INCH-POUND
MIL-DTL-24643/3D
22 August 2002
SUPERSEDING
MIL-C-24643/3C
14 March 1994

DETAIL SPECIFICATION SHEET

CABLE, ELECTRICAL, 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 the issue of MIL-DTL-24643 listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation.

REQUIREMENTS:

Qualification required.

Construction (non-watertight)

First - Copper conductor, uncoated (see table I for size).
Second - Separator may be used at manufacturer's option where required to provide free-stripping insulation.
Third - Ethylene propylene rubber (see table I for wall thickness). Standard identification code applied by method 3 or 4. Note a colored tape may be used on size 23 and larger.
Fourth - Reinforcement on type LSSHOF, size 23 and larger.
Fifth - The required number of conductors cabled together with a left hand lay (see table I for length of lay). Fillers shall be employed on multi-conductor types to obtain a firm well rounded assembly.
Sixth - Binder tape applied helically with overlap on multi-conductor cables.
Seventh - Cross-linked polyolefin jacket.

NOTE: The initial letter of the cable designation denotes the number of conductors. Thus "S" denotes a single conductor cable; "D" a two-conductor cable; "T" a three-conductor cable; and "F" a four-conductor cable.

TABLE I. Details.

Military part no. 24643/3	Type and size	Conductor size		Insulation thickness min avg (in)	Lay of conductor max (in)	Jacket wall thickness min avg (in)	Overall diameter		Roller dia for bending endurance (max) (in)	Conductor res 1000 ft (max ohms)	Insulation resistance (meg-ohm)
		Navy Std.	AWG				min (in)	max (in)			
-01UN	LSSHOF-3		16 (CLASS M)	0.031		0.030	0.195	0.210		4.28	300
-02UN	LSSHOF-23		7 (CLASS K)	0.040		0.040	0.440	0.460		0.546	300
-03UN	LSSHOF-60	60 (304)		0.050		0.050	0.570	0.600		0.187	250
-04UN	LSSHOF-150	150 (760)		0.070		0.050	0.830	0.870		0.0747	200
-05UN	LSSHOF-200	200 (988)		0.070		0.050	0.940	0.980		0.0575	200
-06UN	LSSHOF-250	250 (1254)		0.070		0.070	1.035	1.085		0.0453	150
-07UN	LSSHOF-500		500MCM (CLASS K)	0.090		0.070	1.380	1.450		0.0234	100
-08UN	LSSHOF-650		650MCM (CLASS G)	0.100		0.070	1.540	1.610		0.0174	100
-09UN	LSSHOF-800	800 (4033)		0.100		0.070	1.600	1.670		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	.440	0.460	1.4	2.73	250
-12UN	LSDHOF-6		12 (CLASS K)	0.031	2-1/2	0.040	.490	0.510	1.5	1.72	200

Military part no. 24643/3	Type and size	Conductor size		Insulation thickness min avg (in)	Lay of conductor max (in)	Jacket wall thickness min avg (in)	Overall diameter		Roller dia for bending endurance (max) (in)	Conductor res. 1000 ft (max ohms)	Insulation resistance (meg-ohm)
		Navy std.	AWG				min (in)	max (in)			
-13UN	LSDHOF-9	9(90)		0.031	3	0.050	.540	0.570	1.7	1.24	200
-14UN	LSDHOF-14	14 (140)		0.040	4	0.050	.675	0.705	2.1	0.802	200
-15UN	LSDHOF-23		7(CLASS K)	0.040	5-1/2	0.050	.820	0.860	3.0	0.560	150
-16UN	LSDHOF-30		5(CLASS K)	0.050	7-1/2	0.050	.920	0.960	3.5	0.351	150
-17UN	LSDHOF-83	83 (418)		0.070	16	0.070	1.390	1.450	7.0	.139	150
-18UN	LSDHOF-250	250 (1254)		0.070	24	0.100	2.000	2.100		.0462	100
-19UN	LSDHOF-400	400 (2052)		0.090	30	0.100	2.400	2.500		.0283	100
-20UN	LSTHOF-3		16(CLASS K)	0.031	2	0.040	0.430	0.450	1.4	4.36	300
-21UN	LSTHOF-4		14(CLASS K)	0.031	2-1/2	0.040	.460	.480	1.4	2.73	250
-22UN	LSTHOF-6		12(CLASS K)	0.031	3	0.050	.520	.550	1.7	1.72	200
-23UN	LSTHOF-9	9(90)		0.031	3-1/2	0.050	.570	.600	1.8	1.24	200
-24UN	LSTHOF-14	14 (140)		0.040	4-1/2	0.050	.720	.750	2.3	0.802	200

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		Navy Std.	AWG				min (in)	max (in)			
-25UN	LSTHOF-23		7(CLASS K)	0.040	6	0.050	.860	.900	3.5	0.560	150
-26UN	LSTHOF-42	42 (209)		0.070	12	0.070	1.200	1.250	4.5	0.277	150
-27UN	LSTHOF-150	150 (760)		0.070	18	0.100	1.740	1.820		0.0762	125
-28UN	LSTHOF-250	250 (1254)		0.070	24	0.100	2.140	2.240		0.0462	100
-29UN	LSTHOF-400	400 (2052)		0.090	30	0.100	2.680	2.800		0.0283	100
-30UN	LSTHOF-500		500MCM (CLASS K)	0.090	33	0.100	2.920	3.100		0.0230	100
-31UN	LSTHOF-600		600MCM (CLASS G)	0.100	36	0.100	2.980	3.150		0.0200	100
-32UN	LSFHOF-3		16 (CLASS K)	0.031	2-1/2	0.040	0.460	.480	1.4	4.36	300
-33UN	LSFHOF-4		14 (CLASS K)	0.031	3	0.040	0.520	.550	1.6	2.73	250
-34UN	LSFHOF-9	9(90)		0.031	4	0.050	0.630	.660	1.8	1.24	200
-35UN	LSFHOF-42	42 (209)		0.070	15	0.070	1.300	1.380	4.1	0.277	150
-36UN	LSFHOF-60	60 (304)		0.070	18	0.070	1.430	1.510	4.5	0.191	150
-37UN	LSFHOF-133	133 (684)		0.070	20	0.100	1.920	2.000		0.0847	125

EXAMINATION AND TESTS:

Basic electrical:	Requirements:
Conductor resistance - ohms/1000 feet at 25°C, maximum	(see table I)
Voltage withstand - volts, root mean square, minimum	
Sizes 3 to 9, inclusive	2000
Sizes 14 to 800, inclusive	2500
Insulation resistance - megohms -1000 feet, minimum	(see table I)
Conductor continuity	No failure
Group A:	
Visual and dimensional	No failure
Group B:	
Cross-linked proof test (percent, maximum)	
Insulation	50
Jacket (when tested at 200°C)	50
Tear - pounds per inch thickness, minimum (ASTM D 470)	35
Physicals (unaged)	
Insulation	
Ethylene propylene rubber	
Tensile strength - lb/in^2, minimum	700
Elongation - percent, minimum	250
Jacket (cable)	
Tensile strength - lb/in^2, minimum	1300
Elongation - percent, minimum	160
Twisting and bending endurance - (see note 1)	
At 75°C, cycles, minimum	6000
At minus 30 $\pm$ 2°C, cycles, minimum	2000

NOTE: 1. 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).

Group C:	
Physicals (aged)	
Insulation	
Ethylene propylene	
Air oven	
Tensile strength - percent of unaged, minimum	75
Elongation - percent of unaged minimum	75

Jacket (cable)
Air oven
Tensile strength - percent of unaged, minimum 60
Elongation - percent of unaged minimum 60
Hot oil immersion
Tensile strength - percent of unaged, minimum 50
Elongation - percent of unaged, minimum 50
Shrinkage ..... No failure
Heat distortion - percent of unaged, maximum 30
Permanence of printing (jacket) - cycles, minimum 125

Group D:
Flame propagation (cable) ..... No failure

QUALIFICATION INSPECTION:

Qualification inspection shall include basic electrical, all of groups A, B, C and D, plus the following:

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

UNIT ORDERING LENGTHS: 250 thru 600

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

NOTE: (LSSHOF-3, LSDHOF-3, LSDHOF-4, LSTHOF-3, LSTHOF-4, LSFHOF-3) packed: 500 feet (nominal)

Custodians:
Army - MI
Navy - SH

Preparing Activity:
Navy - SH
(Project 6145-2308-002)

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