



Standard Specification for Concentric-Lay-Stranded Aluminum Conductors, Aluminum-Clad Steel Reinforced for Use in Overhead Electrical Conductors¹

This standard is issued under the fixed designation B549; 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 specification covers concentric-lay-stranded conductors made from round aluminum 1350-H19 (extra hard) aluminum wires and round aluminum-clad steel core wires for use as overhead electrical conductors (Explanatory [Note 1](#) and [Note 2](#)).

1.2 The SI values of density and resistivity are to be regarded as standard. For all other properties the inch-pound units are regarded as standard and the SI units may be approximate.

2. Referenced Documents

2.1 The following documents of the issue in effect on date of material purchase form a part of this specification to the extent referenced herein.

2.2 ASTM Standards:²

[B230/B230M Specification for Aluminum 1350–H19 Wire for Electrical Purposes](#)

[B263 Test Method for Determination of Cross-Sectional Area of Stranded Conductors](#)

[B354 Terminology Relating to Uninsulated Metallic Electrical Conductors](#)

[B500/B500M Specification for Metallic Coated or Aluminum Clad Stranded Steel Core for Use in Overhead Electrical Conductors](#)

[B502 Specification for Aluminum-Clad Steel Core Wire for Use in Overhead Electrical Aluminum Conductors](#)

[E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications](#)

¹ This specification is under the jurisdiction of ASTM Committee B01 on Electrical Conductors and is the direct responsibility of Subcommittee B01.07 on Conductors of Light Metals.

Current edition approved April 1, 2013. Published May 2013. Originally approved in 1971. Last previous edition approved in 2010 as B549 – 10. DOI: 10.1520/B0549-13.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

2.3 ANSI Standards:³

[ANSI C 42.100 Dictionary of Electrical and Electronics Terms](#)

[ANSI H 35.1 American National Standard Alloy and Temper Designation Systems for Aluminum](#)

2.4 Other Standard:

[NBS Handbook 100—Copper Wire Tables of the National Bureau of Standards](#)⁴

3. Terminology

3.1 Description of Terms Specific to This Standard

3.1.1 ACSR covered by this specification has one type of steel core wire which is designated by the following abbreviation (Explanatory [Note 2](#)):

3.1.1.1 ACSR/AW—ACSR using aluminum-clad steel wire (Explanatory [Note 2](#)).

4. Classification

4.1 For the purpose of this specification, conductors are classified as follows (Explanatory [Note 1](#) and [Note 2](#)):

4.1.1 *Class AA*—For bare conductors usually used in overhead lines. These conductors are used as follows:

4.1.1.1 Conductors used for regular overhead line construction and

4.1.1.2 Conductors having a high ratio of mechanical strength to current-carrying capacity used for overhead ground wires and for extra-long span construction.

4.1.2 *Class A*—For conductors to be covered with weather-resistant (weatherproof) materials.

5. Ordering Information

5.1 Orders for material under this specification shall include the following information:

5.1.1 Quantity of each size, stranding, and class,

5.1.2 Conductor size: circular mil area or AWG of aluminum wires (Section [9](#) and [Table 1](#)),

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

⁴ Available from National Technical Information Service (NTIS), 5301 Shawnee Rd., Alexandria, VA 22312, <http://www.ntis.gov>.

TABLE 1 Construction Requirements of Concentric-Lay-Stranded Aluminum Conductors, Aluminum-Clad Steel Reinforced^A

Code Name ^B	Conductor Size				Stranding						Conductor Rated Strength	Conductor Mass per Unit Length			
	Cross-sectional Area Using Aluminum Strand Wires		Approximate Cross-sectional Area Including Nominal Aluminum Area in AW Strand Wires ^D		Aluminum		Aluminum-Clad Steel								
	cmil	mm ²	cmil	mm ²	Num- ber of Wires	Nominal Diameter		Num- ber of Wires	Nominal Diameter						
						in.	mm		in.	mm					
Thrasher/AW	2312000	1171	2324300	1178	AA	76	0.1744	4.43	19	0.0814	2.07	55.3	246	2472	3679
Kiwi/AW	2167000	1098	2176100	1103	AA	72	0.1735	4.41	7	0.1157	2.94	49.1	218	2262	3366
Bluebird/AW	2156000	1092	2173100	1101	AA	84	0.1602	4.07	19	0.0961	2.44	59.0	262	2437	3627
Chukar/AW	1780000	902	1795200	910	AA	84	0.1456	3.70	19	0.0874	2.22	49.4	220	2013	2996
Falcon/AW	1590000	806	1609800	816	AA	54	0.1716	4.36	19	0.1030	2.62	53.0	236	1960	2917
Lapwing/AW	1590000	806	1601200	811	AA	45	0.1880	4.78	7	0.1253	3.18	41.8	186	1746	2598
Parrot/AW	1510500	765	1528200	774	AA	54	0.1672	4.25	19	0.1003	2.55	50.3	224	1860	2768
Nuthatch/AW	1510500	765	1520500	770	AA	45	0.1832	4.65	7	0.1221	3.10	39.7	177	1680	2467
Plover/AW	1431000	725	1448900	734	AA	54	0.1628	4.14	19	0.0977	2.48	47.7	212	1764	2625
Bobolink/AW	1431000	725	1440200	730	AA	45	0.1783	4.53	7	0.1189	3.02	37.6	167	1570	2336
Martin/AW	1351500	685	1367700	693	AA	54	0.1582	4.02	19	0.0949	2.41	45.1	201	1665	2478
Dipper/AW	1351500	685	1360100	689	AA	45	0.1733	4.40	7	0.1155	2.93	35.5	158	1483	2207
Pheasant/AW	1272000	645	1287700	652	AA	54	0.1535	3.90	19	0.0921	2.34	42.4	189	1568	2333
Bittern/AW	1272000	645	1280600	649	AA	45	0.1681	4.27	7	0.1121	2.85	33.4	149	1396	2078
Skylark/AW	1272000	645	1275400	646	AA	36	0.1880	4.78	1	0.1880	4.78	25.7	114	1272	1893
Grackle/AW	1192500	604	1206700	611	AA	54	0.1486	3.77	19	0.0892	2.27	40.2	179	1470	2188
Bunting/AW	1192500	604	1201000	609	AA	45	0.1628	4.14	7	0.1085	2.76	31.3	139	1309	1948
Finch/AW	1113000	564	1127800	571	AA	54	0.1436	3.65	19	0.0862	2.19	37.5	167	1373	2043
Bluejay/AW	1113000	564	1120500	568	AA	45	0.1573	4.00	7	0.1049	2.66	29.3	130	1222	1819
Curlw/AW	1033500	524	1046100	530	AA	54	0.1383	3.51	7	0.1383	3.51	35.6	158	1274	1896
Ortolan/AW	1033500	524	1040000	527	AA	45	0.1515	3.85	7	0.1010	2.57	27.1	121	1134	1688
Tanager/AW	1033500	524	1035800	525	AA	36	0.1694	4.30	1	0.1694	4.30	21.1	94	1033	1537
Cardinal/AW	954000	483	966100	490	AA	54	0.1329	3.38	7	0.1329	3.38	32.9	146	1177	1752
Rail/AW	954000	483	960400	487	AA	45	0.1456	3.70	7	0.0971	2.47	25.4	113	1047	1558
Catbird/AW	954000	483	956600	485	AA	36	0.1628	4.14	1	0.1628	4.14	19.5	87	954	1420
Canary/AW	900000	456	911400	462	AA	54	0.1291	3.28	7	0.1291	3.28	31.0	138	1111	1653
Ruddy/AW	900000	456	906100	459	AA	45	0.1414	3.59	7	0.0943	2.40	24.0	107	988	1470
Mallard/AW	795000	403	812700	412	AA	30	0.1628	4.14	19	0.0977	2.48	37.1	165	1160	1726
Condor/AW	795000	403	805000	408	AA	54	0.1213	3.08	7	0.1213	3.08	27.8	124	980	1458
Tern/AW	795000	403	800400	406	AA	45	0.1329	3.38	7	0.0886	2.25	21.5	96	872	1298
Drake/AW	795000	403	807600	409	AA	26	0.1749	4.44	7	0.1360	3.45	30.5	136	1041	1549
Cuckoo/AW	795000	403	805000	408	AA	24	0.1820	4.62	7	0.1213	3.08	27.5	122	981	1460
Coot/AW	795000	403	797200	404	AA	36	0.1486	3.77	1	0.1486	3.77	16.6	74	795	1183
Redwing/AW	715500	363	730900	370	AA	30	0.1544	3.92	19	0.0926	2.35	33.4	149	1043	1552
Starling/AW	715500	363	727400	369	AA	26	0.1659	4.21	7	0.1290	3.28	27.5	122	936	1393
Stit/AW	715500	363	725000	367	AA	24	0.1727	4.39	7	0.1151	2.92	24.8	110	883	1314
Gannet/AW	666600	338	676600	343	AA	26	0.1601	4.07	7	0.1245	3.16	26.0	116	872	1298
Flamingo/AW	666600	338	675400	342	AA	24	0.1667	4.23	7	0.1111	2.82	23.1	103	823	1225
Egret/AW	636000	322	650200	329	AA	30	0.1456	3.70	19	0.0874	2.22	29.9	133	928	1381
Sooter/AW	636000	322	650500	330	AA	30	0.1456	3.70	7	0.1456	3.70	29.3	130	935	1391
Grosbeak/AW	636000	322	646100	327	AA	26	0.1564	3.97	7	0.1216	3.09	24.8	110	832	1238
Rook/AW	636000	322	644000	326	AA	24	0.1628	4.14	7	0.1085	2.76	22.0	98	785	1168



TABLE 1 Continued

Conductor Size															Stranding					Conductor	
Cross-sectional Area Using Only Aluminum Strand Wires			Approximate Cross-sectional Area Including Nominal Aluminum Area in AW Strand Wires ^D			Aluminum			Aluminum-Clad Steel			Rated Strength		Mass per Unit Length							
cmil	mm ²	cmil	mm ²	Class ^C	Num-ber of Wires	Nominal Diameter in.	mm	Num-ber of Wires	Nominal Diameter in.	mm	(1000 lbf)	kN	lb/1000 ft	kg/km							
Code Name ^B																					
Swift/AW	636000	322	637700	AA	36	0.1329	3.38	1	0.1329	3.38	13.6	61	636	946							
Kingbird/AW	636000	322	639400	AA	18	0.1880	4.78	1	0.1880	4.78	15.0	67	676	1006							
Teal/AW	605000	307	618400	AA	30	0.1420	3.61	19	0.0852	2.16	28.5	127	883	1314							
Wood Duck/AW	605000	307	618800	AA	30	0.1420	3.61	7	0.1420	3.61	28.4	126	889	1323							
Squab/AW	605000	307	614600	AA	26	0.1525	3.87	7	0.1186	3.01	23.6	105	791	1177							
Peacock/AW	605000	307	612700	AA	24	0.1588	4.03	7	0.1059	2.69	21.0	93	747	1112							
Eagle/AW	556500	282	569700	AA	30	0.1362	3.46	7	0.1362	3.46	26.8	119	818	1217							
Dove/AW	556500	282	564800	AA	26	0.1463	3.72	7	0.1138	2.89	21.9	97	728	1083							
Parakeet/AW	556500	282	564000	AA	24	0.1523	3.87	7	0.1015	2.58	19.3	86	687	1022							
Ospray/AW	556500	282	559000	AA	18	0.1758	4.47	1	0.1758	4.47	13.2	59	591	880							
Hen/AW	477000	242	487900	AA	30	0.1261	3.20	7	0.1261	3.20	23.4	104	701	1043							
Hawk/AW	477000	242	484600	AA	26	0.1354	3.44	7	0.1053	2.68	18.9	84	624	929							
Flicker/AW	477000	242	483000	AA	24	0.1410	3.58	7	0.0940	2.39	16.7	74	589	877							
Pelican/AW	477000	242	479600	AA	18	0.1628	4.14	1	0.1628	4.14	11.5	51	507	755							
Lark/AW	397500	201	406000	AA	30	0.1151	2.92	7	0.1151	2.92	19.6	87	584	869							
Ibis/AW	397500	201	403300	AA	26	0.1236	3.14	7	0.0961	2.44	15.8	70	520	774							
Brant/AW	397500	201	403000	AA	24	0.1287	3.27	7	0.0858	2.18	14.1	63	491	731							
Chickadee/AW	397500	201	399200	AA	18	0.1486	3.77	1	0.1486	3.77	9.8	44	422	628							
Oriole/AW	336400	170	343700	AA	30	0.1059	2.69	7	0.1059	2.69	16.7	74	495	737							
Linnet/AW	336400	170	341300	AA	26	0.1137	2.89	7	0.0884	2.25	13.5	60	440	655							
Merlin/AW	336400	170	337800	AA	18	0.1367	3.47	1	0.1367	3.47	8.5	38	357	531							
Ostrich/AW	300000	152	304800	AA	26	0.1074	2.73	7	0.0835	2.12	12.1	54	392	583							
Partridge/AW	266800	135	271200	AA	26	0.1013	2.57	7	0.0788	2.00	10.8	48	349	519							
Waxwing/AW	266800	135	268400	AA	18	0.1217	3.09	1	0.1217	3.09	6.8	30	283	421							
#4/0 Penguin/AW	211600	107	215400	AA,A	6	0.1878	4.77	1	0.1878	4.77	7.7	34	277	412							
Cochin/AW	211300	107	223000	AA(+)	12	0.1327	3.37	7	0.1327	3.37	19.8	88	477	710							
Brahma/AW	203200	103	220700	AA(+)	16	0.1127	2.86	19	0.0977	2.48	27.1	121	601	894							
Dorking/AW	190800	96.7	201900	AA(+)	12	0.1261	3.20	7	0.1261	3.20	18.3	81	431	641							
Dotterel/AW	176900	89.6	187100	AA(+)	12	0.1214	3.08	7	0.1214	3.08	16.9	75	399	594							
#3/0 Pigeon/AW	167800	85.0	170700	AA,A	6	0.1672	4.25	1	0.1672	4.25	6.3	28	219	326							
Guinea/AW	159000	80.6	168000	AA(+)	12	0.1151	2.92	7	0.1151	2.92	15.3	68	359	534							
#3/0 (5/2) AWAC*	152500	77.3	159000	AA(+)	5	0.1747	4.44	2	0.1747	4.44	9.7	43	281	418							
#3/0 (12/7) AWAC*	141300	71.6	151300	AA(+)	4	0.1880	4.78	3	0.1880	4.78	14.2	63	373	555							
Leghorn/AW	134600	68.2	142700	AA(+)	12	0.1059	2.69	7	0.1059	2.69	13.0	58	304	452							
#2/0 Quail/AW	133100	67.4	135200	AA,A	6	0.1489	3.78	1	0.1489	3.78	5.1	23	174	259							
#2/0 (5/2) AWAC*	121000	61.3	125700	AA(+)	5	0.1556	3.95	2	0.1556	3.95	8.0	36	223	332							
#2/0 (4/3) AWAC*	112100	56.8	120200	AA(+)	4	0.1674	4.25	3	0.1674	4.25	11.9	53	296	441							
Minorca/AW	110800	56.1	117300	AA(+)	12	0.0961	2.44	7	0.0961	2.44	10.8	48	250	372							
#1/0 Raven/AW	105600	53.5	107700	AA,A	6	0.1327	3.37	1	0.1327	3.37	4.3	19	138	205							
Petrel/AW	101800	51.6	107800	AA(+)	12	0.0921	2.34	7	0.0921	2.34	9.9	44	230	342							