

INCH-POUND

MIL-DTL-24643/45F

1 October 2009

SUPERSEDING

MIL-DTL-24643/45E

22 August 2002

DETAIL SPECIFICATION SHEET

CABLE, ELECTRICAL, -20 °C TO +90 °C, TYPE LS2U

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, 26 AWG – 7 strands.
- Second - Separator may be used at manufacturer's option where required to provide free-stripping insulation.
- Third - Thermoset insulation. Nominal wall thickness of 0.015 inch: wall thickness may vary from nominal as necessary, in order for completed cable to meet the specified electrical requirements. Telephone identification code shall be applied by Method 3.
- Fourth - Two conductors cabled together with a maximum lay of 1½ inches to form a pair.
- Fifth - The specified number of pairs (see table I) shall be cabled together with a lay in accordance with 3.4.4 of MIL-DTL-24643. Cabling sequence shall be consecutive, starting with no. 1, from the center outward. Fillers may be used as necessary to form a firm well-rounded assembly.
- Sixth - An optional binder.
- Seventh - Braided shield of tin-coated copper.
- Eighth - An optional binder.
- Ninth - Cross-linked polyolefin jacket (see table I for thickness).

TABLE I. Details.

Military part no. M24643/45	Type and size	No. of pairs	Cable jacket thickness min. avg. (inch)	Overall diameter	
				min. (inch)	max. (inch)
-01UN	LS2U-10	10	0.050	0.450	0.480
-02UN	LS2U-15	15	0.050	0.530	0.560
-03UN	LS2U-19	19	0.050	0.550	0.580
-04UN	LS2U-30	30	0.050	0.670	0.700
-05UN	LS2U-45	45	0.050	0.830	0.870
-06UN	LS2U-60	60	0.065	0.920	0.960

## REQUIREMENTS:

Qualification required.

## INSPECTION:

## Basic Electricals:

Conductor resistance (ohms/1000 feet at 25 °C, max.)	45.19
Voltage withstand (volts, root mean square, min.)	
Conductor to conductor	2000
Conductor to shield	1000
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
Characteristic impedance, at 1 megahertz (MHz) (ohms)	135±15

## Group B:

Cold bending cable	No failure
Thermoset proof test (percent, max.)	
Insulation	50
Jacket (when tested at 200 °C)	50
Bending endurance, At 25±2 °C (cycles, min.)	25

Physicals (unaged)	
Insulation (extruded)	
Tensile strength (lb/in <sup>2</sup> , min.)	700
Elongation (percent, min.)	150
Jacket (cable)	
Tensile strength (lb/in <sup>2</sup> , min.)	1300
Elongation (percent, min.)	160
Tear (pounds per inch 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
Shield (conformance to material, construction and coverage)	No failure
Surface transfer impedance (Type LS only)	
Milliohms per meter (max.)	700
EMP response (dB, min.)	60
Group D:	
Flame propagation (cable)	No failure
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

Shield insulation	2
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>
LS2U – 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 6145-2008-049)

## 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>.

**From:** "CommandStandards" <[CommandStandards@navy.mil](mailto:CommandStandards@navy.mil)>  
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**Subject:** RE: M24643/45 Designation Change

Kevin,

NAVSEA is in agreement, because of the error during the publication of M24643/45F, it is acceptable to use cable manufactured with either the UN or the UO designations. A formal letter will follow this email as soon as possible; in the meantime, please consider this official acceptance of either cable.

Regards,  
Catherine McGuire

Q-2011-249 (SEA 05S Tracking)