

1. SCOPE

1.1 Scope.- This specification establishes the requirements for the manufacture, performance, inspection and procurement of multi-conductor, flat, flexible, electrical cables which are primarily intended for use in aircraft, aerospace and electronic ground system applications.

1.2 Classification

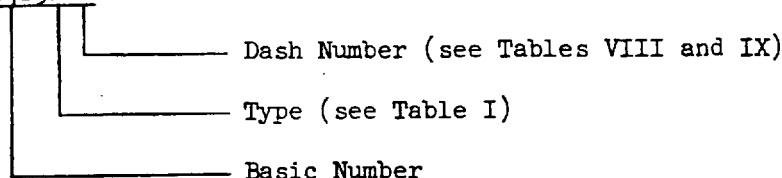
1.2.1 Type Designation.- The type designation shall be in the following form, and as specified by the procurement agency.

TABLE I.- CABLE TYPE

Type	Cable Temperature range
A	-65° to +85° C (Flame retardant)
B	-65° to +85° C (Nonflame retardant)
C	-65° to +200° C (Flame retardant)

1.3 Method of Code Designation.- The method of designation shall be as follows:

NAS729A24



2. APPLICABLE DOCUMENTS

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

SPECIFICATIONS

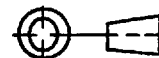
Federal

J-C-98	Cable and Wire, Insulated: Methods of Sampling and Testing
QQ-C-502	Copper Rods and Shapes, and Flat Products with Finished Edges (Flat Wire, Strips and Bars)

LIST OF CURRENT SHEETS

SHT.	REV.	SHT.	REV.	SHT.	REV.
1	1	6	1	11	2
2	1	7	1	12	2
3	1	8	1	13	2
4	1	9	1		
5	1	10	1		

CUSTODIAN NATIONAL AEROSPACE STANDARDS COMMITTEE

THIRD
ANGLE
PROJECTIONPROCUREMENT
SPECIFICATION

NONE

TITLE

CABLE, ELECTRICAL, FLAT CONDUCTOR, FLEXIBLE -
300 VOLTS, COPPERCLASSIFICATION
SPECIFICATION

NAS729

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STANDARDS

Federal

Federal Test
Method Std 151

Metals; Test Methods

Military

MIL-STD-129

Marking for Shipment and Storage

MIL-STD-202

Test Methods for Electronic and Electrical
Component PartsInactive For New Design
After 30 June 1981. No
Superseding Standard.

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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 shall apply.

ASTM-D568-61

Standard Method of Test for Flammability of
Plastics 0.050 Inch and Under in Thickness

3. 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 Conductor Material.- The conductors shall be composed of soft copper ribbon per QQ-C-502. The finish on the conductors shall be bright.

3.3 Insulation Material.- The insulation used in Types A and B cables shall be adhesive polyester. The Type C cable insulation shall be fluorinated ethylene propylene.

3.4 Design and Construction.- The cable shall be of the design, construction and physical dimensions specified in Figure 3, and in Tables VIII and IX.

3.4.1 Cable Length.- Unless otherwise specified, the minimum length of unspliced cable pieces shall not be less than 50 feet.

3.4.2 Cable Color.- Unless otherwise specified, the insulation shall be of a natural color.

3.4.3 Cable Indexing and Manufacturer Identification.- One of the following methods shall be used to index the cable and identify its manufacturer:

- (a) Color Coding.- Colored threads shall be fused into the cable during its fabrication. The threads shall be of the specific color and number listed for each manufacturer by Underwriters' Laboratory, Inc., and shall appear along one edge of the cable throughout its entire length.

CUSTODIAN: ELECTRONIC PARTS COMMITTEE

PROCUREMENT SPECIFICATION	TITLE	CLASSIFICATION SPECIFICATION
NONE	CABLE, ELECTRICAL, FLAT CONDUCTOR, FLEXIBLE -- 300 VOLTS, COPPER	NAS 729 SHEET 2

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- (b) Marking.- The name and/or trademark of the cable manufacturer shall be printed or embossed on the cable. The marking shall appear on one side of the cable only, and shall be repeated at intervals of not more than one foot. All marking shall be permanent, and shall remain legible after the completion of all non-destructive tests.

3.5 Rated Voltage.- The rated working voltage (conductor to conductor or conductor to ground) shall be 300 volts rms at the maximum operating temperature specified in Table I.

3.6 Conductor Resistance.- When the cable is tested as specified in 4.7.1, the resistance of the individual conductors shall not exceed the values specified in the following table:

TABLE II.- CONDUCTOR RESISTANCE

Conductor Size (inch)	Equivalent AWG No.	Resistance at 20° C (Ohms/1000 feet)
0.002 x 0.025	32	188.0
0.003 x 0.026	30	119.0
0.003 x 0.042	28	78.7
0.003 x 0.062	26	48.4
0.005 x 0.063	24	28.9
0.005 x 0.100	22	18.8

3.7 Dielectric Strength.- When tested as specified in 4.7.2, there shall be no evidence of insulation puncture or other mechanical or electrical failure.

3.8 Insulation Resistance.- When tested as specified in 4.7.3, the insulation resistance shall not be less than 1000 megohms per 1000 feet.

3.9 Cable Thickness and Uniformity of Insulation.- The thickness of the complete cable shall not exceed the dimensions specified in Tables VIII and IX. When measured as specified in 4.7.4, the thickness of the insulation on each side of the conductors shall be uniform within ± 0.001 inch.

3.10 Shrinkage.- When tested as specified in 4.7.5, the shrinkage of the length or width of the insulation shall not exceed 1 percent.

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After 30 June 1981. No
Superseding Standard.

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3.11 Accelerated Aging.- Following the test specified in 4.7.6, the shrinkage of the length or width of the insulation shall not exceed 3.0 percent. There shall be no evidence of insulation separation or cracking and there shall be no discontinuity due to breaks in the conductors. The cable sample shall meet the requirements for dielectric strength and insulation resistance as specified in 3.7 and 3.8 respectively.

3.12 Thermal Shock.- Following the test specified in 4.7.7, the cable sample shall meet the requirements for dielectric strength and insulation resistance as specified in 3.7 and 3.8 respectively.

3.13 Tensile Strength.- When the cable is tested as specified in 4.7.8, the tensile strength shall not be less than 5000 psi and there shall be no mechanical or electrical failure.

3.14 Humidity.- Following the test specified in 4.7.9, the measured insulation resistance shall not be less than 100 megohms for one foot of cable, and the specimen shall meet the dielectric strength test requirements specified in 3.7.

3.15 Altitude.- Following the test specified in 4.7.10, the cable sample shall meet the requirements for dielectric strength and insulation resistance as specified in 3.7 and 3.8 respectively.

3.16 Folding.- After the cable sample is tested as specified in 4.7.11, there shall be no evidence of insulation separation or cracking and there shall be no discontinuity due to breaks in the conductors.

3.17 Flex Life.- When the cable is tested as specified in 4.7.12, there shall be no evidence of insulation separation or cracking and there shall be no discontinuity due to breaks in the conductors.

3.18 Vibration.- There shall be no discontinuities recorded for any conductor when the cable sample is tested as specified in 4.7.13.

3.19 Flammability.- The flame rate of travel along the cable during the flammability test specified in 4.7.14 shall not exceed two inches per minute and shall be self-extinguishing within 10 seconds after removing the flame source. The test specified shall be applicable to Types A and C cables only.

3.20 Chemical Resistance.- When tested as specified in 4.7.15, the cable sample shall exhibit no evidence of damage or deterioration due to the action of the chemical solutions.

3.21 Fungus Resistance.- The cable shall be fabricated with non-nutrient materials and shall be fungus resistant.

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SHEET 4