

DETAIL SPECIFICATION SHEET

CABLE, ELECTRICAL, -20 °C TO +105 °C, 1000 VOLTS, TYPE LS40W

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, extruded or taped (see [table I](#) for minimum average wall).
- Third - Optional glass braid.
- Fourth - Optional covering, unless required (see 3.3.5 of MIL-DTL-24643).
- Fifth - Four conductors shall be cabled together to form a firm well-rounded assembly with a lay not less than 8 or greater than 16 times the cabled diameter. Standard identification code applied by Method 1, 3, or 5. Fillers may be used as necessary to form a firm well-rounded assembly.
- Sixth - Aluminum foil/polyester tape/aluminum foil. 0.002-inch thick with 45 percent overlap.
- Seventh - Braided shield of tin-coated copper. AWG and coverage as necessary to comply with shield performance requirements.
- Eighth - An optional binder.
- Ninth - Cross-linked polyolefin jacket (see [table I](#) for wall thickness).

TABLE I. Details.

Military part no. M24643/68 (type)	Conductors size (AWG)	Insulation resistance (megohms)	Insulation wall thickness min. avg. (inches)	Jacket wall thickness min. avg. (inches)	Overall diameter (inches)		Conductor resistance per 1000 feet at 25 °C (ohms)
					Min.	Max.	
-01UO (LS4OW-3)	16 (Class B)	500	0.018	0.027	0.412	0.442	4.3
-02UO (LS4OW-4)	14 (Class B)	500	0.018	0.028	0.437	0.469	2.68
-03UO (LS4OW-9)	10 (Class B)	500	0.018	0.036	0.559	0.600	1.08
-04UO (LS4OW-14)	9 (Class B)	500	0.018	0.040	0.772	0.828	0.859
-05UO (LS4OW-23)	7 (Class B)	500	0.030	0.050	0.900	0.965	0.543
-06UO (LS4OW-50)	3 (Class C)	200	0.030	0.050	1.084	1.163	0.21
-07UO (LS4OW-75)	1 (Class C)	175	0.035	0.050	1.254	1.345	0.134
-08UO (LS4OW-100)	0 (Class D)	160	0.035	0.060	1.396	1.498	0.106
-085UO (LS4OW-150)	000 (Class D)	135	0.050	0.060	1.600	1.725	0.067
-09UO (LS4OW-200)	0000 (Class D)	125	0.050	0.060	1.850	1.984	0.053

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 (sizes 3 – 9)	3000
Conductor to conductor (sizes 14 – 200)	5000
Conductor to shield (sizes 3 – 9)	5000
Conductor to shield (sizes 14 – 200)	2500
Insulation resistance (megohms/1000 feet, min.)	
Sizes 3 – 200	See table I
Conductor and shield continuity	No failure

Jacket flaws	No failure
Group A:	
Visual and dimensional	No failure
Watertightness (see MIL-DTL-24643 for limits of water leakage)	No failure
Crack resistance (applicable to constructions using glass braids with coverings)	No damage
Group B:	
Thermoset proof test (percent, max.)	
Insulation (extruded insulations only)	50
Jacket (when tested at 200 °C)	50
Drip (95±1 °C)	Zero
Cold bending (cable)	No damage
Gas flame (1 hour)	No failure
Physicals (unaged)	
Insulation (extruded insulation only)	
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)	
Jacket (cable)	
Tensile strength (percent of unaged, min.)	60
Elongation (percent of unaged, min.)	60
Shrinkage	No failure
Heat distortion (percent of unaged, max.)	30
Permanence of printing (conductor – Method 1 only) (cycles, min.)	25
Permanence of printing (jacket) (cycles, min.)	125
Cable sealant removability	No failure
Surface transfer impedance	
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:	
Gas flame (3 hours)	No failure
Aging and compatibility (cable) (125±5 °C)	No failure
Abrasion resistance	
Jacket (75 scraps, min.)	No damage
Insulation (extruded insulation only, 250 scraps, min.)	No damage
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	35
Toxicity index, max.	
Jacket	5
Fillers	5
Insulation	1.5
Durometer (jacket) – Type A (hardness, min.)	80
Weathering (jacket)	No failure

UNIT ORDERING LENGTHS:

<u>Type and size</u>	<u>Feet (nominal)</u>
LS4OW	500

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 6145-2009-111)

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>.