

INCH-POUND

MIL-DTL-81381/17A

17 February 2017

SUPERSEDING

MIL-W-81381/17

26 February 1973

DETAIL SPECIFICATION SHEET

WIRE, ELECTRIC, FLUOROCARBON/POLYIMIDE INSULATED LIGHT
WEIGHT, SILVER COATED COPPER, 600 VOLTS, 200 DEGREES C,
NOMINAL 4.6 MIL WALL

Inactive for new design after 16 June 1997. For new design, use SAE
AS22759/191.

This specification is approved for use by all Departments and Agencies
of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and
MIL-DTL-81381.

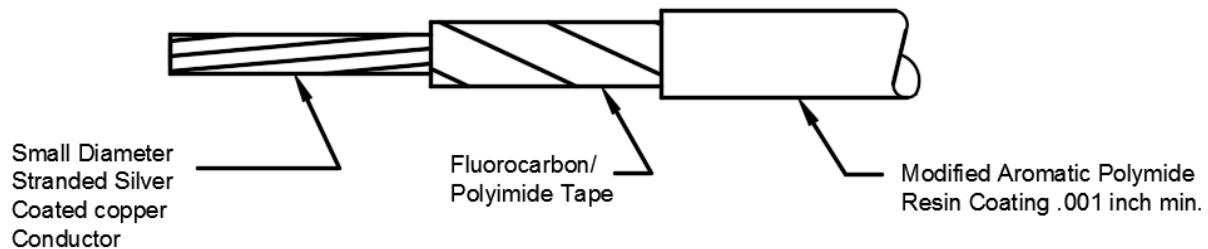


FIGURE 1 - Wire construction.



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TABLE I. Construction details.

Part or Identification Number (PIN) 2/	Conductor			Finished Wire			Insulation Tapes 1/	
	Wire Size	Stranding (Number of Strands x AWG Gage of Strands)	Diameter Maximum (inches)	Max Resistance at 20° C (ohms/1000 ft.)	Diameter (inches) (min – max)	Weight (lbs/1000 ft.)	One Wrap	
							Tape Code	Min. Overlap
M81381/17-26-*	26	19 x 38	.019	38.4	.028 - .030	1.2	.1/1/.1	67.0
M81381/17-24-*	24	19 x 36	.024	24.3	.032 - .035	1.8		
M81381/17-22-*	22	19 x 34	.030	15.1	.038 - .041	2.7		
M81381/17-20-*	20	19 x 32	.038	9.19	.046 - .049	4.2		
M81381/17-18-*	18	19 x 30	.048	5.79	.055 - .058	6.4		
M81381/17-16-*	16	19 x 29	.054	4.52	.062 - .065	8.0		
M81381/17-14-*	14	19 x 27	.068	2.88	.075 - .078	12.5		
M81381/17-12-*	12	37 x 28	.087	1.90	.094 - .098	19.2		

1/ Tape Codes:

.1/1/.1 0.1mil FEP fluorocarbon resin/1 mil polyimide film/0.1 mil FEP fluorocarbon resin

FEP = Fluorinated Ethylene Propylene

2/ Color identification number per MIL-STD-681. Opaque dark yellow shall be designated by the letter "N". A non-white insulation may be used with striping or banding (certain color combinations with low color contrast can make identification difficult or increase the chance of misidentification).

TABLE II. Performance details.

Part or Identification Number (PIN)	Durability Test Load (grams)	Abrasion Resistance (Procedure II)				Bend Testing				
		Weight Support Bracket	Weight (lbs)	Tension Load (lbs)	Minimum Inches of Tape	Max Mandrel diameter (inches)			Test Load (lbs)	
						Life Cycle Test	Cold Bend Test	Wrap Test	Life Cycle Test	Cold Bend Test
M81381/17-26-*	100	A	.125	1	19	.25	.25	.125	.50	.50
M81381/17-24-*	150								.75	.75
M81381/17-22-*										
M81381/17-20-*										
M81381/17-18-*				2	12	.375	.375	.25	1	1
M81381/17-16-*	.50									
M81381/17-14-*	.75	.375	2			2				
M81381/17-12-*										

PIN: The asterisk, *, in the PIN shown in the tables shall be replaced with a color identification number in accordance with MIL-STD-681, to indicate the color desired.

Example M81381/17-20-9 Size 20 wire, white, without stripes or bands
M81381/17-20-93 Size 20 wire, base color white with orange stripe or band

WIRE RATINGS AND ADDITIONAL REQUIREMENTS

Temperature rating: 200° C (392° F) max conductor temperature

Voltage rating: 600 volts (RMS) at sea level

Blocking: Oven temperature, 200 ±2° C (392 ±3.6° F)

Color: As specified in contract or order in accordance with MIL-DTL-81381

Flammability: 3 sec (max) after flame
3 inches (max) flame travel
No flaming of tissue paper

Humidity Resistance: 5 megohms-1000 ft, min insulation resistance after humidity exposure

Identification of product: Required for sizes 22 AWG and larger

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Identification, striping, or banding durability: 125 cycles (250 strokes); see Table II for test load
Impulse dielectric test: 100% test; impulse voltage as specified in MIL-DTL-81381
Insulation resistance: 2500 megohm-1000 ft. (min)
Lamination sealing: Oven temperature $230\pm 2^{\circ}\text{C}$ ($446\pm 3.6^{\circ}\text{F}$) for 4 hours
Life cycle: Oven temperature $230\pm 2^{\circ}\text{C}$ ($446\pm 3.6^{\circ}\text{F}$) for 500 hours
Minimum wall thickness: 4.3 mils
Polyimide cure test: Applicable
Propellant resistance: Test not required
Resin coating durability: 250 cycles (500 strokes) (min. average), 200 cycles (400 strokes) (min single reading) of 6 readings; see Table II for test load
Shrinkage: 0.031 inches (max) at $230\pm 2^{\circ}\text{C}$ ($446\pm 3.6^{\circ}\text{F}$)
Surface resistance: 5 megohms-inches (min), initial and final readings
Thermal shock: Oven temperature, $200\pm 2^{\circ}\text{C}$ ($392\pm 3.6^{\circ}\text{F}$), Change in measurement: 0.031 inches (max)
Wet dielectric test: 2500 volts (RMS)

This wire is intended for use in electronic chassis hookup applications. It is also intended for use in bundles under a protective jacket for airframe interconnecting applications.

This wire should not be subjected to hypergolic propellants.

Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

Referenced document. In addition to the basic specification MIL-DTL-81381, this document references:
MIL-STD-681
AS22759/191

CONCLUDING MATERIAL

Custodians:
Navy - AS
DLA - CC

Preparing activity:
DLA - CC

(Project 6145-2016-056)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil>.