

NATIONAL AIRCRAFT STANDARD

AIRCRAFT INDUSTRIES ASSOCIATION OF AMERICA, INC 1725 DE SALES STREET, N. W., WASHINGTON, D. C. 20036

FED SUP CLASS

6145

CABLE: HIGH TEMPERATURE, COAXIAL

1.0 SCOPE

- 1.1 This specification covers flexible high temperature twin conductor and single conductor radio frequency coaxial cables. (See 6.1)
- 1.2 CLASSIFICATION - Cable shall be furnished in the following impedances classes, sizes and temperature ranges. (See 6.2)

1.2.1 IMPEDANCE -

50
75
95

1.2.2 CLASSES -

Class S - Single
Class T - Twin

1.2.3 SIZES - Maximum outside diameter of the finished cable shall be as follows:

Size 1 0 --- 0.160 (inches)
Size 2 0.161 --- 0.300 (inches)
Size 3 0.301 and larger (inches)

1.2.4 TEMPERATURE RANGES -

Range a -65°C to 200°C Maximum
Range b -65°C to an excess of 200°C

2.0 APPLICABLE DOCUMENTS

- 2.1 The following publications, of the issue in effect on the date of invitation for bids, shall form a part of this specification.

SPECIFICATIONS

MILITARY

JAN-P-127
MIL-C-915
MIL-T-5438

Tape, Adhesive, Pressure-Sensitive Water Res.
Cables; Cord and Wire; Electrical
Tester, Abrasion, Electrical Cable

STANDARDS

MIL-STD-104
FEDERAL
UU-T-111

Limits for Electrical Insulation Color
Tape, Paper, Gummed (Sealing and Securing)

CUSTODIAN: ELECTRONIC EQUIPMENT COMMITTEE

PROCUREMENT
SPECIFICATION

TITLE
CABLE: HIGH TEMPERATURE
COAXIAL

CLASSIFICATION
SPECIFICATION

NAS Documents
SHEET 1 OF 13

NATIONAL AIRCRAFT STANDARD

AIRCRAFT INDUSTRIES ASSOCIATION OF AMERICA, INC. 1725 DE SALES STREET, N. W. WASHINGTON, D. C. 20036

2.0 APPLICABLE DOCUMENTS (CONT'D)

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ASTM STANDARDS

ASTM B 298-55T

Silver-Coated Soft or Annealed Copper Wire.

3.0 REQUIREMENTS

- 3.1 QUALIFICATION - The cable furnished under this specification shall be a product which has been tested and has passed the qualification tests specified herein.
- 3.2 INNER CONDUCTOR - The conductors shall be in accordance with Table I and the following:
- 3.2.1 SIZE 1, RANGE a - The inner conductors shall be composed of copper-covered steel strands plated or coated with a uniform covering of silver. Steel wire shall have a continuous covering of copper; the copper shall be continuously welded to the steel core. Conductors shall have a tensile strength not less than 110,000 pounds per square inch (psi) an elongation of not less than 1 percent in 10 inches, and a conductivity of 40 percent that of pure copper.
- 3.2.1.1 SILVER COATING - The silver coating shall be a minimum of 40 micro-inches and completely continuous when tested in accordance with 6 (d) of ASTM-B-298-55T.
- 3.2.1.2 SPLICES - There shall be no joints made subsequent to the last drawing operation. Splices in the individual strands shall be brazed or silver soldered, using a monacid flux, in such a manner that the strand diameter shall not be increased, and there shall be no lumps or sharp projections. No joint in an individual strand shall be within 12 inches of a joint in any other individual strand.
- 3.2.1.3 STRANDING - Stranding shall be concentric. The direction of lay shall be left hand and the length of lay shall be in accordance with Table I.

TABLE I

CABLE SIZE	NO. OF STRANDS	STRAND AWG	MAX. COND. DIA. INCHES	MAX. COND. RESISTANCE ohm/1000 ft. 20°C	LENGTH OF LAY (max) INCHES
Range a 1 2 3	7	38	0.013	268.25	0.25

CUSTODIAN: ELECTRONIC EQUIPMENT COMMITTEE

PROCUREMENT
SPECIFICATIONTITLE
CABLE: HIGH TEMPERATURE,
COAXIALCLASSIFICATION
SPECIFICATIONNA 718
SHEET 2

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NATIONAL AIRCRAFT STANDARD

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3.0 REQUIREMENTS (CONT'D)

- 3.3 DIELECTRIC - The dielectric shall be in accordance with Table II and the following:
- 3.3.1 SIZE 1, RANGE a - The dielectric shall be polytetrafluoroethylene resin (teflon) or equal applied concentrically about the conductor, and may be solid or laminate in structure. However, laminate structures shall be fused and sintered into a homogeneous wall during processing. The dielectric shall be concentric with the conductor and shall strip freely without adherence. At any section along the length of the completed wire, the minimum thickness of the dielectric shall be not less than 41 percent of the difference between measured diameter over dielectric and measured diameter over conductor or not less than 70 percent of the maximum dielectric thickness at that cross section as measured between the extreme surface of the conductor and the outside of the dielectric.
- 3.4 SHIELD -
- 3.4.1 RANGE a - The outer conductor (or shield) shall be composed of silver plated copper strands in accordance with Table II. There shall be no strands which are not interwoven, and there shall be no splice of the complete braid.
- 3.5 JACKET - The jacket shall be in accordance with Table II and the following:
- 3.5.1 SIZE 1, RANGE a - The jacket shall be polytetrafluoroethylene or equal applied to the shield and may be solid or laminate in structure. However, laminate structures shall be fused into a homogeneous wall during processing. The minimum wall thickness shall be as specified in Table II.
- 3.6 CHARACTERISTICS OF COMPLETED CABLE -
- 3.6.1 ELECTRICAL CHARACTERISTICS - The electrical characteristics of the completed cable shall be in accordance with Tables II, III and the following:
- 3.6.1.1 CONTINUITY - Each conductor in each shipping length of cable shall be continuous when tested as specified in 4.8.6.
- 3.6.1.2 INSULATION RESISTANCE -
Size 1, range a - The insulation resistance shall be 10,000 megohms 1000 feet minimum when tested in accordance with 4.8.7.

① Inactive For New Design
After 1/30/81

CUSTODIAN: ELECTRONIC EQUIPMENT COMMITTEE

PROCUREMENT
SPECIFICATIONTITLE
CABLE: HIGH TEMPERATURE,
COAXIALCLASSIFICATION
SPECIFICATIONNAS 718 Documents
SHEET 3

NATIONAL AIRCRAFT STANDARD

AIRCRAFT INDUSTRIES ASSOCIATION OF AMERICA, INC., 1725 DE SALES STREET, N. W., WASHINGTON, D. C. 20036

3.0 REQUIREMENTS (CONT'D)

3.6.1.3 DIELECTRIC STRENGTH -

Range a - The dielectric strength shall be as specified in Table III when tested in accordance with 4.8.8.

3.6.2 PHYSICAL CHARACTERISTICS -

3.6.2.1 HEAT RESISTANCE -

Range a - Completed cable shall be subjected to tests given in 4.8.3. Upon completion of the heat resistance test, the dielectric for jacket shall not crack.

3.6.2.2 COLD BEND -

Range a - The cable shall withstand a temperature of -65°C (-85°F) without cracking when bent over a mandrel as specified in 4.8.13.

3.6.2.3 FLOW -

Class S, range a - The inner conductor shall not be displaced from the center of the cable by more than 15 percent of the diameter of the dielectric measured along the direction of flow after the test specified in 4.8.4.

3.6.2.4 JACKET ABRASION RESISTANCE -

Class S, range a - The jacket of the finished cable shall meet the minimum requirements specified in Table VIII. The method of testing shall be in accordance with 4.8.5.

3.6.2.5 COLOR -

Range a - The color of the dielectric shall be natural or white. The color of the jacket shall not exceed the dark limit of white in accordance with MIL-STD-104.

3.7 WORKMANSHIP AND MATERIALS - All materials used in the construction of the completed cable shall be of the quality and form best suited for the purpose intended. Where materials, methods of test, or other qualifications are not specifically designated, it is understood that recognized best commercial practice shall apply.

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Inactive For New Design
After 1/30/81

CUSTODIAN: ELECTRONIC EQUIPMENT COMMITTEE

PROCUREMENT
SPECIFICATION

TITLE

CABLE: HIGH TEMPERATURE,
COAXIALCLASSIFICATION
SPECIFICATIONNAS 718
SHEET 4

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