INCH-POUND
MIL-DTL-24643/3E
1 October 2009
SUPERSEDING
MIL-DTL-24643/3D
22 August 2002

DETAIL SPECIFICATION SHEET

CABLE, ELECTRICAL, -20 °C TO +90 °C, 600 VOLTS, TYPES LSSHOF, LSDHOF, LSTHOF, AND LSFHOF

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, coated or uncoated (see table I for size).
Second	-	Separator may be used at manufacturer's option where required to provide free-stripping insulation.
Third	-	Thermoset insulation (see table I for wall thickness). Standard identification code applied by Method 1 or Method 3. NOTE: A colored tape may be used on Size 23 and larger. If identification Method 1 is used, insulation color shall be black.
Fourth	-	An optional reinforcement on Type LSSHOF, Size 23 and larger.
Fifth	-	The specified number of conductors (see table I) shall be cabled together with a left-hand lay as required for the completed cable to meet the twisting and bending endurance tests. On multi-conductor types, fillers may be used as necessary to form a firm well-rounded assembly; and the cabling sequence shall be consecutive.
Sixth	-	An optional binder.
Seventh	-	Cross-linked polyolefin jacket (see table I for thickness).

TABLE I. Details.

Military part no. 24643/3	Type and size	Conductor size		Insulation thickness min. avg. (inch)	Number of conductors	Jacket wall thickness min. avg. (inch)	Overall diameter		Roller dia. for bending endurance (max.) (inch)	Conductor resistance (ohms)	Insulation resistance (megohm)
		Navy std.	AWG				min. (inch)	max. (inch)			
-01UN	LSSHOF-3		16 (Class M)	0.031	1	0.030	0.195	0.210	NA	4.28	300
-02UN	LSSHOF-23		7 (Class K)	0.040	1	0.040	0.440	0.460	NA	0.546	300
-03UN	LSSHOF-60	60 (304)		0.050	1	0.050	0.570	0.600	NA	0.187	250
-04UN	LSSHOF-150	150 (760)		0.070	1	0.050	0.830	0.870	NA	0.0747	200
-05UN	LSSHOF-200	200 (988)		0.070	1	0.050	0.940	0.980	NA	0.0575	200
-06UN	LSSHOF-250	250 (1254)		0.070	1	0.070	1.035	1.085	NA	0.0453	150
-07UN	LSSHOF-500		500 MCM (Class K)	0.090	1	0.070	1.380	1.450	NA	0.0234	100
-08UN	LSSHOF-650		650 MCM (Class G)	0.100	1	0.070	1.540	1.610	NA	0.0174	100
-09UN	LSSHOF-800	800 (4033)		0.100	1	0.070	1.600	1.670	NA	0.0141	100
-10UN	LSDHOF-3		16 (Class K)	0.031	2	0.040	0.405	0.425	1.3	4.36	300
-11UN	LSDHOF-4		14 (Class K)	0.031	2	0.040	0.440	0.460	1.4	2.73	250
-12UN	LSDHOF-6		12 (Class K)	0.031	2	0.040	0.490	0.510	1.5	1.72	200
-13UN	LSDHOF-9	9 (90)		0.031	2	0.050	0.540	0.570	1.7	1.24	200
-14UN	LSDHOF-14	14 (140)		0.040	2	0.050	0.675	0.705	2.1	0.802	200
-15UN	LSDHOF-23		7 (Class K)	0.040	2	0.050	0.820	0.860	3.0	0.560	150
-16UN	LSDHOF-30		5 (Class K)	0.050	2	0.050	0.920	0.960	3.5	0.351	150
-17UN	LSDHOF-83	83 (418)		0.070	2	0.070	1.390	1.450	7.0	0.139	150
-18UN	LSDHOF-250	250 (1254)		0.070	2	0.100	2.000	2.100		0.0462	100
-19UN	LSDHOF-400	400 (2052)		0.090	2	0.100	2.400	2.500		0.0283	100

TABLE I. Details - Continued.

Military part no. 24643/3	Type and size	Conductor size		Insulation thickness min. avg. (inch)	Number of conductors	Jacket wall thickness min. avg. (inch)	Overall diameter		Roller dia. for bending endurance (max.) (inch)	Conductor resistance (ohms)	Insulation resistance (megohm)
		Navy std.	AWG				min. (inch)	max. (inch)			
-20UN	LSTHOF-3		16 (Class K)	0.031	3	0.040	0.430	0.450	1.4	4.36	300
-21UN	LSTHOF-4		14 (Class K)	0.031	3	0.040	0.460	0.480	1.4	2.73	250
-22UN	LSTHOF-6		12 (Class K)	0.031	3	0.050	0.520	0.550	1.7	1.72	200
-23UN	LSTHOF-9	9(90)		0.031	3	0.050	0.570	0.600	1.8	1.24	200
-24UN	LSTHOF-14	14 (140)		0.040	3	0.050	0.720	0.750	2.3	0.802	200
-25UN	LSTHOF-23		7 (Class K)	0.040	3	0.050	0.860	0.900	3.5	0.560	150
-26UN	LSTHOF-42	42 (209)		0.070	3	0.070	1.200	1.250	4.5	0.277	150
-27UN	LSTHOF-150	150 (760)		0.070	3	0.100	1.740	1.820		0.0762	125
-28UN	LSTHOF-250	250 (1254)		0.070	3	0.100	2.140	2.240		0.0462	100
-29UN	LSTHOF-400	400 (2052)		0.090	3	0.100	2.680	2.800		0.0283	100
-30UN	LSTHOF-500		500 MCM (Class K)	0.090	3	0.100	2.920	3.100		0.0230	100
-31UN	LSTHOF-600		600 MCM (Class G)	0.100	3	0.100	2.980	3.150		0.0200	100
-32UN	LSFHOF-3		16 (Class K)	0.031	4	0.040	0.460	0.480	1.4	4.36	300
-33UN	LSFHOF-4		14 (Class K)	0.031	4	0.040	0.520	0.550	1.6	2.73	250
-34UN	LSFHOF-9	9(90)		0.031	4	0.050	0.630	0.660	1.8	1.24	200
-35UN	LSFHOF-42	42 (209)		0.070	4	0.070	1.300	1.380	4.1	0.277	150
-36UN	LSFHOF-60	60 (304)		0.070	4	0.070	1.430	1.510	4.5	0.191	150
-37UN	LSFHOF-133	133 (684)		0.070	4	0.100	1.920	2.000		0.0847	125

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.)	
Type LSSHOF only:	
Conductor to ground	2000
Types LSDHOF, LSTHOF, LSFHOF only:	
Conductor to conductor (Sizes 3 to 9 inclusive)	2000
Conductor to conductor (Sizes 14 to 600 inclusive)	2500
Insulation resistance (megohms/1000 feet, min.)	
Type LSSHOF only:	
Conductor to ground	See table I
Types LSDHOF, LSTHOF, LSFHOF only:	
Conductor to conductor	See table I
Conductor continuity	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
Twisting and bending endurance	
At 75 °C, cycles, min.	6000
At minus 30±2 °C (cycles, min.)	2000

NOTE: Tests to be performed on all sizes of LSDHOF, LSTHOF, and LSFHOF, excepting LSDHOF-400, LSTHOF-150, LSTHOF-250, LSTHOF-400, LSTHOF-500, LSTHOF-600, LSFHOF-133. Test not required for LSSHOF (see table I for roller sizes).

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 (insulation, Method 1 only) (cycles, min.)	25
Permanence of printing (jacket) (cycles, min.)	125
Heat distortion (percent of unaged, max.)	30
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:	
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:

Type	Size	Feet (nominal)
LSSHOF	23	2000
LSSHOF	60 through 250	1000
LSSHOF	500 through 800	500
LSDHOF	6	2000
LSDHOF	9 and 14	1500
LSDHOF	23 through 83	1000
LSDHOF	250 and 400	500
LSTHOF	6	2000
LSTHOF	9 and 14	1500
LSTHOF	23 through 150	1000
LSTHOF	250 through 600	500
LSFHOF	4	2000
LSFHOF	9	1500
LSFHOF	42 and 60	1000
LSFHOF	133	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 6145-2008-008)

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.