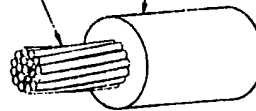


MILITARY SPECIFICATION SHEET
WIRE, ELECTRIC, ETFE FLUOROPOLYMER-INSULATED,
MEDIUM WEIGHT, TIN-COATED COPPER, 600 VOLT

The complete requirements for procuring the wire described herein shall consist of this document and the issue in effect of Specification MIL-W-22759.

tin-coated stranded copper conductor extruded ETFE insulation



ETFE = Ethylene - Tetrafluoroethylene copolymer

PART NUMBER	WIRE SIZE	CONDUCTOR STRANDING	MAX. DIA. OF STRANDED CONDUCTOR (INCHES)	MAX. RESISTANCE AT 20°C (68°F.) (OHMS/1000 FT.)	FINISHED WIRE		MAXIMUM WEIGHT (LBS./1000 FT.)
					DIAMETER (INCHES)		
M22759/16-24-**	24	19 x 36	.024	26.2	.045 ± .002		2.57
M22759/16-22-**	22	19 x 34	.031	16.2	.052 ± .002		3.68
M22759/16-20-**	20	19 x 32	.039	9.88	.060 ± .002		5.36
M22759/16-18-**	18	19 x 30	.049	6.23	.071 ± .002		7.89
M22759/16-16-**	16	19 x 29	.055	4.81	.079 ± .002		9.95
M22759/16-14-**	14	19 x 27	.069	3.06	.093 ± .002		14.9
M22759/16-12-**	12	37 x 28	.089	2.02	.114 ± .003		22.6
M22759/16-10-**	10	37 x 26	.112	1.26	.139 ± .003		35.1
M22759/16- 8-**	8	133 x 29	.169	.701	.199 ± .003		63.5
M22759/16- 6-**	6	133 x 27	.212	.445	.250 ± .003		99.9
M22759/16- 4-**	4	133 x 25	.268	.280	.312 ± .004		157
M22759/16- 2-**	2	665 x 30	.340	.183	.388 ± .004		239
M22759/16- 1-**	1	817 x 30	.380	.149	.431 ± .005		314
M22759/16- 01-**	0	1045 x 30	.425	.116	.479 ± .006		391
M22759/16- 02-**	00	1330 x 30	.475	.091	.546 ± .007		504

* Color identification number per MIL-STD-681. White (9) preferred.

PART NUMBER	-ABRASION RESISTANCE (PROCEDURE II)				BEND TESTING			
	MINIMUM RESISTANCE (INCHES OF TAPE)	WEIGHT SUPPORT BRACKET	WEIGHT (POUNDS)	TENSION LOAD (POUNDS)	MANDREL DIAMETER (INCHES MAXIMUM)		TEST LOAD (POUNDS)	
					LIFE CYCLE TESTS	COLD BEND TEST	LIFE CYCLE TEST	COLD BEND TEST
M22759/16-24-**	18	A	1.0	1	1/2	1	0.5	3.0
M22759/16-22-**	18	A	1.0	1	3/4	1	1.5	3.0
M22759/16-20-**	18	A	1.0	1	3/4	1	2.0	4.0
M22759/16-18-**	20	A	1.0	1	1	1-1/4	2.0	4.0
M22759/16-16-**	22	A	1.0	2	1	1-1/4	2.0	5.0
M22759/16-14-**	15	B	3.0	2	1-1/4	2	2.0	5.0
M22759/16-12-**	18	B	3.0	2	2	2	2.0	5.0
M22759/16-10-**	24	B	3.0	3	3	3	2.0	5.0
M22759/16- 8-**	26	B	3.0	3	3	4	3.0	6.0
M22759/16- 6-**	30	C	3.0	4	4	5	3.0	10.0
M22759/16- 4-**	40	C	4.25	4	5	6	3.0	10.0
M22759/16- 2-**	50	C	4.25	5	6	8	4.0	15.0
M22759/16- 1-**	60	C	4.25	5	8	10	4.0	15.0
M22759/16- 01-**	70	C	4.25	5	8	10	4.0	15.0
M22759/16- 02-**	80	C	4.25	5	10	14	6.0	20.0

Ratings:

Temperature Rating: 150°C (302°F) Maximum Conductor Temperature.
Voltage Rating: 600 Volts (rms) at sea level.

Additional Requirements:

Abrasion After Immersion: Required.
Accelerated Aging: 7 hours at 230°C (446°F) (Quality conformance test, Group II; procedure as in life cycle test).

Acid Resistance: No requirement.

Blocking: 200°C (392°F)
Color: MIL-STD-104, Class 1; white preferred.
Color Striping Durability: 125 cycles (250 strokes) 500 gram total weight.
Impulse Dielectric Test: 100% test; impulse voltage, 8.0 kilovolts (peak) (Test as specified in MIL-W-81381A).

Flammability: (Vertical Flame Test) 5 sec. (max.) after flame; 0.25 inch flame travel, max.

Humidity Resistance: Insulation resistance after humidity exposure shall meet initial requirements.

Identification of Product: Required.

Insulation Resistance (Initial):

Sizes 24-14 5,000 megohms - 1,000 feet - minimum

Sizes 12-6 3,000 megohms - 1,000 feet - minimum

Sizes 4-00 2,000 megohms - 1,000 feet - minimum

Life Cycle:

Air oven temperature 200°C ± 2°C (392°F ± 3.6°F).

Dielectric Test: 2200 volts (rms), 60Hz

Low Temperature (Cold Bend): -65° ± 2°C (-75° ± 3.6°F).

Print Durability: 125 cycles (250 strokes) 500 gram total weight.

Shrinkage: 1/8 inch max. in 12 inches at 200°C ± 2°C (392°F ± 3.6°F).

Smoke: 200°C (392°F) no visible smoke.

Surface Resistance: 500 megohms - inches min. (sizes 24-12 only).

Thermal Shock Test: Air oven temperature 150°C ± 2°C (302°F ± 3.6°F).

Shrinkage (Max.): 0.06 inch for sizes 24-12

0.10 inch for sizes 10-8

0.125 inch for sizes 6-2/0

Wicking: Not applicable.

Wrap Back Test: Required. 2 hours at 200°C ± 2°C (392°F ± 3.6°F).

For sizes 4 and smaller use standard procedure. For sizes 2 and larger use same procedure, but with following mandrel sizes: size 2: 1-1/4 inch; size 1: 1-1/4 inch; size 0: 1-3/4 inch; size 00: 1-3/4 inch

Spark Test and Dielectric Tank Test: Not required

Notes:

Intended Use: This wire intended for interconnecting and hook-up applications.

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

Example: M22759/16-20-9; Size 20 wire, white, without stripe or bands.
M22759/16-20-93; Size 20 wire, base color white with orange stripe or band.

VERTICAL FLAME TEST

Single Wire. The test specimen shall be 18 inches in length, and shall be placed vertically within a chamber approximately 2 feet by 1 foot by 1 foot, open at the top and one vertical side (front), which allows a sufficient flow of air for complete combustion, but which is free from drafts. The upper end of the specimen shall be fastened in the chamber by means of a clamp and a weight shall be attached to the lower end of the specimen to hold the specimen taut during the flammability test. The weights shall be the same as those used for the life cycle tests. The specimen shall be marked at approximately 7 inches above the floor of the chamber to indicate where the flame is to be applied.

A flame from a Bunsen burner shall be applied for 15 seconds to the specimen. The Bunsen burner shall be positioned below the test mark on the specimen and at an angle of 20 degrees to the vertical plane of the specimen. The Bunsen burner shall have a 1/4 inch inlet, a nominal bore of 3/8 inch, and a length of approximately 4 inches from the top to primary inlets. The burner shall be adjusted to produce a 3 inch high flame with an inner cone approximately one-third of the flame height. The temperature of the hottest portion of the flame, as measured by a thermocouple pyrometer, shall be not less than $955^{\circ}\text{C} \pm 30^{\circ}\text{C}$. ($1751^{\circ}\text{F} \pm 54^{\circ}\text{F}$). The burner shall be positioned so that the hottest portion of the flame is applied to the approximate position of the test mark on the wire. The time of burning and the flame travel after removal of the flame shall be recorded. Breaking of the wire specimens in sizes 24 and smaller shall not be considered as a failure.

Bundles. The test specimens shall be prepared by assembling 7 single wire specimens, each 14 inches long, into a bundle tied in two places with glass cord or equivalent nonmetallic, noncombustible material, 3 inches from each end. The bundles shall be suspended vertically in the test chamber described above. A flame from a Bunsen burner shall be applied vertically to the base of the bundle for 15 seconds. The burner flame shall be adjusted as described for the single wire flame test. The time of burning and flame travel after removal of the flame shall be recorded.

Preparing activity:
Navy - AS
(Project No. 6145-N228)