

Multi-Core “LFH” Insulated and Sheathed Cable for Military Vessels

DEF61-12 Part 25 600V 85°C



Application

Multi-core lightweight thin-wall insulated cables for power, lighting, control, communication and instrumentation circuits in HM surface ships and submarines. Incorporates LFH (Limited Fire Hazard) insulation and sheathed for reduced levels of smoke and toxic fumes in the event of a fire. Suitable for use in fixed or flexible applications where fuel, lubricating oils, hydraulic fluids and water are present.

Specifications

- In accordance with DEF61-12 part 25.
- **Conductor:** Stranded Class 2 tinned copper conductors to BS EN 60228.
- **Insulation:** Thin-wall LFH (Limited Fire Hazard) insulation to DEF61-12 part 25.
N.B. Cores comply with DEF61-12 part 18 for category 1 equipment wires.
- **Core Identification:**
2 core - red, blue.
3 core - red, blue, white.
Above three core - Red and blue marker cores adjacent in each layer with remaining cores white.
N.B. When a single core is used as a centre the colour shall be white. In addition, cables of four core and above will also be numbered, in a contrasting colour, the core colours remaining as detailed above.
- **Binder Tape:** p.e.t.p. tape minimum 20% overlap.
- **Outer Sheath:** Black LFH (Limited Fire Hazard) outer sheath to DEF61-12 part 31. In addition, the outer sheath also displays the following characteristics:
Minimum oxygen index: 30%.
Maximum HCL emission @ 800°C: 0.5%.
- Flame retardant to DS 02-641.
- **Voltage Rating:** 600V rms/800V d.c. (between cores, or between cores and ships structure, or between cores and cable screen).
- **Temperature Rating:** 85°C maximum conductor operating temperature.
N.B. Cables will retain a degree of flexibility in service under weatherdeck conditions of -30°C.

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N.S.N. 6145-99-	Anixter Number A10DW-	Nominal Cond Area mm ²	Nominal Cond Stranding #/mm	Number of Cores	Insulation Thickness mm	Minimum O/D mm	Maximum O/D mm	Approx Cable Weight kg/km
DEF61-12 part 25 Table 4								
891-9293	891-9293	0.20	19/0.12	2	0.2	3.6	4.8	23
891-9874	891-9874	0.20	19/0.12	3	0.2	3.95	5.05	28
891-9875	891-9875	0.20	19/0.12	7	0.2	4.7	5.9	44
891-9876	891-9876	0.20	19/0.12	14	0.2	6.0	7.4	73
891-9877	891-9877	0.20	19/0.12	24	0.2	7.6	9.0	115
891-9878	891-9878	0.20	19/0.12	37	0.2	8.3	10.2	160
891-9879	891-9879	0.20	19/0.12	44	0.2	9.4	11.4	190
DEF61-12 part 25 Table 5								
891-9880	891-9880	0.35	19/0.15	3	0.2	4.25	5.4	33
891-9881	891-9881	0.35	19/0.15	7	0.2	5.15	6.45	56
891-9882	891-9882	0.35	19/0.15	14	0.2	6.7	8.1	95
891-9883	891-9883	0.35	19/0.15	19	0.2	7.25	8.75	125
891-9884	891-9884	0.35	19/0.15	24	0.2	8.5	10.1	155
891-9885	891-9885	0.35	19/0.15	37	0.2	9.55	11.45	215
891-9886	891-9886	0.35	19/0.15	44	0.2	10.8	12.8	280
DEF61-12 part 25 Table 6								
891-9310	891-9310	0.60	19/0.20	2	0.2	4.4	5.7	34
891-9887	891-9887	0.60	19/0.20	3	0.2	4.8	6.0	45
891-9313	891-9313	0.60	19/0.20	4	0.2	5.1	6.3	55
891-9888	891-9888	0.60	19/0.20	7	0.2	5.9	7.2	81
891-9889	891-9889	0.60	19/0.20	14	0.2	7.95	9.4	150
891-9890	891-9890	0.60	19/0.20	19	0.2	8.7	10.2	190
891-9891	891-9891	0.60	19/0.20	24	0.2	10.0	11.8	235
891-9892	891-9892	0.60	19/0.20	37	0.2	11.5	13.4	340
DEF61-12 part 25 Table 7								
891-9893	891-9893	1.0	19/0.25	2	0.2	5.1	6.3	47
892-0029	892-0029	1.0	19/0.25	3	0.2	5.35	6.55	59
892-0030	892-0030	1.0	19/0.25	4	0.2	5.75	7.0	72
892-0031	892-0031	1.0	19/0.25	7	0.2	6.65	7.95	110
892-0032	892-0032	1.0	19/0.25	10	0.2	8.4	9.8	155
892-0033	892-0033	1.0	19/0.25	14	0.2	9.05	10.5	205
892-0034	892-0034	1.0	19/0.25	19	0.2	9.95	11.7	265
892-0035	892-0035	1.0	19/0.25	24	0.2	11.7	13.5	335
892-0036	892-0036	1.0	19/0.25	37	0.2	13.45	15.4	500

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DEF61-12 part 25 Table 8								
892-0037	892-0037	1.5	19/0.30	2	0.2	5.6	6.8	58
892-0038	892-0038	1.5	19/0.30	3	0.2	5.9	7.1	75
892-0039	892-0039	1.5	19/0.30	7	0.2	7.4	8.7	145
892-0040	892-0040	1.5	19/0.30	14	0.2	10.15	11.8	275
892-0041	892-0041	1.5	19/0.30	24	0.2	13.4	15.2	460
DEF61-12 part 25 Table 9								
892-0042	892-0042	2.5	37/0.30	2	0.25	6.9	8.0	93
892-0043	892-0043	2.5	37/0.30	3	0.25	7.3	8.4	125
892-0044	892-0044	2.5	37/0.30	7	0.25	9.55	10.7	260
892-0045	892-0045	2.5	37/0.30	14	0.25	13.45	14.9	500
892-0046	892-0046	2.5	37/0.30	24	0.25	17.50	19.2	830

Minimum Bending Radius: Flexing Applications 10D.
Fixed Applications 4D.

Where D = overall diameter of the cable.

Technical Information

for DEF 61-12 Part 25 Cables

Conductor Size mm ²	0.35	0.6	1.0	1.5	2.5
Nominal Conductor Stranding #/mm	19/0.15	19/0.2	19/0.25	19/0.3	37/0.3
Maximum d.c. Conductor Resistance @ 20°C Ω/km	60.0	33.1	21.1	14.5	7.6
Maximum a.c. Conductor Resistance @ 85°C Ω/km	75.3	41.6	26.5	18.2	9.54
Reactance @ 60Hz Ω/km	0.108	0.101	0.096	0.093	0.091
Nominal Mutual Capacitance:					
Un-screened and Collectively Screened Multicore Cables above 3 core	65	75	85	90	95
Individually Screened Multipair/triple Cable and 2/3 Core Collectively Screened	125	150	170	190	200

CURRENT RATINGS

Conductor Size mm ²	Current Rating *A
0.35	6.5
0.60	8.5
1.0	11
1.5	16
2.5	27

* The ratings quoted are based on 40°C ambient air temperature and assume only one core carrying current. When more than one core carries current the following factors should be applied:

Number of cores loaded	2	3	4	7	14	18	30
Rating factor	0.825	0.73	0.66	0.54	0.39	0.36	0.28

Ambient air temp °C	35	40	45	50	55	60	65	70
Rating factor	1.05	1.0	0.94	0.88	0.82	0.75	0.67	0.58