

INCH-POUND

MIL-DTL-24643/16E

22 August 2002

SUPERSEDING

MIL-C-24643/16D

22 November 1994

## DETAIL SPECIFICATION SHEET

### CABLE, ELECTRICAL, 1000 VOLTS, TYPE LSTSGU (INCLUDING VARIATION LSTSGA)

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.

#### REQUIREMENTS:

Qualification required.

#### Construction (watertight with circuit integrity)

#### Sizes 3 to 100 inclusive, extruded silicone rubber insulation <sup>1/</sup>

- First - Copper conductor, uncoated, (see table I for size)
- Second - Extruded silicone rubber insulation (see table I for diameter).
- Third - Glass braid.
- Fourth - Braid covering (see table I for diameter). Standard identification code applied by method 1 or method 3.

#### Sizes 23 to 400 inclusive, silicone rubber-glass tape insulation <sup>1/</sup>

- First - Copper conductor, uncoated, (see table I for size)
- Second - Silicone rubber - glass tape insulation (see table I for diameter). Letter identification code applied by method 5 or standard identification code method 1.
- Third - The three conductors shall be cabled together with a lay not greater than 24 times the pitch diameter. Fillers shall be used as necessary to form a firm, well rounded assembly.
- Fourth - A binder.

<sup>1/</sup> Size 23 through 100 may be glass tape or extruded silicone rubber insulation.

Construction variant type

Sizes 3 to 100 inclusive, extruded silicone rubber insulation <sup>1/</sup>

- Fifth - The three conductors shall be cabled together with a lay not greater than 24 times the pitch diameter. Fillers shall be used as necessary to form a firm, well rounded assembly
- Sixth - Binder or combination binder and barrier.
- Seventh - Cross-linked polyolefin jacket. (see table I for thickness).

Sizes 23 to 400 inclusive, silicone rubber-glass tape insulation <sup>1/</sup>

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

Construction variant type LSTSGA

- Fifth - Cross-linked polyolefin jacket. (see table I for thickness).
- Sixth - Braided metal armor

<sup>1/</sup> Size 23 through 100 may be glass tape or extruded silicone rubber insulation.

TABLE I. Details.

Military part no. M24643/16	Size	Conductors size		Type's overall diameter (inches)				Diameter over outer insulation tape nom. (inch)	Diameter over insulation min (inch)	Diameter over braid max (inch)	Jacket thickness min avg (inch)	Conductor resistance (ohms)	Insulation resistance (meg-ohms for 1000ft.)	Cold bending mandrel diameter (max) (inches)	Accelerated service loading ampere
		Navy std	AWG	LSTSGU		LSTSGA									
				min	max	min	max								
-01UN	3		16 (Class B)		0.411		0.461	----	0.096	0.130	0.030	4.3	500	----	----
-02UN	4		14 (Class B)		0.449		.499	----	0.112	0.143	0.030	2.68	500	----	----
-03UN	9		10 (Class B)		0.575		.625	----	0.154	0.187	0.040	1.08	500	----	----
-04UN	14		9 (Class B)		0.718		.768	----	0.230	0.262	0.040	0.859	500	----	90
-05UN	23		7 (Class B)		0.812		.862	0.274	0.271	0.310	0.050	0.543	500	----	115
-055UN	30	30 (19)			0.852		.902	0.282	0.285	0.335	0.050	0.358	225	----	140
-058UN	40		4 (Class C)		0.900		0.950	0.310	---	---	0.050	0.290	215	----	160
-06UN	50		3 (Class C)		0.969		1.019	0.334	0.335	0.380	0.050	0.21	200	12	185
-065UN	60		2(Class D)		1.060		1.110	0.365	---	----	0.050	0.190	190	13	215
-07UN	75		1 (Class C)		1.134		1.185	0.407	0.407	0.440	0.050	0.134	175	14	250
08UN	100		0 (Class D)		1.266		1.316	0.453	0.453	0.500	0.060	0.106	160	16	295
-085UN	125	125 (61)			1.408		1.458	0.507	---	---	0.060	0.0888	150	17	340
-09UN	150		000 (Class D)		1.515		1.565	0.557	----	----	0.060	0.0674	135	19	400
-10UN	200		0000 (Class D)		1.669		1.719	0.634	----	----	0.060	0.053	125	21	460
-105UN	250	250 (61)			1.794		1.844	0.697	---	---	0.060	0.0444	120	22	535

Military part no. M24643/16	Size	Conductors size		Type's overall diameter (inches)				Diameter over outer insulation tape nom. (inch)	Diameter over insulation min (inch)	Diameter over braid max (inch)	Jacket thickness min avg (inch)	Conductor resistance (ohms)	Insulation resistance (meg-ohms for 1000ft.)	Cold bending mandrel diameter (max) (inches)	Accelerated service loading ampere
		Navy std	AWG	LSTSGU		LSTSGA									
				min	max	min	max								
-11UN	300		300 MCM (Class D)		1.957		2.007	0.748	----	----	0.075	0.0377	110	24	590
-115UN	350		350 MCM (Class D)		2.073		2.123	0.802	---	---	0.075	0.0316	105	25	665
-12UN	400	400 (127)			2.203		2.253	0.862	----	----	0.075	0.0273	100	27	750

1/ Unarmored. When armored option is required, see MIL-DTL-24643 for configuration of part number.

2/ Type LSTSGU and LSTSGA

## EXAMINATION AND TESTS:

Requirements:Basic electrical:

Conductor resistance - ohms/1000 feet at 25°C, maximum .....	(see table I)
Voltage withstand - volts, root mean square, minimum	
Sizes 3 through 9.....	3000
Sizes 14 and larger.....	5000
Insulation resistance - megohms -1000 feet, minimum .....	(see table I)
Conductor continuity .....	No failure

Group A:

Visual and dimensional.....	No failure
Watertightness - see MIL-DTL-24643 for limits of water leakage .....	No failure
Abrasion resistance - sizes 3 through 100 (extruded silicone rubber) scrapes, minimum.....	250
Crack resistance - sizes 3 through 100 (extruded silicone rubber).....	No damage

Group B:

Cross-linked proof test (percent, maximum)	
Insulation .....	50
Jacket (When tested at 200°C).....	50
Gas flame - 1 hour.....	No failure
Drip - $95 \pm 1^\circ\text{C}$ .....	Zero
Tear - pounds per inch thickness, minimum (ASTM D 470) .....	35
Cold bending, cable - see table I for mandrel diameter).....	No damage

## Physicals (Unaged)

Insulation (extruded)	
Tensile strength - lb/in <sup>2</sup> , minimum .....	750
Elongation - percent, minimum .....	125
Jacket (cable)	
Tensile strength - lb/in <sup>2</sup> , 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, method 1 only) -cycles, minimum (extruded silicon rubber only).....	25
Permanence of printing (jacket) - cycles, minimum.....	125
Cable sealant removability.....	No failure
Armor (type LSTSGA only) - conformance to material, construction and coverage .....	No failure
<u>Group D:</u>	
Flame propagation (cable) .....	No failure

#### QUALIFICATION INSPECTION:

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

	<u>Requirements:</u>
Cold working (minus $20 \pm 2^{\circ}\text{C}$ ) .....	No damage
Gas flame (3 hours).....	No failure
Specific gravity of extruded silicone insulation, maximum .....	1.55
Accelerated service - sizes 14 and larger (see table I for load current).....	No failure
Aging and compatibility (cable) ( $125 \pm 5^{\circ}\text{C}$ .) .....	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

UNIT ORDERING LENGTHS:

<u>Type and Size</u>	<u>Feet (nominal)</u>
LSTSGU - 3	2500
LSTSGU - 4 through 40	2000
LSTSGU - 50 through 60	1500
LSTSGU - 75 through 150	1000
LSTSGU - 200 through 400	800

Custodians:

Army - MI

Navy - SH

Preparing Activity:

Navy - SH

(Project 6145-2308-014)

Review Activities:

Army - AV, CR

Navy - CG, EC

DLA - CC