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Standard Specification for ACSR Twisted Pair Conductor (ACSR/TP)[1]

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1. Scope

1.1 This specification covers ACSR Twisted Pair Conductor (ACSR/TP) for use as overhead electric conductors (see Notes 1 and 2).

NOTE 1—The conductor is fabricated from two component ACSR conductors of the same size twisted helically around each other. This conductor is identified by the code name of the component ACSR conductor followed by /TP or the size and type of the component ACSR conductor followed by /TP.

NOTE 2—There are registered trademark symbols that are also used to identify the twisted pair notation. Consult cable manufacturers for additional details.

1.2 The values stated in inch-pound or SI units are to be regarded separately as standard. Each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the specification. For conductor sizes designated by AWG or kcmil, the requirements in SI units have been numerically converted from corresponding values stated or derived in inch-pound units. For conductor sizes designated by SI units only, the requirements are stated or derived in SI units.

1.2.1 For density, resistivity, and temperature, the values stated in SI units are to be regarded as standard.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

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

2.2 *ASTM Standards:*[2]

B232/B232M Specification for Concentric-Lay-Stranded Aluminum Conductors, Coated-Steel Reinforced (ACSR)

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *component conductors*—the two conductors twisted to fabricate the finished ACSR/TP.

4. Ordering Information

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

4.1.1 Quantity of each size,

4.1.1.1 *Conductor Size*—kcmil area of the fabricated ACSR/TP (2 × kcmil area of one of the component conductors),

4.1.2 Conductor type and the number of wires of the component conductors,

4.1.3 The type of steel core wire and type of coating,

4.1.4 Place of inspection,

4.1.5 Package size and type,

4.1.6 Special package markings, if required, and

4.1.7 Heavy wood lagging, if required.

5. Requirements for Component Conductors

5.1 Before twisting, the component conductors shall conform to the requirements of Specification B232/B232M.

6. Twist

6.1 The component conductors shall be twisted about themselves with a complete twist every 9 ft ± 1 ft. This twist length shall be measured between the twisting machine and the take-up reel with normal take-up tension on the ACSR/TP.

NOTE 3—The twist length can be altered as the ACSR/TP is wound up onto the take-up reel. It may not have the same twist length as when the TP is removed from the reel.

6.2 The direction of the twist shall be left hand.

7. Construction Requirements

7.1 Construction requirements are given in Table 1 for ACSR/TP.

[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.

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[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.

TABLE 1 Construction Requirements for TP Type Conductor Using Aluminum Conductor, Steel Reinforced (ACSR)

Code Word[A]	Equivalent Size AWG or kcmil	Component Composition			Outer Dimensions in.		Nominal Mass[B] lb/1000ft	Rated Strg. lb[C]	Resistance[D] Ohms/1000ft dc at 20°C
		AWG or kcmil	Aluminum	Steel	minor	major			
Swan / TP	1	4	6 × 0.0834	1 × 0.0834	0.250	0.500	115	3700	0.2016
Swanate / TP	1	4	7 × 0.0772	1 × 0.1029	0.257	0.514	115	4720	0.1994
Swallow / TP	1/0	3	6 × 0.0937	1 × 0.0937	0.281	0.562	145	4600	0.1601
Sparrow / TP	2/0	2	6 × 0.1052	1 × 0.1052	0.316	0.632	182	5660	0.1267
Sparate / TP	2/0	2	7 × 0.0974	1 × 0.1299	0.325	0.650	213	7260	0.1253
Robin / TP	3/0	1	6 × 0.1181	1 × 0.1181	0.354	0.708	230	7120	0.1005
Raven / TP	4/0	1/0	6 × 0.1327	1 × 0.1327	0.398	0.796	290	8760	0.0796
Quail / TP	266.2	2/0	6 × 0.1489	1 × 0.1489	0.447	0.894	336	10600	0.0633
Pigeon / TP	335.6	3/0	6 × 0.1672	1 × 0.1672	0.502	1.004	461	13200	0.0502
Penguin / TP	423.2	4/0	6 × 0.1878	1 × 0.1878	0.563	1.126	582	16700	0.0398
Jaeger / TP	456.4	228.2	18 × 0.1126	1 × 0.1126	0.563	1.126	495	12100	0.0376
Waxwing / TP	533.6	266.8	18 × 0.1217	1 × 0.1217	0.609	1.218	579	13700	0.0322
Spoonbill / TP	533.6	266.8	22 × 0.1101	7 × 0.0612	0.624	1.248	642	17400	0.0321
Scaup / TP	533.6	266.8	24 × 0.1054	7 × 0.0703	0.633	1.266	687	20000	0.0320
Partridge / TP	533.6	266.8	26 × 0.1013	7 × 0.0788	0.642	1.284	734	22600	0.0319
Junco / TP	533.6	266.8	30 × 0.0943	7 × 0.0943	0.660	1.320	835	27800	0.0316
Ostrich / TP	600.0	300.0	26 × 0.1074	7 × 0.0835	0.680	1.360	825	25400	0.0283
Merlin / TP	672.8	336.4	18 × 0.1367	1 × 0.1367	0.683	1.366	730	17400	0.0255
Trogon / TP	672.8	336.4	20 × 0.1297	7 × 0.0576	0.692	1.384	757	19000	0.0256
Woodcock / TP	672.8	336.4	22 × 0.1237	7 × 0.0687	0.701	1.402	809	21800	0.0255
Widgeon / TP	672.8	336.4	24 × 0.1184	7 × 0.0789	0.710	1.420	866	25000	0.0254
Linnet / TP	672.8	336.4	26 × 0.1137	7 × 0.0884	0.720	1.440	925	28200	0.0253
Oriole / TP	672.8	336.4	30 × 0.1059	7 × 0.1059	0.741	1.482	1053	34600	0.0251
Chickadee / TP	795.0	397.5	18 × 0.1486	1 × 0.1486	0.743	1.486	862	19900	0.0216
Ptarmigan / TP	795.0	397.5	20 × 0.1410	7 × 0.0627	0.752	1.504	895	22200	0.0216
Stork / TP	795.0	397.5	22 × 0.1344	7 × 0.0747	0.762	1.524	956	25800	0.0216
Brant / TP	795.0	397.5	24 × 0.1287	7 × 0.0858	0.772	1.544	1023	29200	0.0215
Ibis / TP	795.0	397.5	26 × 0.1236	7 × 0.0961	0.783	1.566	1093	32600	0.0214
Lark / TP	795.0	397.5	30 × 0.1151	7 × 0.1151	0.806	1.612	1244	40600	0.0212
Pelican / TP	954.0	477.0	18 × 0.1628	1 × 0.1628	0.814	1.628	1035	23600	0.0180
Tailorbird / TP	954.0	477.0	20 × 0.1544	7 × 0.0686	0.823	1.646	1074	26200	0.0180
Toucan / TP	954.0	477.0	22 × 0.1472	7 × 0.0818	0.834	1.668	1148	30400	0.0180
Flicker / TP	954.0	477.0	24 × 0.1410	7 × 0.0940	0.846	1.692	1227	34400	0.0179
Hawk / TP	954.0	477.0	26 × 0.1354	7 × 0.1053	0.858	1.716	1312	39000	0.0178
Hen / TP	954.0	477.0	30 × 0.1261	7 × 0.1261	0.883	1.766	1493	47600	0.0177
Heron / TP	1000.0	500.0	30 × 0.1291	7 × 0.1291	0.904	1.808	1565	50000	0.0169
Nightingale/TP	1034.0	517.0	18 × 0.1694	1 × 0.1694	0.848	1.696	1121	25400	0.0166
Creeper / TP	1034.0	517.0	20 × 0.1607	7 × 0.0714	0.858	1.716	1164	28400	0.0166
Osprey / TP	1113.0	556.5	18 × 0.1758	1 × 0.1758	0.879	1.758	1207	27400	0.0154
Tody / TP	1113.0	556.5	20 × 0.1668	7 × 0.0741	0.890	1.780	1253	30600	0.0155
Sapsucker / TP	1113.0	556.5	22 × 0.1590	7 × 0.0883	0.901	1.802	1339	35200	0.0154
Parakeet / TP	1113.0	556.5	24 × 0.1523	7 × 0.1015	0.914	1.828	1432	39600	0.0153
Dove / TP	1113.0	556.5	26 × 0.1463	7 × 0.1138	0.927	1.854	1530	45200	0.0153
Eagle / TP	1113.0	556.5	30 × 0.1362	7 × 0.1362	0.953	1.906	1741	55600	0.0152
Kittiwake / TP	1192.0	596.0	18 × 0.1820	1 × 0.1820	0.910	1.820	1293	29400	0.0144
Skua / TP	1210.0	605.0	20 × 0.1739	7 × 0.0773	0.928	1.856	1362	33200	0.0142
Peacock / TP	1210.0	605.0	24 × 0.1588	7 × 0.1059	0.953	1.906	1557	43200	0.0141
Squab / TP	1210.0	605.0	26 × 0.1525	7 × 0.1186	0.966	1.932	1664	48600	0.0141
Wood Duck/ TP	1210.0	605.0	30 × 0.1420	7 × 0.1420	0.994	1.988	1893	57800	0.0140
Teal / TP	1210.0	605.0	30 × 0.1420	19 × 0.0852	0.994	1.988	1877	60000	0.0140
Swift / TP	1272.0	636.0	36 × 0.1329	1 × 0.1329	0.930	1.860	1286	27600	0.0135
Kingbird / TP	1272.0	636.0	18 × 0.1880	1 × 0.1880	0.940	1.880	1379	31400	0.0135
Turacos / TP	1272.0	636.0	20 × 0.1783	7 × 0.0792	0.951	1.902	1432	34800	0.0135
Rook / TP	1272.0	636.0	24 × 0.1628	7 × 0.1085	0.977	1.954	1530	45200	0.0134
Grosbeak / TP	1272.0	636.0	26 × 0.1564	7 × 0.1216	0.990	1.980	1637	50400	0.0134
Scoter / TP	1272.0	636.0	30 × 0.1456	7 × 0.1456	1.019	2.038	1749	60800	0.0133
Egret / TP	1272.0	636.0	30 × 0.1456	19 × 0.0874	1.019	2.038	1974	63000	0.0133
Siskin / TP	1333.2	666.6	20 × 0.1826	7 × 0.0812	0.974	1.948	1501	36600	0.0129
Flamingo / TP	1333.2	666.6	24 × 0.1667	7 × 0.1111	1.000	2.000	1715	47600	0.0128
Gannet / TP	1333.2	666.6	26 × 0.1601	7 × 0.1245	1.014	2.028	1833	52800	0.0128
Dunlin / TP	1431.0	715.5	20 × 0.1891	7 × 0.0840	1.008	2.016	1611	39200	0.0120
Stilt / TP	1431.0	715.5	24 × 0.1727	7 × 0.1151	1.036	2.072	1841	51000	0.0119
Starling / TP	1431.0	715.5	26 × 0.1659	7 × 0.1290	1.051	2.102	1968	56800	0.0119
Redwing / TP	1431.0	715.5	30 × 0.1544	19 × 0.0926	1.081	2.162	2220	69200	0.0118
Coot / TP	1590.0	795.0	36 × 0.1486	1 × 0.1486	1.040	2.080	1607	33400	0.0108
Macaw / TP	1590.0	795.0	42 × 0.1376	7 × 0.0764	1.055	2.110	1715	40200	0.0108
Turbit / TP	1590.0	795.0	20 × 0.1994	7 × 0.0886	1.063	2.126	1790	43600	0.0108
Tern / TP	1590.0	795.0	45 × 0.1329	7 × 0.0886	1.063	2.126	1790	44200	0.0108
Puffin / TP	1590.0	795.0	22 × 0.1901	7 × 0.1056	1.077	2.154	1913	49600	0.0108
Cuckoo / TP	1590.0	795.0	24 × 0.1820	7 × 0.1213	1.092	2.184	2046	55800	0.0107
Condor / TP	1590.0	795.0	54 × 0.1213	7 × 0.1213	1.092	2.184	2046	56400	0.0107