

INCH-POUND

MIL-DTL-24643/18E

22 August 2002

SUPERSEDING

MIL-C-24643/18D

22 November 1994

DETAIL SPECIFICATION SHEET

CABLE, ELECTRICAL, 1000 VOLTS, TYPE LSMSCU (INCLUDING VARIATION LSMSCS)

This specification is approved for the 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 the issue of MIL-DTL-24643 listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation.

This cable can be manufactured in three variations: LSMSCU, and LSMSCS (double overall shield).

REQUIREMENTS:

Qualification required.

Construction (watertight with circuit integrity)

- First - Copper conductor, uncoated, AWG size 18, class B stranding.
- Second - Extruded Silicone rubber insulation. Minimum average wall thickness of 0.018 inch. Diameter insulation 0.084 inch minimum.
- Third - Glass braid.
- Fourth - Braid covering (see table I for diameter). Standard identification code applied by method 1. Diameter over braid covering 0.113 inch maximum.
- Fifth - The required number of conductors (see table I) cabled together with a lay not greater than 24 times the pitch diameter of the layer, except the lay of the two outer layers for sizes 44, 61 and 91 shall not exceed 18 times the pitch diameter of the layer. Fillers shall be used as necessary to form a firm, well rounded assembly. Cabling sequence shall be consecutive, starting with No. 1, from the center outward.
- Sixth - Binder or combination binder and barrier.

Construction variant type LSMSCU

Seventh - Cross-linked polyolefin jacket. (see table I for thickness).

Construction variant type LSMSCS

Seventh - Braided shield of tin coated copper.

Eighth - Spirally wrapped 0.002 inch thick polyethylene (polyester tape) separator tape with 25 percent minimum overlap.

Ninth - Braided shield of tin coated copper.

Tenth - Binder tape applied helically with overlap.

Eleventh - Cross-linked polyolefin jacket. (see table I for thickness).

TABLE I. Details

Military ^{1/} part no. M24643/18	Size ^{2/}	No. of conductors	Jacket thickness min avg (in.)	Dia over shielded core (in. nom)	Overall diameter (inches)			
					TYPE LSMSCU		TYPE LSMSCS	
					min	max	min	max
-01UN	7	7	0.040	0.409	0.447	0.484	0.507	0.544
-02UN	10	10	0.050	0.497	0.575	0.622	0.635	0.682
-03UN	14	14	0.050	0.563	0.617	0.668	0.677	0.728
-04UN	19	19	0.050	0.631	0.682	0.738	0.742	0.798
-05UN	24	24	0.050	0.738	0.790	0.855	0.850	0.915
-06UN	30	30	0.050	0.788	0.833	0.901	0.893	0.961
-07UN	37	37	0.060	0.855	0.926	1.002	0.986	1.065
-08UN	44	44	0.060	0.950	1.030	1.114	1.090	1.174
-09UN	61	61	0.060	1.080	1.156	1.250	1.216	1.310
-10UN	91	91	0.060	1.294	1.369	1.480	1.429	1.540

^{1/} When double shield is required, see MIL-DTL-24643 for configuration of part number.

^{2/} Type LSMSCU and LSMSCS.

EXAMINATION AND TESTS:

Basic electrical:

Requirements:

Conductor resistance - ohms/1000 feet at 25°C, maximum	7.07
Voltage withstand - volts, root mean square, minimum	
Conductor to conductor	3000
Shield to shield (LSMSCS only, overall shields only)	200
Insulation resistance, megohms -1000 feet minimum	
conductor to conductor	500
shield to shield (LSMSCS, overall shield only)	100
Jacket flaws (LSMSCS only).....	No failure
Conductor and shield continuity (LSMSCS only).....	No failure

Group A:

Visual and dimensional.....	No failure
Watertightness - see MIL-DTL-24643 for limits of water leakage	No failure
Abrasion resistance - minimum	250
Crack resistance -	No damage

Group B:

Cross-linked proof test (percent maximum)	
Insulation	50
Jacket (When tested at 200°C).....	50
Gas flame - 1 hour <u>3</u> /	No failure
Drip - 95 ± 1°C	Zero
Tear - pounds per inch thickness, minimum (ASTM D 470)	35
Cold bending, cable - maximum mandrel diameter, 12 times cable diameter	No damage
Physicals (unaged)	
Insulation	
Tensile strength - lb/in ² , minimum	750
Elongation - percent, minimum	125
Jacket (cable)	
Tensile strength - lb/in ² , minimum	1300
Elongation - percent, minimum	160

Group C:

Physicals (aged)

Jacket (cable)	
Air oven	
Tensile strength - percent of unaged, minimum	60
Elongation - percent of unaged minimum	60
Hot oil immersion	
Tensile strength - percent of unaged, minimum	50
Elongation - percent of unaged, minimum	50
Shrinkage	No failure
Heat distortion - percent of unaged, maximum	30
Permanence of printing (conductor) - cycles, minimum	25
Permanence of printing (jacket) - (types LSMSCU and LSMSCS) cycles, minimum	125
Cable sealant removability.....	No failure
Surface transfer impedance (type LSMSCS only)	
Milliohms per meter, maximum	700
EMP response, dB, minimum.....	60

Group D:

Flame propagation (cable)	No failure
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QUALIFICATION INSPECTION:

Qualification inspection shall include basic electrical, all of groups A, B, C and D, plus the following:

Cold working (minus 20 ± 2°C)	No damage
Gas flame (3 hours).....	No failure
Specific gravity of extruded silicone insulation, maximum	1.55
Aging and compatibility (cable) (125 ± 5°C).....	No failure
Abrasion resistance (jacket) - scrapes, minimum	75
Acid gas equivalent - percent, maximum	
Jacket	2
Fillers	2
Insulation	18
Halogen content - percent, maximum	
Jacket	0.2
Fillers	0.2
Immersion (jacket)	
Tensile strength - percent of unaged, minimum	50
Elongation - percent of unaged, minimum	50
Smoke index, maximum	
Jacket	25
Fillers	45
Insulation	35
Toxicity index, maximum	
Jacket	5
Fillers	5
Insulation	1.5
Durometer (jacket) - (type A) hardness, minimum.....	80
Weathering (jacket).....	No failure

3/ Type LSMSCS only. Shields shall not be grounded during test.

UNIT ORDERING LENGTHS:

<u>Type and Size</u>	<u>Feet (nominal)</u>
LSMSCU-7, , LSMSCS-7	1500
LSMSCU-10, , LSMSCS-10	1500
All others	1000

Custodians:
Army - MI
Navy - SH

Preparing Activity:
Navy - SH
(Project 6145-2308-016)

Review Activities:
Army - AV, CR
Navy - CG, EC
DLA – CC