

INCH-POUND

MIL-DTL-24643/20F

1 October 2009

SUPERSEDING

MIL-DTL-24643/20E

22 August 2002

DETAIL SPECIFICATION SHEET

CABLE, ELECTRICAL, -20 °C TO +105 °C, 1000 VOLTS, TYPE LS7SGU

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, Watertight with Circuit Integrity

- First - Copper conductor, coated or uncoated (see [table I](#) for size).
- Second - Thermoset insulation (see [table I](#) for thickness).
- Third - Optional glass braid.
- Fourth - Optional covering (unless required by 3.3.5 of MIL-DTL-24643).
- Fifth - The seven conductors 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. Standard identification code applied by Method 1.
- Sixth - An optional binder.
- Seventh - Cross-linked polyolefin jacket. Minimum average wall thickness of 0.040 inch.

TABLE I. Details.

Military part no. M24643/20	Type and size	Conductor size AWG	Cable overall diameter max. (inch)	Insulation thickness min. avg. (inch)	Conductor resistance max. (ohms)
-01UN	LS7SGU-3	16 (Class B)	0.545	0.018	4.3
-02UN	LS7SGU-4	14 (Class B)	0.595	0.018	2.68

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	3000
Insulation resistance (megohms/1000 feet, min.)	
Conductor to conductor	500
Conductor continuity	No failure

Group A:

Visual and dimensional	No failure
Abrasion resistance, extruded insulation only (scrapes min.)	250
Watertightness (see MIL-DTL-24643 for limits of water leakage)	No failure
Crack resistance (extruded insulation only)	No damage

Group B:

Cold bending cable	No failure
Thermoset proof test (percent, max.)	
Insulation	50
Jacket (when tested at 200 °C)	50
Drip (95±1°C)	Zero
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
Gas flame (1 hour)	No failure
Group C:	
Physicals (aged) air oven	
Jacket (cable)	
Tensile strength (percent of unaged, min.)	60
Elongation (percent of unaged, min.)	60
Permanence of printing (cycles, min.)	25
Permanence of printing (jacket) (cycles, min.)	125
Heat distortion (percent of unaged, max.)	30
Cable fill (sealant) removability	No failure
Shrinkage	No failure
Group D:	
Flame propagation (cable)	No failure
Qualification Inspection:	
Qualification inspection shall include basic electricals; groups A, B, C, and D; plus the following:	
Cold working (minus 20±2 °C)	No damage
Gas flame (3 hours)	No failure
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>
LS7SGU all sizes	2000

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 6145-2008-024)

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>.