

INCH-POUND

MIL-DTL-24643/43F

1 October 2009

SUPERSEDING

MIL-DTL-24643/43E

22 August 2002

DETAIL SPECIFICATION SHEET

CABLE, ELECTRICAL, -20 °C TO +90 °C, 600 VOLTS, TYPE LS2SJ, LS3SJ, AND LS4SJ

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-24643.

Construction, Non-Watertight

- First - Copper conductor, tin-coated, ASTM B286, 14 AWG and smaller. Coated or uncoated copper, ASTM B286 or ASTM B8, Class B stranding, for 12 AWG sizes and larger.
- Second - Separator may be used at manufacturer's option where required to provide free-stripping insulation.
- Third - Thermoset insulation (see [table I](#) for dimensions). Standard identification code applied by Method 3.
- Fourth - Two, three, or four conductors (see [table I](#)), as required, shall be cabled together with a lay in accordance with [table I](#). Fillers may be used as necessary to form a firm well-rounded assembly.
- Fifth - An optional binder.
- Sixth - Braided shield of tin-coated copper.
- Seventh - An optional binder.
- Eighth - Cross-linked polyolefin jacket. Minimum average wall thickness of 0.035 inch.

TABLE I. Details.

Military part no. M24643/43	Type and size	Conductors			Insulation wall thickness min. avg. (inch)	Lay of conductors max. (inch)	Overall diameter		Conductor resistance max. (ohms)
		No.	ASTM B286	ASTM B8			Min. (inch)	Max. (inch)	
-01UO	LS2SJ-22	2	22 – 19		0.016	1½	0.261	0.275	16.54
-02UO	LS2SJ-20	2	20 – 19		0.016	1½	0.273	0.290	10.16
-03UO	LS2SJ-18	2	18 – 19		0.016	1½	0.295	0.310	6.47
-04UO	LS2SJ-16	2	16 – 19		0.016	2½	0.309	0.325	5.02
-05UO	LS2SJ-14	2	14 – 19		0.016	2½	0.337	0.350	3.17
-06UO	LS2SJ-12	2		12 (Class B)	0.024	3	0.417	0.430	1.72
-07UO	LS2SJ-11	2		10 (Class B)	0.025	3	0.447	0.460	1.085
-08UO	LS2SJ-9	2		9 (Class B)	0.031	4	0.525	0.545	0.86
-09UO	LS2SJ-7	2		7 (Class B)	0.032	4	0.600	0.615	0.54
-10UO	LS3SJ-22	3	22 – 19		0.016	1½	0.271	0.285	16.54
-11UO	LS3SJ-20	3	20 – 19		0.016	1½	0.284	0.300	10.16
-12UO	LS3SJ-18	3	18 – 19		0.016	1½	0.308	0.325	6.47
-13UO	LS3SJ-16	3	16 – 19		0.016	2½	0.323	0.340	5.02
-14UO	LS3SJ-14	3	14 – 19		0.016	2½	0.353	0.370	3.17
-15UO	LS3SJ-12	3		12 (Class B)	0.024	3	0.440	0.455	1.72
-16UO	LS3SJ-9	3		9 (Class B)	0.031	4	0.594	0.620	0.86
-17UO	LS4SJ-20	4	20 – 19		0.016	1½	0.303	0.320	10.16
-18UO	LS4SJ-16	4	16 – 19		0.016	2½	0.346	0.360	5.02
-19UO	LS4SJ-14	4	14 – 19		0.016	3	0.380	0.395	3.17

NOTE: Size designation does not correlate to conductor size for all types and sizes.

REQUIREMENTS:

Qualification required.

INSPECTION:

Basic Electricals:

Conductor resistance (ohms/1000 feet at 25 °C, max.)	See table I
Voltage withstand (volts, root mean square, min.)	
Conductor to conductor	1200
Conductor to shield	600
Insulation resistance (megohms/1000 feet, min.)	
Conductor to conductor	500

Conductor to shield	500
Conductor continuity	No failure
Shield continuity	No failure
Jacket flaws	No failure
Group A:	
Visual and dimensional	No failure
Group B:	
Thermoset proof test (percent, max.)	
Insulation	50
Jacket (when tested at 200 °C)	50
Physicals (unaged)	
Insulation (extruded)	
Tensile strength (lb/in ² , min.)	700
Elongation (percent, min.)	150
Jacket (cable)	
Tensile strength (lb/in ² , min.)	1300
Elongation (percent, min.)	160
Tear (lb/in thickness, min.)	35
Group C:	
Physicals (aged) air oven	
Insulation (extruded)	
Tensile strength (percent of unaged, min.)	75
Elongation (percent of unaged, min.)	75
Jacket (cable)	
Tensile strength (percent of unaged, min.)	60
Elongation (percent of unaged, min.)	60
Permanence of printing (jacket) (cycles, min.)	125
Heat distortion (percent of unaged, max.)	30
Shrinkage	No failure
Surface transfer impedance	
Milliohms per meter (max.)	700
EMP response (dB, min.)	60
Shield (conformance to material, construction and coverage)	No failure

Group D:

Flame propagation (cable)	No failure
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Qualification Inspection:

Qualification inspection shall include basic electricals; groups A, B, C, and D; plus the following:

Aging and compatibility (cable) (125±5 °C)	No failure
Abrasion resistance (jacket) (scrapes, min.)	75
Acid gas equivalent (percent, max.)	
Jacket	2
Fillers	2
Insulation	18
Halogen content (percent, max.)	
Jacket	0.2
Fillers	0.2
Insulation	0.2
Immersion (jacket)	
Tensile strength (percent of unaged, min.)	50
Elongation (percent of unaged, min.)	50
Smoke index (max.)	
Jacket	25
Fillers	45
Insulation	45
Toxicity index (max.)	
Jacket	5
Fillers	5
Insulation	1.5
Durometer (jacket) - Type A (hardness, min.)	80
Weathering (jacket)	No failure
Electrical moisture absorption	No failure

UNIT ORDERING LENGTHS:

<u>Type and size</u>	<u>Feet (nominal)</u>
LS2SJ, LS3SJ and LS4SJ – all sizes	1000

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.

Custodians:
Army – MI
Navy – SH

Preparing Activity:
Navy – SH
(Project 6145-2008-047)

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

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 <http://assist.daps.dla.mil>.