

## 1. Introduction

### 1.1 Scope

This specification covers the design, performance and qualification requirements for Raychem SolderTact electrical contacts.

### 1.2 Description

The Raychem SolderTact contacts covered by this specification consist of coaxial or triaxial shielded contacts or single-conductor, general purpose contacts for use in military specification and other aerospace connectors. Termination of conductors to these contacts is by means of preinstalled solder preforms, with insulation and strain relief of terminations provided by radiation-cross-linked, heat-shrinkable thermoplastic sleeves. Contacts for termination to coaxial cables, triaxial cables, twisted-pair cables and single wires are covered by this specification. These contacts are heat-shrinkable solder devices as described in MIL-STD-2000.

### 1.3 Classification

Contacts covered by this specification are classified as follows:

#### a. Series

<u>Number</u>	<u>Description</u>
12	Size 12 contacts for use with MIL-DTL-26482 Series I, MIL-DTL-26500, and MIL-C-83733 Series II connectors.
482	Size 16 contacts for use with MIL-DTL-26482 Series I, MIL-DTL-26500, and MIL-C-83733 Series II connectors.
723	Size 12 contacts for use with NAS 1599 connectors, MIL-DTL-26482 Series II connectors, MIL-DTL-81703 Series III connectors, MIL-DTL-83723 Series I and III connectors, and MIL-DTL-83733 connectors.
748	Size 16 contacts for use with MIL-DTL-28748/3, /4, /9, /10 connectors, with Army Specification MIS-20065 connectors, and with Raychem D-621 series connectors.
999	Sizes 8, 12 and 16 contacts for use with MIL-DTL-38999 connectors.

b. Types

- For single wires
- For non-shielded twisted pair cable.
- For coaxial cable.
- For triaxial cable.
- For shielded twisted pair cable.

c. Mating configuration

- (For coaxial or triaxial contacts, designation of mating configuration applies to the outer member of the contact.)
- Pin contact
  - Socket contact

1.4 Temperature Range

Contacts covered by this specification are suitable for use at a minimum temperature of  $-55^{\circ}\text{C}$  and a maximum temperature as specified on the applicable specification control drawing. Contacts are rated for 1000 hours of service when the operating temperature of the contact is the maximum rated temperature. Operating temperature is the maximum temperature reached by any point of the contact as a result of electrical current flow and ambient temperature.

**2. Applicable Documents**

2.1 Issues of Documents

The following documents, of the issue in effect on date of order or request for proposal, form a part of this specification to the extent specified herein. However, this specification takes precedence over the referenced documents.

2.2 Department of Defense Specifications  
Military

MIL-I-17214	Indicator, Permeability; Low-Mu (Go-No Go)
MIL-DTL-26482	Connectors, Electrical, (Circular, Miniature, Quick Disconnect, Environment Resisting), Receptacles and Plugs, General Specification for
MIL-DTL-26500	Connectors, General Purpose, Electrical, Miniature, Circular, Environment Resisting, General Specification for.
MIL-DTL-28748	Connectors, Electrical, Rectangular, Rack and Panel, Solder Type and Crimp Type Contacts General Specification for.
MIL-DTL-28748/3	Connectors, Electrical, Rectangular, Rack and Panel, Crimp Type Removable Pin Contacts, Sizes 16 and 20.
MIL-DTL-28748/4	Connectors, Electrical, Rectangular, Rack and Panel, Crimp Type Removable Socket Contacts, Sizes 16 and 20.



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MIL-DTL-28748/9	Connectors, Receptacle, Electrical, Rectangular, Rack and Panel, Polarized Center Jackscrew or Guidepin Style, Crimp Type Removable Pin Contacts, Size 16.
MIL-DTL-28748/10	Connectors, Receptacle, Electrical, Rectangular, Rack and Panel, Polarized Center Jackscrew or Guidepin Style, Crimp Type Removable Socket Contacts, Size 16.
MIL-DTL-38999	Connectors, Electrical, Circular, Miniature, High Density, Quick Disconnect (Bayonet, Threaded, and Breech Coupling), Environment Resistant, Removable Crimp and Hermetic Solder Contacts, General Specification for.
MIL-DTL-39029	Contacts, Electrical Connector, General Specification for
MIL-G-45204	Gold Plating, Electrodeposited.
MIL-DTL-81703	Connectors, Electric, Circular, Miniature, Rack and Panel or Push-Pull Coupling, Environment Resisting.
MIL-DTL-83723	Connectors, Electrical, Circular, (Environment Resisting), Receptacles and Plugs, General Specification for.
MIL-DTL-83733	Connectors, Electrical, Miniature, Rectangular Type, Rack to Panel, Environment Resisting, 200°C Total Continuous Operating Temperature, General Specification for.

#### Standards

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-202	Test Methods for Electronic and Electrical Component Parts.
MIL-STD-454	Standard General Requirements for Electronic Equipment.
MIL-STD-810	Environmental Test Methods and Engineering Guidelines.
MIL-STD-1344	Test Methods for Electrical Connectors
MIL-STD-2000	Standard Requirements for Soldered Electrical and Electronic Assemblies
MIL-STD-45662	Calibration Systems 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.)

### 2.3 U.S. Army Missile Command

MIS-20065	Connectors, Plugs and Receptacles, General Specification for
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(Copies of Army Missile Command specifications may be obtained from the U.S. Army Missile Command, Redstone Arsenal, Alabama 35898-5280)

### 2.4 Aerospace Industries Association of America, Inc.

NAS 1599	Connectors, General Purpose, Electrical, Miniature Circular, Environment Resisting, 200 Degrees C Maximum Operating Temperature.
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(Copies of National Aerospace Standards may be obtained from Aerospace Industries Association of America, Inc., 1725 De Sales Street, N.W., Washington, D.C. 20036).

### 3. Requirements

#### 3.1 Specification Control Drawings

The requirements for contacts under this specification shall be as specified herein and in the applicable specification control drawing (SCD). In the event of any conflict between the requirements of this specification and those of the specification control drawing, the latter shall govern.

#### 3.2 Classification of Requirements

The requirements for the contacts are classified herein as follows:

<u>Requirement</u>	<u>Paragraph</u>
Qualification	3.3
Materials	3.4
Design and construction	3.5
Performance	3.6
Product identification	3.7
Workmanship	3.8

#### 3.3 Qualification

Contacts furnished under this specification or listed on Qualified Product List D-6002-QPL shall be products which are qualified to this specification.

#### 4.4 Materials Requirements

All materials used in the manufacture of these contacts shall be of the quality and form best suited for the purpose intended. All materials used shall conform to the requirements specified herein.

##### 3.4.1 Dissimilar Metals

When dissimilar metals are used in intimate contact with each other, suitable protection against electrolytic corrosion shall be provided as specified in MIL-STD-454, Requirement 16.

##### 3.4.2 Plating

Unless otherwise specified, contacts shall be gold plated in accordance with MIL-G-45204, Type I, Grade C or D, except that silver under-plating shall not be used.

##### 3.4.3 Fungus Resistance

Finishes and materials shall be fungus-inert in accordance with MIL-STD-454, Requirement 4, and encompassing the fungus species listed in MIL-STD-810, Method 508.

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- 3.4.4 Hydrolytic Stability  
All nonmetallic materials shall be selected to meet the hydrolytic reversion resistance requirements specified in MIL-STD- 454, Requirement 47.
- 3.5 Design and Construction  
Contacts shall be of the design, construction, and physical dimensions specified in the applicable specification control drawing.
- 3.5.1 Inner Pin Contact  
Inner pin contacts shall have a circular cross section and shall be machined. The engagement end of the inner pin contact shall have either a spherical radius approximately half the diameter of the contact member, or a conical end with a 60 degree included angle, allowing for a flat not exceeding 0.003 inch in diameter.
- 3.5.2 Inner Socket Contact  
Inner socket contacts shall have a circular cross section and shall be machined. The engagement end of the inner socket contact shall be chamfered to allow for direction and centering of the entering pin contact. The inner socket contact shall provide spring action for maintaining contact pressure between mated contacts. The inner socket contact shall be surrounded by insulating material which prevents entry of inner pin contacts exceeding by 0.005 inch or more the allowable maximum diameter of the applicable mating inner pin contact.
- 3.5.3 Intermediate Pin Contact  
Intermediate pin contacts shall have a circular cross section and shall be machined. The engaging end of the intermediate pin contact shall be designed to engage with the applicable intermediate socket contact.
- 3.5.4 Intermediate Socket Contact  
Intermediate socket contacts shall have a circular cross section and shall be machined. The engaging end of the intermediate socket contact shall be chamfered to allow for directing and centering of the entering pin contact. The intermediate contact body shall provide spring action for maintaining contact pressure between mated contacts, and shall prevent entry of a pin contact exceeding by 0.005 inch or more the allow able maximum diameter of the applicable mating intermediate pin contact.
- 3.5.5 Outer Pin Contact  
Outer pin contacts shall have a circular cross section and shall be machined. The engaging end of the outer pin contact shall be designed to engage with the applicable outer socket contact.

- 3.5.6 Outer Socket Contact  
Outer socket contacts shall have a circular cross section and shall be machined. The engaging end of the outer socket contact shall be chamfered to allow for directing and centering of the entering pin contact. The outer body shall provide spring action for maintaining contact pressure between mated contacts, and shall prevent entry of a pin contact exceeding by 0.005 inch or more the allowable maximum diameter of the applicable mating outer pin contact.
- 3.5.7 Contact Insertion and Removal  
Contacts shall be capable of being inserted into and removed from the applicable connector cavities using the specified contact insertion/removal tool.
- 3.5.8 Cable Size Accommodation  
Contacts shall be capable of being terminated to the wire and cable types and sizes specified in the applicable specification control drawing.
- 3.5.9 Cable Termination  
Contacts shall provide controlled soldered termination to the wire or cable as specified in MIL-STD-2000 for heat-shrinkable solder devices. Contacts shall incorporate fluxed solder preforms positioned so as to solder each cable conductor to the appropriate contact member when heat is applied in accordance with the applicable installation procedure. Solder joints shall be encapsulated within transparent insulating sleeving and shall be visually inspectable. Terminated contacts shall display no evidence of the detrimental effects described in 4.5.5.
- 3.6 Performance  
Contacts shall conform to the requirements specified herein and in the applicable specification control drawings. Unless otherwise specified, room temperature shall be  $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ . Values given as "after conditioning" values refer to requirements after any of the environmental exposures of Table II.
- 3.6.1 Permeability  
When tested as specified in 4.5.4, the relative magnetic permeability of the mated contact pair shall be no greater than 2.0.
- 3.6.2 Low Signal Level Contact Resistance  
When mated contact pairs are tested as specified in 4.5.6, the low signal level contact resistance of the applicable contacts shall not exceed the values specified in the applicable specification control drawing.

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- 3.6.3 Contact Resistance  
When mated contact pairs are tested as specified in 4.5.7, the contact resistance shall not exceed the values specified in the applicable specification control drawing.
- 3.6.4 Contact Engagement and Separation Force  
When contacts are tested as specified in 4.5.8, contact engagement and separation forces shall be as specified in the applicable specification control drawing.
- 3.6.5 Dielectric Withstanding Voltage  
When terminated, mated and unmated contacts with concentric contact members are tested as specified in 4.5.9, the contacts shall withstand the test potential for 60 seconds without breakdown or arcing. Corona shall not be considered as breakdown.
- 3.6.6 Insulation Resistance  
When terminated, unmated contacts with concentric contact members are tested as specified in 4.5.10, the insulation resistance between adjacent contact members shall be 5000 megohms minimum at 25°C and 2000 megohms minimum at the maximum rated temperature.
- 3.6.7 Thermal Shock  
When terminated, mated contacts are subjected to five thermal shock cycles as specified in 4.5.11, the contacts shall meet the subsequent performance requirements of Table II and shall show no damage detrimental to performance or handling.
- 3.6.8 Durability  
When terminated contacts are subjected to 500 mating/ demating cycles as specified in 4.5.12, contacts shall meet the subsequent performance requirements of Table II and shall show no evidence of damage detrimental to performance or handling.
- 3.6.9 Salt Spray (Corrosion)  
When terminated mated contacts are subjected to 48 hours salt spray testing as specified in 4.5.13, contacts shall meet the subsequent performance requirements of Table II and shall show no evidence of damage detrimental to performance or handling.
- 3.6.10 Temperature Life  
When terminated, mated contacts are subjected to 1000 hours conditioning at the maximum rated temperature as specified in 4.5.14, contacts shall meet the subsequent performance requirements of Table II and shall show no evidence of damage detrimental to performance or handling.

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- 3.6.11 Industrial Gas  
When contacts are exposed to industrial gas for 100 hours as specified in 4.5.15, contacts shall meet the subsequent performance requirements of Table II.
- 3.6.12 Gold Finish Porosity  
When contacts are tested with nitric acid as specified in 4.5.16, there shall be no bubbling during the 30-second observation period.
- 3.6.13 Plating Thickness  
When plating thickness is measured as specified in 4.5.17, the minimum plating thickness of external, gold plated surfaces at the mating end shall be 50 micro inches.
- 3.6.14 Solder Termination Tensile Strength  
When terminated contacts are tested in accordance with 4.5.18, they shall meet the tensile load requirements specified in the applicable specification control drawing.
- 3.6.15 Vibration  
When terminated, installed contacts are subjected to random vibration of the level specified for the applicable connector for 8 hours in each of two axes in accordance with 4.5.19, there shall be no electrical discontinuities greater than 1.0 microsecond and no damage detrimental to performance or handling.
- 3.6.16 Shock  
When terminated, installed contacts are subjected to 18 half-sine shocks of the level specified for the applicable connector in accordance with 4.5.20, there shall be no electrical discontinuity greater than 1.0 microsecond and no damage detrimental to performance or handling.
- 3.7 Product Identification  
The part number shall be marked on the exterior of the shipping container and shall consist of the part number shown in the applicable specification control drawing.
- 3.8 Workmanship  
Contacts shall be processed in such a manner as to be uniform in quality. They shall be free from foreign matter, burrs or sharp corners that might damage the connector or affect mating or performance of the contacts.



#### **4. Quality Assurance Provisions**

##### **4.1 Responsibility for Inspection**

The supplier is responsible for the performance of all inspection tests specified herein. The supplier may utilize his own or any other 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 Test Equipment and Inspection 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 the requirements of MIL-STD-45662.

##### **4.2 Classification of Inspections**

The examination and testing of contacts covered by this specification shall be classified as follows:

- a). Qualification inspection (See 4.3).
- b). Acceptance inspection (See 4.4).

##### **4.3 Qualification Inspection**

Qualification inspection shall consist of all the tests in Table II. Qualification shall be granted upon successful completion of the inspections and tests listed in Table II, conducted upon the samples of Table I. The samples shall be subjected to all the tests of each test group in the order listed.

##### **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. Sample quantities shall be as specified in Table 1.

##### **4.3.2 Failures**

One or more failures of the tests listed in Table II shall constitute failure of qualification of the parts under test. The exception to this is visual examination, where occurrence of one major defect or two minor defects shall constitute failure of qualification. Major and minor defects shall be as defined in MIL-STD-105.

- 4.3.3 Qualification Report  
Qualification shall be documented in a report which shall be available to the buyer.

**Table I. Qualification Test Samples**

Test Group	Type of Test Sample	Sample Quantity
1	Terminated contact pairs	8
2	Terminated contact pairs	8
3	Terminated contact pairs	8
4	Terminated contact pairs	8
5	Terminated contact pairs	8
6	Unterminated contacts	4
7	Unterminated contacts	4

**Table II. Qualification Inspection**

Test Group 1

Test Sequence	Requirement Paragraph	Procedure Paragraph
Visual examination	3.1, 3.4, 3.5, 3.7, 3.8	4.5.3
Permeability	3.6.1	4.5.4
Preparation of samples	--	4.5.2
Examination of terminated contacts	3.5.9	4.5.5
Low signal level contact resistance	3.6.2	4.5.6
Contact resistance (25°C)	3.6.3	4.5.7
Contact engagement and separation forces	3.6.4	4.5.8
Thermal shock	3.6.7	4.5.11
Contact engagement and separation forces	3.6.4	4.5.8
Contact resistance (25°C)	3.6.3	4.5.7
Insulation resistance (25°C)	3.6.6	4.5.10
Solder termination tensile strength	3.6.14	4.5.18

Test Group 2

Test Sequence	Requirement Paragraph	Procedure Paragraph
Visual examination	3.1, 3.4, 3.5, 3.7, 3.8	4.5.3
Permeability	3.6.1	4.5.4
Preparation of samples	--	4.5.2
Examination of terminated contacts	3.5.9	4.5.5
Low signal level contact resistance	3.6.2	4.5.6
Contact resistance (25°C)	3.6.3	4.5.7
Contact engagement and separation forces	3.6.4	4.5.8
Durability	3.6.8	4.5.12
Vibration	3.6.15	4.5.19
Shock	3.6.16	4.5.20
Salt spray	3.6.9	4.5.13
Low signal level contact resistance	3.6.2	4.5.6
Contact resistance (25°C)	3.6.3	4.5.7
Contact resistance at maximum rated temp.	3.6.3	4.5.7
Contact engagement and separation forces	3.6.4	4.5.8
Insulation resistance (25°C)	3.6.6	4.5.10

Test Group 3

Test Sequence	Requirement Paragraph	Procedure Paragraph
Visual examination	3.1, 3.4, 3.5, 3.7, 3.8	4.5.3
Permeability	3.6.1	4.5.4
Preparation of samples	--	4.5.2
Examination of terminated contacts	3.5.9	4.5.5
Low signal level contact resistance	3.6.2	4.5.6
Contact resistance (25°C)	3.6.3	4.5.7
Contact engagement and separation forces	3.6.4	4.5.8
Temperature life	3.6.10	4.5.14
Insulation resistance measurement at maximum rated temperature		
Low signal level contact resistance	3.6.2	4.5.6
Contact resistance (25°C)	3.6.3	4.5.7
Contact resistance at maximum rated temp.	3.6.3	4.5.7
Contact engagement and separation forces	3.6.4	4.5.8
Solder termination tensile strength	3.6.14	4.5.18



Test Group 4

Test Sequence	Requirement Paragraph	Procedure Paragraph
Visual examination	3.1, 3.4, 3.5, 3.7, 3.8	4.5.3
Permeability	3.6.1	4.5.4
Preparation of samples	--	4.5.2
Examination of terminated contacts	3.5.9	4.5.5
Dielectric withstanding voltage	3.6.5	4.5.9
Low signal level contact resistance	3.6.2	4.5.6
Industrial gas	3.6.11	4.5.15
Low signal level contact resistance	3.6.2	4.5.6

Test Group 5

Test Sequence	Requirement Paragraph	Procedure Paragraph
Visual examination	3.1, 3.4, 3.5, 3.7, 3.8	4.5.3
Permeability	3.6.1	4.5.4
Preparation of samples	--	4.5.2
Examination of terminated contacts	3.5.9	4.5.5
Solder termination tensile strength	3.6.14	4.5.18

Test Group 6

Test Sequence	Requirement Paragraph	Procedure Paragraph
Visual examination	3.1, 3.4, 3.5, 3.7, 3.8	4.5.3
Gold finish porosity	3.6.12	4.5.16

Test Group 7

Test Sequence	Requirement Paragraph	Procedure Paragraph
Visual examination	3.1, 3.4, 3.5, 3.7, 3.8	4.5.3
Plating thickness	3.6.13	4.5.17

4.4 Acceptance Inspection

Lot acceptance inspection shall consist of the tests listed in Table III. Acceptance inspection shall be performed on every lot of contacts manufactured under this specification. The sample units shall be tested unterminated and may be shipped against orders. In-process examination may be used for acceptance inspection. Statistical process control (SPC) may be substituted for lot acceptance inspection.

**Table III. Acceptance Inspection**

	Requirement Paragraph	Procedure Paragraph	Inspection Level (Normal)	AQL*
Visual examination	3.1, 3.4, 3.5,	4.5.3	I, Minor defects	4.0%
			I, Major defects	1.0%
	3.7, 3.8	4.5.3	II	1.0%
Contact engagement and separation forces, min & max requirements only	3.6.4	4.5.8	II	1.0%
Dielectric withstanding voltage	3.6.5	4.5.9	II**	1.0%
Insulation resistance	3.6.6	4.5.10	II**	1.0%
Plating thickness	3.6.13	4.5.17	S-3	0 defects

\* AQL shall apply to individual defects in accordance with MIL-STD-105, paragraph 4.5.

\*\* Tested unterminated.

4.4.1 Sampling For Acceptance Inspection

MIL-STD-105 shall apply for definitions of inspection terms used herein. For purposes of this specification, the following shall apply:

4.4.1.1 Inspection Lot

An inspection lot shall consist of contacts covered by one part number, produced under essentially the same conditions, and offered for inspection at the same time.

4.4.1.2 Inspection Level and Acceptable Quality Levels (AQL)

The inspection levels and acceptable quality levels shall be in accordance with MIL-STD-105 and shall be as specified in Table III.

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- 4.4.2 Rejected Lots  
If an inspection lot is rejected, the lot shall be replaced, or the defective units shall be screened out or reworked to correct the defect. If the lot is reworked or the defective units are screened out, the lot shall be resubmitted for inspection. Resubmitted lots shall be inspected using tightened inspection in accordance with MIL-STD-105.
- 4.4.3 Examination of Preparation for Delivery  
Preparation for delivery of material ready for shipment shall be examined to determine compliance with the requirements of Section 5.
- 4.5 Test Procedures
- 4.5.1 Test Conditions  
Unless otherwise specified, all tests shall be performed at ambient pressure and relative humidity as specified in the general requirements of MIL-STD-1344, with an ambient temperature of  $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ . Where conditioning at the maximum rated temperature is specified, the temperature tolerances shall be  $-0^{\circ}\text{C}$  and  $+5^{\circ}\text{C}$ .
- 4.5.2 Preparation of Samples  
When terminated contacts are specified for testing, contacts shall be terminated to wire or coaxial cable of both the minimum and maximum diameter suitable for the particular contacts. Where installed contacts are specified, the terminated contacts shall be installed in appropriate connectors, using appropriate alignment bushings where applicable.
- 4.5.3 Visual Examination (see 3.1, 3.4, 3.5, 3.7, 3.8)  
Contacts shall be visually examined at 4X magnification.
- 4.5.4 Permeability (see 3.6.1)  
The permeability of mated contacts shall be checked with an indicator conforming to MIL-I-17214. Traceability of calibration of indicator to the National Bureau of Standards is not required.
- 4.5.5 Examination of Terminated Contacts (See 3.5.9)  
Terminated contacts shall be visually examined for proper solder flow, splits, cracks or holes in insulation sleeves, and mechanical damage to basis metal and plating.
- 4.5.6 Low Signal Level Contact Resistance (see 3.6.2)  
Terminated contacts shall be tested in accordance with MIL-STD-1344, Method 3002.

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- 4.5.7 Contact Resistance (see 3.6.3)  
Terminated contacts shall be tested in accordance with MIL-STD-1344, Method 3004. The contact resistance shall be measured within 0.25 inches from each end of the contacts. Maximum voltage of current source shall be 1Vdc. Test current shall be as specified in the applicable specification control drawing.
- 4.5.8 Contact Engagement and Separation Forces (see 3.6.4)  
Contacts shall be tested in accordance with MIL-STD-1344, Method 2014, Procedure I. Test pins shall be as specified on the applicable specification control drawing.
- 4.5.9 Dielectric Withstanding Voltage (see 3.6.5)  
Terminated contacts shall be tested in accordance with MIL-STD-1344, Method 3001. Test voltage shall be 60 Hz ac applied between adjacent contact members. The magnitude of the test voltage shall be as specified in the applicable specification control drawing. Contacts shall be tested mated and unmated at sea level; contacts shall be tested mated only at altitude.
- 4.5.10 Insulation Resistance (see 3.6.6)  
Terminated, unmated contacts shall be tested in accordance with MIL-STD-1344, Method 3003. Measurements shall be made between adjacent contact members.
- 4.5.11 Thermal Shock (see 3.6.7)  
Contacts shall be conditioned in accordance with MIL-STD-202, Method 107. The following details shall apply:
- a. Test Condition "A" except that the high temperature shall be the maximum rated temperature.
  - b. Measurements before and after cycling--not applicable.
- 4.5.12 Durability (see 3.6.8)  
Terminated, installed contacts shall be subjected to 500 cycles of mating and demating at a rate not to exceed 300 cycles per hour. The depth of engagement shall be not less than 70 percent of maximum engagement.
- 4.5.13 Salt Spray (Corrosion) (see 3.6.9)  
Terminated, mated contacts shall be conditioned in accordance with MIL-STD-1344, Method 1001, Test condition B.
- 4.5.14 Temperature Life (see 3.6.10)  
Terminated, mated contacts shall be tested in accordance with MIL-STD-1344, Method 1005, for 1000 hours at the maximum rated temperature, using an air-circulating oven. Series wiring of contacts and connection to an electrical load is not required. Leads shall be brought out through a suitable port so that electrical measurements can be taken. After 1000 hours and while contacts are still at the maximum rated temperature and mated, the insulation resistance shall be measured in accordance with 4.5.10.

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- 4.5.15 Industrial Gas (see 3.6.11)  
Unmated contacts shall be placed on a noncorrosive rack in a closed plastic or glass chamber (volume, 2 cubic feet maximum) which contains a 10 percent (by weight) solution of technical grade potassium sulfide (K<sub>2</sub>S) in distilled water. Contacts shall not be immersed in the solution but shall be exposed to the sulfide vapor for 100 hours at 25°C ± 3°C.
- 4.5.16 Gold Finish Porosity (see 3.6.12)  
Contacts shall be placed in containers and covered with a nitric acid and water solution at 25°C ± 3°C. The nitric acid solution shall have a specific gravity of 1.316 at 15.6°C. The gold finish surfaces shall be observed for 30 seconds.
- 4.5.17 Plating Thickness (see 3.6.13)  
Plating thickness shall be measured in accordance with MIL-G-45204.
- 4.5.18 Solder Termination Tensile Strength (see 3.6.14)  
Terminated contacts shall be tested in accordance with MIL-STD-1344, Method 2003. When tensile testing follows environmental conditioning (test groups I and 3), coaxial cable shall be gripped as a single cable, and the value shall be the tensile strength of the cable shield termination to the contact outer body.
- 4.5.19 Vibration (see 3.6.15)  
Terminated, installed contacts shall be tested in accordance with the method specified for the applicable connectors. Inner, intermediate (if applicable) and outer contacts shall be series wired for continuity measurements.
- 4.5.20 Shock (see 3.6.16)  
Terminated, installed contacts shall be tested in accordance with the method specified for the applicable connectors. Inner, intermediate (if applicable) and outer contacts shall be series wired for continuity measurements.
- 5. Preparation For Delivery**
- 5.1 Packing and Packaging  
Unless otherwise specified in the procurement document, packing and packaging shall be in accordance with commercial practice.
- 5.2 Marking  
Unless otherwise specified in the procurement document, marking shall be in accordance with commercial practice.