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Type 99M

Product Facts

- Low flammability
- Low smoke generation
- Low toxicity index
- Low generation of corrosive gases
- Small size, lightweight



Applications

Type 99M wire has a dual wall construction of radiation cross-linked modified polyester. This combines excellent mechanical performance and chemical resistance with a range of enhanced fire hazard properties. Type 99M wire is designed to meet the stringent low fire hazard performance now being specified by the UK Naval Defense Standard Authority for ship wiring and cabling.

During the 1980's there were major changes in the demands of many wire and cable specifications to reduce the risks associated with all aspects of fire hazards. Specifications such as Def Stan 61-12 Part 18, have been developed over the last decade demanding improved performance of wires and cables under fire conditions.

This has led to a tightening of the requirements for flammability, smoke generation, corrosive gas generation and hazardous fume emission. Type 99M wire achieves these improvements in performance whilst retaining small size, light weight, flexibility, handleability, resistance to carbon arc tracking and resistance to chemicals and fluids.

Physical Characteristics

Handleability

Type 99M wire has been designed to be compatible with modern wiring and harnessing techniques. It is a flexible wire with virtually no springback once set. It is easily stripped with tools such as conventional die-blade strippers.

Small Size

Type 99M equipment wire has a nominal 0.2 mm insulation wall thickness which is comparable to other established thin wall wires such as SPEC 44 wire.

Light Weight

Type 99M wire is designed to have the same weights as SPEC 44 wire.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 5-12

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Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

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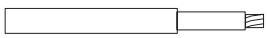
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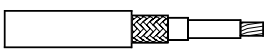
Approvals

TE WCD 281
Defense Standard 61-12 Part 18 Issue 5 Type 1
Italian Navy STN-SR-01

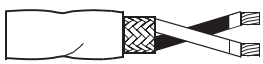
Type 99M Wire and Cable - Nominal Sizes, Strandings and Weights



99M011X (600 V)
Primary Wire



99M1111
Shielded & Jacketed



99M1121
Shielded & Jacketed

Primary Wires/Shielded and Jacketed Cables - 99M

Size	Stranding (mm)	99M011X (600 V)		99M1111		99M1121	
		OD	Weight (g/m)	OD	Weight (g/m)	OD	Weight (g/m)
26	19x0.10	0.88 [.035]	2.00	1.80 [.071]	7.5	2.91 [.115]	13.3
24	19x0.12	0.98 [.039]	3.00	1.90 [.075]	9.2	3.20 [.126]	16.6
22	19x0.15	1.13 [.044]	4.40	2.05 [.081]	11.1	3.52 [.139]	20.5
20	19x0.20	1.40 [.055]	6.50	2.30 [.091]	14.6	4.02 [.158]	27.7
18	19x0.25	1.65 [.065]	9.90	2.55 [.100]	19.3	4.57 [.180]	37.1
16	19x0.30	1.90 [.075]	14.15	2.95 [.116]	24.9	5.13 [.202]	48.5
14	37x0.25	2.25 [.089]	18.62	3.13 [.123]	30.9	5.72 [.225]	60.5
12	37x0.32	2.60 [.102]	25.70	3.48 [.137]	43.1	6.42 [.253]	81.3

Typical Properties (wire only)

Test	Method	Typical value
Temperature rating	BS 3G230	120°C [248°F]
Voltage rating	TE	600 V thin wall
Tensile strength/elongation of insulation	—	30 MPa/250%
Notch propagation (0.05 mm notch)	BS 3G230	Pass
Shrinkage 200°C [392°F]	BS 3G230	<1%
Low temperature bend	BS 3G230	-55°C [-67°F]
Voltage withstand	BS 3G230	2.5 kV
Insulation resistance (20°C [68°F])	BS 3G230	1000 M ohms km (min)
Pliability rating	Def Stan 61-12 (18)	82 - Pliable
Fluid resistance	Def Stan 61-12 (18)	
Fuels - aircraft		Pass
Oils - (IRM 903)		Pass
Solvents		Pass

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Type 99M (Continued)

Environmental Properties

Mechanical Performance

Type 99M wire has good scrape abrasion and cut through performance complying with the requirements of Def. Standard 61-12 Part 18.

Fluid Resistance

Type 99M wire demonstrates outstanding resistance to most acids, alkalis, hydrocarbon solvents, fuels, lubricants and water.

Electrical Arc Tracking

Type 99M wire is resistant to electrical arc tracking.

Voltage Ratings

Standard available voltage ratings for Type 99M wire is 600 V (0.2 mm wall thickness).

Fire Hazard Characteristics

Low Toxicity Index

Type 99M wire is designed to meet the low hazardous fume emission levels required in modern specifications. For example, the change in the Toxicity Index requirement from 1.5 to 0.2 between Issue 2 and Issue 5 of Def Stan 61-12 (Part 18), is met by Type 99M wire.

Flammability

Type 99M wire has passed the stringent flammability test requirements of Def. Standard 61-12 (Part 18).

Smoke Generation

Type 99M wire has been designed to meet stringent smoke tests such as those specified in Def Stan 61-12 (Part 18).

Corrosivity

Type 99M wire has a low corrosive gas emission, demonstrated by its low acid gas value, sufficient to pass the requirements of Def. Standard 61-12 Part 18.

Fire Hazard Properties

Test	Method	Typical value
Flammability	BS 3G230	Pass
Toxicity index	Def Stan 61-12 (18)	0.1 per meter of wire
Smoke index	Def Stan 61-12 (18)	8 per meter of wire
Acid gas equivalent	TDE 76/P/76	<1.5%

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Type 99M (Continued)

Part Numbering System

99 X X X X X- Size- X/X- X

Jacket Color
(in accordance with MIL-STD-681, black preferred)

Primary Wire Insulation Color
0=Black 1=Brown 2=Red 2L=Pink 3=Orange 4=Yellow
45=Yellow/Green 5=Green 6=Blue 7=Violet 8=Grey 9=White
Additional number after base color indicates stripe

Conductor Size

Conductor Type
1 - Tin-plated copper

Number of Conductors
1, 2, 3, 4 etc.

Class of Wire
1 - 600V equipment wire

Constructions
0 - Primary wire & unscreened, unjacketed cables
1 - Round braid screened & jacketed*
9 - Special construction

Wire Type
M - Military wire

Basic Specification Number

* The cable jackets are TE Zerohal and the preferred color is black.

Part Numbering System is a cross reference only and not meant for part creation.

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