement across the SolderSleeve splice. The difference between the two measurements shall be recorded as the voltage drop result.

4.5.4 Tensile Strength (see 3.6.2). The specimen shall be placed in a standard tensile testing machine with separate members of the connection gripped by jaws at opposite ends of the SolderSleeve device. Sufficient force shall be applied to cause tensile failure. The travel speed of the head shall be 1 inch per minute. The clamping surfaces of the jaws may be serrated to provide sufficient gripping force.

4.5.5 Dielectric Withstanding Voltage (SolderSleeve Device) (see 3.6.3). A piece of metallic foil between l/8 and 1/4 inch narrower than the length of the installed SolderSleeve device shall be wrapped tightly around the middle of the SolderSleeve device. One lead from the high voltage test set shall be attached to the foil, and one lead shall be attached to the conductor being spliced or terminated. A 60 Hz test voltage shall be applied and increased at a rate of 500 volts per second until a value of 2000 Vrms is attained. This voltage shall be applied for 1 minute.

4.5.6 Dielectric Withstanding Voltage (Cable) (see 3.6.4). (Applicable only to shielded wire and coaxial cable terminations) A test voltage equal to that specified for the cable shall be applied for 1 minute between the primary conductor and the ground lead. The rate of voltage application shall be 500 volts per second.

4.5.7 Salt Spray (Corrosion) (see 3.6.5). Installed SolderSleeve devices shall be conditioned in accordance with MIL-STD-202, Method 101, test condition A. After conditioning, the voltage drop and tensile strength shall be measured in accordance with 4.5.3 and 4.5.4.

4.5.8 Vibration (see 3.6.6). Specimens with installed SolderSleeve devices shall have terminal lugs conforming to MIL-T-7928 attached to all conductors. The conductors leading from one end of the SolderSleeve device shall be rigidly mounted to a test fixture 1 inch in height and securely fastened to the vibrating platform. The conductors leading from the opposite end of the devices shall be secured to a stationary support so that the center of the specimen is 6 inches from the vibrating platform and the tension on the wire allows between l/8 and l/4 inch of movement perpendicular to the axis of the specimen. The specimens shall be vibrated in accordance with MIL-STD-202, Method 204, test condition B. One axis shall be parallel to the specimen axis. After conditioning, the voltage drop and tensile strength shall be measured in accordance with 4.5.3 and 4.5.4 respectively.

4.5.9 Thermal Shock (see 3.6.7). Installed SolderSleeve devices shall be conditioned in accordance with MIL-STD-202, Method 107, test condition F, except that the maximum temperature extreme shall be the maximum continuous operating temperature of the SolderSleeve device or wire, whichever is lower. After conditioning, the voltage drop and tensile strength shall be measured in accordance with 4.5.3 and 4.5.4.

4.5.10 Heat Aging (see 3.6.8). Installed SolderSleeve devices shall be conditioned in an oven at the maximum operating temperature of the SolderSleeve device or wire, whichever is lower. The duration of the test shall be 96 hours. Specimens shall be placed in the oven horizontally. After conditioning, voltage drop, dielectric withstanding voltage, and tensile strength tests shall be performed in accordance with 4.5.3, 4.5.5, and 4.5.4.

4.5.11 Fluid Resistance (see 3.6.9). Installed SolderSleeve devices shall be immersed in test fluids as specified in Table II. A separate specimen shall be immersed in each fluid. After the fluid immersion, dielectric withstanding voltage testing shall be performed in accordance with 4.5.5.

4.5.12 Flammability (see 3.6.10). Installed devices shall be suspended horizontally in a draft-free enclosure. A Bunsen Burner with a 3/8 inch bore, 1/4 inch inlet and 4 inch length shall be connected to a natural gas source and adjusted to produce a 2 inch high flame with a 3/4 inch inner cone. The top of this inner cone shall be applied to the center of the SolderSleeve device under test. After 20 seconds, the flame shall be removed, and the length of time required for the flame to extinguish shall be recorded.

4.5.13 Altitude Immersion (see 3.6.11). Installed devices shall be immersed in a water bath containing 0.5 percent of an anionic wetting agent so that the free ends of the leads are a minimum of 2 inches above the top surface of the water. After immersion for at least 30 minutes, insulation resistance shall be measured between the conductor and the water bath in accordance with MIL-STD- 202, Method 302, test condition A, with 1 minute electrification time.

Following the insulation resistance measurement, the immersed specimens shall be placed in a vacuum chamber. The vacuum chamber shall be evacuated to a pressure of 1 inch of mercury, maintained at this pressure for 30 minutes, and returned to ambient pressure. This shall constitute one cycle. A total of three cycles shall be performed. After the third cycle and while the specimen is still immersed, insulation resistance shall be measured as described above, and the immersed specimen shall be subjected to dielectric withstanding voltage testing in accordance with 4.5.5, using the water bath as the outer electrode.

TABLE II. FLUID IMMERSION

SPECIMEN NUMBER	TEST FLUID SPECIFICATION	TEST CONDITION
1 2	MIL-L-7808 MIL-L-23699	a) Immerse for 5 minutes at 120 ± 3°C or at the maximum operating temperature of the SolderSleeve device or wire, whichever is lower. (b) Remove and allow to drain for 1 hour at 23 ± 5°C (c) Place in oven at rated temperature of device or wire, whichever is lower, for 22 hours, (d) Repeat a, b, and c for 7 cycles
3	MIL-H-5606	Same as MIL-L-7808, except 85 ± 3°C for step (a) and 104 ± 3°C for step (c).
4 5	MIL-A-8243 MIL-C-25769 pH 10-12	Same as MIL-L-7808, except 65 ± 3°C for step (a).
6	MIL-T-5624	(a) Immerse at 23 ± 5°C for 20 hours. (b) Remove and allow to drain for 4 hours at 23 ± 5°C

4.5.14 Thermal Indicator Change (see 3.6.12).

4.5.14.1 Color-Change Type. SolderSleeve devices containing color-change type thermal indicator shall be installed on the maximum size cable with a convection heat source in accordance with the following procedure:

a. Carefully observe the solder preform during the heating operation, and remove the assembly from the heat after the solder preform has collapsed but before it has melted, so that the solder termination has the characteristics of a "Reject - Insufficient Heat" termination as defined in MIL-S-83519.

b. Examine the solder joint area for clearly visible amounts of the thermal indicator indicative of insufficient heating. (Solder joint area for round wires includes the visible area of conductor in the overlapped portion of the termination. Solder joint area for braid includes the half of the braid circumference to which the ground lead is soldered, in the overlapped portion of the termination.)

c. Reheat the specimen until the thermal indicator color change is complete in the solder joint area. Do not continue heating after the color change is complete.

d. Examine the solder joint area for evidence that the termination is acceptable in accordance with MIL-S-83519.

4.5.14.2 Thermally Fusible Ring Type. SolderSleeve devices containing thermally fusible ring type thermal indicator shall be installed on the maximum size cable with a convection heat source in accordance with the following procedure:

a. Carefully observe the solder preform during the heating operation, and remove the assembly from the heat after the solder preform has collapsed but before it has melted, so that the solder termination has the characteristics of a "Reject - Insufficient Heat" termination as defined in MIL-S-83519.

b. Examine the solder joint area for the clearly visible presence of the thermally fusible ring indicative of insufficient heating. (Solder joint area for round wires includes the visible area of conductor in the overlapped portion of the termination. Solder joint area for braid includes the half of the braid circumference to which the ground lead is soldered, in the overlapped portion of the termination.)

c. Reheat the specimen until the thermally fusible ring loses all appearance of a preform shape. Do not continue heating after the change is complete.

d. Examine the solder joint area for evidence that the termination is acceptable in accordance with MIL-MIL-S-83519.

4.5.15 Copper Mirror Corrosion (see 3.6.13). SolderSleeve devices shall be tested in accordance with MIL-S-83519.

5.0 PREPARATION FOR DELIVERY

5.1 **Packaging and Packing**. SolderSleeve devices shall be packaged and packed in accordance with standard commercial practice.

5.2 **Marking**. Unless otherwise specified in the procurement document, marking shall be in accordance with commercial practice.

6.0 NOTES

6.1 **Intended Use**. The SolderSleeve devices described in this specification are intended for use in making soldered connections between cable shields and ground leads, between cable shields and primary conductors, or between two primary conductors, depending on the type of device provided that the cable shields and conductors are solderable. The solderability of the cable shields and conductors are the responsibility of the users. They are suitable for usage within the limitations set forth in this document and in the applicable Raychem specification control drawing.

The application in which any SolderSleeve device is used should conform with the Raychem Selection Guide, and the installation should be in accordance with the applicable installation procedures.

6.2 Ordering Data.

Procurement documents should specify the following:

(a) Raychem part number;
(b) Quantity;
(c) Any special marking or packaging requirements.

6.3 Design Modification.

Raychem reserves the right to make minor design modifications (which do not affect the form, fit or primary function of the product) without notification.

6.4 Storage Recommendations.

Raychem SolderSleeve devices may be stored up to 5 years after the date of manufacture indicated on the label, provided that the following conditions are satisfied:

- o The products are kept unopened in their original packages.

- o The storage temperature does not exceed +50°C or fall below +5°C, and the relative humidity does not exceed 80 percent.

If storage exceeds 5 years, or storage conditions are not as described above, the user should carry out tests on installed products to ensure that solder joints have acceptable mechanical and electrical characteristics.

Devices containing metallic components in addition to solder (such as ground leads or other conductors) shall be stored in unopened containers in order to preserve solderability.