



Standard Practice for Selection of Wire and Cable Size in AWG or Metric Units¹

This standard is issued under the fixed designation F 1883; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice is intended as a guide to shipbuilders, shipowners, and design agents for use in the selection of conductor size for single conductor or multiple conductor cable sizes either in American Wire Gauge (AWG) or metric designations for commercial ship design and construction.

1.2 The comparison chart of electrical conductor sizes shown in Table 1 presents a combined listing of international standard sizes of Class 2 stranded copper conductors in accordance with AWG (Specification B 8) English units or IEC (IEC 60228) metric units.

1.3 As a precautionary caveat, some conductor sizes listed in Table 1 may exceed minimal size requirements of the U.S. Coast Guard, the American Bureau of Shipping, and IEEE STD 45 for specific applications.

1.4 The values stated for ampacity and dc resistance are presented as maximum values and are provided for information only.

2. Referenced Documents

2.1 ASTM Standards:

B 8 Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft²

B 193 Test Method for Resistivity of Electrical Conductor Materials²

2.2 IEC Standards:³

IEC 60092-350 Electrical Installations in Ships—Part 350: Shipboard Power: Cables—General Construction and Test Requirements

IEC 60228 Conductors of Insulated Cables

2.3 IEEE Standard:⁴

IEEE STD 45 Recommended Practice for Electric Installations on Shipboard

TABLE 1 Conversion Table—AWG/Metric Preferred Sizes of Conductors

Size Metric, mm ²	Size AWG/MCM	Area in Circ Mils (Nominal)	Ampacity ^A	dc Resistances at 20°C ^B	
				Ohms per 1000 ft	Ohms per km
1000*	2000* ^C	2 000 000	1155	0.0053	0.0177
		1 970 000	1145	0.0054	0.0176
800*	1750*	1 750 000	1070	0.0063	0.0199
		1 580 000	1009	0.0067	0.0224
	1500*	1 500 000	980	0.0071	0.0232
	1250*	1 250 000	890	0.0085	0.0278
630*		1 240 000	886	0.0096	0.0286
500*	1000*	1 000 000	780	0.0106	0.0347
		987 000	772	0.0105	0.0369
400*		789 000	675	0.0133	0.0475
	750*	750 000	655	0.0141	0.0463
	600*	600 000	575	0.0176	0.0578
300*		592 000	570	0.0211	0.0607
	500*	500 000	515	0.0211	0.0694
		474 000	499	0.0219	0.0762
240*	400*	400 000	455	0.0264	0.0867
185*		365 000	431	0.0286	0.1000
	350*	350 000	420	0.0302	0.0990
	300*	300 000	375	0.0353	0.1157
		296 000	372	0.0353	0.1260
150*	250*	250 000	340	0.0423	0.1388
120*		237 000	327	0.0436	0.1540
	4/0*	211 600	300	0.0500	0.1639
		187 000	265	0.0551	0.1950
95*	3/0*	167 000	260	0.0631	0.2065
70*		138 000	230	0.0752	0.2700
	2/0*	133 100	225	0.0794	0.2605
	1/0*	105 600	195	0.1002	0.3288
		98 700	185	0.1044	0.3910
50*	1	83 690	165	0.1261	0.4139
35*		69 100	144	0.1495	0.5290
	2*	66 360	140	0.1588	0.5211
	3	52 620	120	0.2005	0.6577
		49 300	115	0.2057	0.7340
25*	4*	41 740	105	0.2528	0.8295
16*		31 600	89	0.3259	1.160
	6*	26 240	80	0.4023	1.320
		19 700	63	0.5167	1.840
10*	8*	16 510	55	0.6380	2.093
6.0*		11 800	43	0.8543	3.110
	10*	10 380	40	1.017	3.335
4.0*		7 890	30	1.304	4.700
	12*	6 530	25	1.620	5.315
		4 930	22	2.067	7.560
2.5*	14*	4 110	20	2.573	8.442
1.5*		2 960	...	3.417	12.20
	16*	2 580	...	4.020	13.19
		1 970	...	5.213	18.20
1.0*		1 773	...	6.45	21.10
0.90		1 620	...	6.82	20.95
	18*	1 576	...	6.52	21.40
		1 480	...	6.82	24.80

¹ This specification is under the jurisdiction of ASTM Committee F25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.10 on Electrical.

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² *Annual Book of ASTM Standards*, Vol 02.03.

³ Available from International Electrochemical Commission, 1 rue de Varembe, Geneva, Switzerland.

⁴ Available from Institute of Electrical and Electronics Engineers, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854.