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## Standard Specification for Shaped Wire Compact Concentric-Lay-Stranded Aluminum Conductors, Coated-Steel Supported (ACSS/TW)<sup>1</sup>

This standard is issued under the fixed designation B857; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This specification covers shaped wire compact concentric-lay-stranded aluminum conductors, steel supported (ACSS/TW) for use as overhead electrical conductors (see Explanatory Note 1).

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.2.1 *Exceptions*—For conductor sizes designated by AWG or kcmil sizes, the requirements in SI units are numerically converted from the corresponding requirements in inch-pound units. For conductor sizes designation 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. For density, resistivity, and temperature, the values stated in SI units are to be regarded as standard.

1.3 ACSS/TW is designed to increase the aluminum area for a given diameter of conductor by the use of trapezoidal shaped wires (TW), or to reduce the diameter for a given area of aluminum. The conductors consist of a central core of round steel wire(s) surrounded by two or more layers of trapezoidal aluminum 1350-0 wires. Different strandings of the same size of conductor are identified by type, which is the approximate ratio of steel area to aluminum area expressed in percent (see Table 1, Table 2, and Table 3). For the purpose of this specification, the sizes listed in Table 1 and Table 2 are tabulated on the basis of the finished conductor having an area or outside diameter equal to that of specified sizes of standard ACSR, ACSS, and ACSR/TW so as to facilitate conductor selection.

### 2. Referenced Documents

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

2.2 *ASTM Standards:*<sup>2</sup> ~~B232/B232M Specification for Concentric-Lay-Stranded Aluminum Conductors, Coated-Steel Reinforced (ACSR)~~

~~B263 Test Method for Determination of Cross-Sectional Area of Stranded Conductors~~ ~~B341/B341M Specification for Aluminum-Coated (Aluminized) Steel Core Wire for Aluminum Conductors, Steel Reinforced (ACSR/AZ)~~

B354 Terminology Relating to Uninsulated Metallic Electrical Conductors

B498/B498M Specification for Zinc-Coated (Galvanized) Steel Core Wire for Use in Overhead Electrical Conductors

B500/B500M Specification for Metallic Coated Stranded Steel Core for Use in Overhead Electrical Conductors

B502 Specification for Aluminum-Clad Steel Core Wire for Use in Overhead Electrical Aluminum Conductors

B549 Specification for Concentric-Lay-Stranded Aluminum Conductors, Aluminum-Clad Steel Reinforced for Use in Overhead Electrical Conductors

B606 Specification for High-Strength Zinc-Coated (Galvanized) Steel Core Wire for Aluminum and Aluminum-Alloy Conductors, Steel Reinforced

B609/B609M Specification for Aluminum 1350 Round Wire, Annealed and Intermediate Tempers, for Electrical Purposes

~~B779 Specification for Shaped Wire Compact Concentric-Lay-Stranded Aluminum Conductors, Steel Reinforced (ACSR/TW)~~

<sup>1</sup> 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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<sup>2</sup> 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 Shaped Wire Compact Concentric-Lay-Stranded Aluminum Conductors, Coated Steel Supported<sup>A</sup>**

NOTE 1—Sized to have area equal aluminum cross-sectional area to an ACSR or ACSS, Class AA conductor.

ACSS/TW Conductor Size	Type	Code Word <sup>B</sup>	Size and Stranding of ACSS with Equal Aluminum Cross-Sectional Area		Number of Aluminum Wires	Aluminum Stranding	Number of Layers	Number of Wires	Steel Core Stranding	Nominal Mass #/ACSS/HS/TW; #/ACSS/1000-#	TW		ACSS/TW Conductor Rated Strength (by type of steel core wire)					Nominal Outside Diameter
			komil	Stranding							Individual Strand Wire Diameter of Wires	AG Individual Wire Diameter, KIPS/in.	AGSS/GA/TWX Core TW; KIPS/1000 ft	-GA2 / MA2 KIPS	GA3 / MAS KIPS	GA4 / MA4 KIPS	GA5 / MA5 KIPS	
266.8	16	Partridge/ACSS/TW	266.8	26/7	18	2	7	0.0788	349	8.90	9.70	10.8	11.4	8.40	8.90	8.58		
336.4	23	Oriole/ACSS/TW	336.4	30/7	47	2	7	0.1059	526	14.8	16.3	14.8	14.2	14.2	14.8	0.693		
336.4	23	Oriole/ACSS/TW	336.4	30/7	17	2	7	0.1059	526	14.8	16.3	14.8	14.2	14.2	14.8	0.69		
477.0	43	Flicker/ACSS/TW	477.0	24/7	48	2	7	0.0940	612	14.2	13.0	16.4	12.5	13.0	13.0	0.78		
477.0	13	Flicker/ACSS/TW	477.0	24/7	18	2	7	0.0940	612	14.2	13.0	16.4	12.5	13.0	13.0	0.78		
477.0	16	Hawk/ACSS/TW	477.0	26/7	48	2	7	0.1053	655	17.1	15.6	18.9	14.9	14.9	15.6	0.79		
477.0	16	Hawk/ACSS/TW	477.0	26/7	18	2	7	0.1053	655	17.1	15.6	18.9	14.9	14.9	15.6	0.79		
477.0	23	Hen/ACSS/TW	477.0	30/7	47	2	7	0.1261	746	21.0	22.7	25.4	20.1	20.5	20.5	0.83		
477.0	23	Hen/ACSS/TW	477.0	30/7	17	2	7	0.1261	746	21.0	22.7	25.4	20.1	20.5	20.5	0.83		
556.5	43	Parakeet/ACSS/TW	556.5	24/7	48	2	7	0.1015	714	15.2	16.6	18.3	14.6	15.2	14.6	0.84		
556.5	13	Parakeet/ACSS/TW	556.5	24/7	18	2	7	0.1015	714	15.2	16.6	18.3	14.6	15.2	14.6	0.84		
556.5	46	Dove/ACSS/TW	556.5	26/7	20	2	7	0.1138	764	19.9	18.2	22.1	17.5	17.5	18.2	0.85		
556.5	16	Dove/ACSS/TW	556.5	26/7	20	2	7	0.1138	764	19.9	18.2	22.1	17.5	17.5	18.2	0.85		
636.0	43	Robin/ACSS/TW	636.0	24/7	48	2	7	0.1085	818	19.0	17.3	20.9	16.7	17.3	17.3	0.89		
636.0	13	Robin/ACSS/TW	636.0	24/7	18	2	7	0.1085	818	19.0	17.3	20.9	16.7	17.3	17.3	0.89		
636.0	46	Grosbeak/ACSS/TW	636.0	26/7	20	2	7	0.1216	873	22.4	20.7	24.8	19.9	20.3	20.3	0.91		
636.0	16	Grosbeak/ACSS/TW	636.0	26/7	20	2	7	0.1216	873	22.4	20.7	24.8	19.9	20.3	20.3	0.91		
795.0	7	Term/ACSS/TW	795.0	45/7	47	2	7	0.0886	891	15.2	14.2	16.6	13.5	14.2	14.2	0.96		
795.0	7	Term/ACSS/TW	795.0	45/7	17	2	7	0.0886	891	15.2	14.2	16.6	13.5	14.2	14.2	0.96		
795.0	40	Puffin/ACSS/TW	795.0	22/7	48	2	7	0.1108	974	20.6	18.9	22.6	18.3	18.9	18.9	0.98		
795.0	10	Puffin/ACSS/TW	795.0	22/7	18	2	7	0.1108	974	20.6	18.9	22.6	18.3	18.9	18.9	0.98		
795.0	43	Gondor/ACSS/TW	795.0	54/7	20	2	7	0.1213	1020	23.3	21.7	25.7	20.9	21.3	21.3	0.99		
795.0	13	Gondor/ACSS/TW	795.0	54/7	20	2	7	0.1213	1020	23.3	21.7	25.7	20.9	21.3	21.3	0.99		
795.0	46	Drake/ACSS/TW	795.0	26/7	20	2	7	0.1360	1091	28.0	25.9	31.0	24.4	25.4	25.4	1.01		
795.0	16	Drake/ACSS/TW	795.0	26/7	20	2	7	0.1360	1091	28.0	25.9	31.0	24.4	25.4	25.4	1.01		
795.0	23	Mallard/ACSS/TW	795.0	30/19	22	2	19	0.0977	1234	37.9	34.3	42.1	32.9	34.3	34.3	1.05		
795.0	23	Mallard/ACSS/TW	795.0	30/19	22	2	19	0.0977	1234	37.9	34.3	42.1	32.9	34.3	34.3	1.05		
954.0	5	Phoenix/ACSS/TW	954.0	42/7	30	3	7	0.0837	1028	15.2	14.2	16.3	13.6	14.2	14.2	1.05		
954.0	5	Phoenix/ACSS/TW	954.0	42/7	30	3	7	0.0837	1028	15.2	14.2	16.3	13.6	14.2	14.2	1.05		
954.0	7	Rail/ACSS/TW	954.0	45/7	32	3	7	0.0971	1074	18.0	16.7	19.6	16.2	16.7	16.7	1.06		
954.0	7	Rail/ACSS/TW	954.0	45/7	32	3	7	0.0971	1074	18.0	16.7	19.6	16.2	16.7	16.7	1.06		
954.0	43	Gardinal/ACSS/TW	954.0	54/7	20	2	7	0.1329	1227	28.0	26.0	30.9	24.6	25.5	25.5	1.08		
954.0	13	Gardinal/ACSS/TW	954.0	54/7	20	2	7	0.1329	1227	28.0	26.0	30.9	24.6	25.5	25.5	1.08		
1033.5	5	Snowbird/ACSS/TW	1033.5	42/7	30	3	7	0.0871	1114	16.4	15.4	17.7	14.8	15.4	15.4	1.09		
1033.5	5	Snowbird/ACSS/TW	1033.5	42/7	30	3	7	0.0871	1114	16.4	15.4	17.7	14.8	15.4	15.4	1.09		
1033.5	7	Oriole/ACSS/TW	1033.5	45/7	32	3	7	0.1010	1163	19.5	18.1	21.2	17.6	18.1	18.1	1.10		
1033.5	7	Oriole/ACSS/TW	1033.5	45/7	32	3	7	0.1010	1163	19.5	18.1	21.2	17.6	18.1	18.1	1.10		
1033.5	43	Curllew/ACSS/TW	1033.5	54/7	21	2	7	0.1383	1326	30.3	28.2	33.4	26.1	27.7	27.7	1.13		
1033.5	43	Curllew/ACSS/TW	1033.5	54/7	21	2	7	0.1383	1326	30.3	28.2	33.4	26.1	27.7	27.7	1.13		
1113.0	5	Avocet/ACSS/TW	1113.0	42/7	30	3	7	0.0904	1199	17.5	16.3	18.8	15.9	16.3	16.3	1.13		
1113.0	5	Avocet/ACSS/TW	1113.0	42/7	30	3	7	0.0904	1199	17.5	16.3	18.8	15.9	16.3	16.3	1.13		
1113.0	7	Bluejay/ACSS/TW	1113.0	45/7	33	3	7	0.1049	1253	21.0	19.5	22.9	18.9	19.5	19.5	1.14		
1113.0	7	Bluejay/ACSS/TW	1113.0	45/7	33	3	7	0.1049	1253	21.0	19.5	22.9	18.9	19.5	19.5	1.14		
1113.0	43	Finch/ACSS/TW	1113.0	54/19	38	3	19	0.0862	1427	33.2	30.4	36.5	28.8	30.4	30.4	1.19		
1113.0	43	Finch/ACSS/TW	1113.0	54/19	38	3	19	0.0862	1427	33.2	30.4	36.5	28.8	30.4	30.4	1.19		
1192.5	5	Oxbird/ACSS/TW	1192.5	42/7	30	3	7	0.0906	1285	18.7	17.5	20.2	17.0	17.0	17.0	1.17		

ACSS/TW Conductor Size  
 Size and Stranding of ACSS with Equal Aluminum Cross-Sectional Area  
 Aluminum Stranding  
 Steel Core Stranding  
 Nominal Mass ACSS/HS/TW; #ACSS/4900-#ft  
 TW  
 ACSS/TW Conductor Rated Strength (by type of steel core wire)  
 Nominal Outside Diameter  
 Diameter

kcmil <sup>C</sup>	Type	Code Word <sup>B</sup>	kcmil	Stranding	Number of Aluminum Wires	Number of Layers	Number of Wires	Individual Strand Wire Diameter, in.	Individual Wire Diameter, kIPSin.	AGSS/GA/TWX Core ACSSlb/TWA; kIPS1000 ft	ACSS/TW					
											GA3/MA3 KIPS	GA4/MA4 KIPS	GA5/MA5 KIPS	AW2 KIPS	AW3 ACSS/AW/TW; KIPS	
1192.5	5	Oxbird/ACSS/TW	1192.5	42/7	30	3	7	0.0936	1285	18.7	17.5	20.2	20.9	17.0	17.5	1.17
1192.5	7	Bunting/ACSS/TW	1192.5	45/7	33	3	7	0.1085	1342	22.5	20.9	24.5	25.5	20.3	17.5	1.18
1192.5	7	Bunting/ACSS/TW	1192.5	45/7	33	3	7	0.1085	1342	22.5	20.9	24.5	25.5	20.3	17.5	1.18
1192.5	13	Grackle/ACSS/TW	1192.5	54/19	38	3	19	0.0892	1529	35.5	32.6	39.1	41.5	30.8	32.6	1.22
1192.5	13	Grackle/ACSS/TW	1192.5	54/19	38	3	19	0.0892	1529	35.5	32.6	39.1	41.5	30.8	32.6	1.22
1272.0	5	Scissortail/ACSS/TW	1272.0	42/7	30	3	7	0.0967	1371	20.0	18.7	21.5	22.3	18.2	18.7	1.20
1272.0	5	Scissortail/ACSS/TW	1272.0	42/7	30	3	7	0.0967	1371	20.0	18.7	21.5	22.3	18.2	18.7	1.20
1272.0	7	Bittern/ACSS/TW	1272.0	45/7	35	3	7	0.1121	1432	24.0	22.3	26.1	27.2	21.6	22.3	1.22
1272.0	7	Bittern/ACSS/TW	1272.0	45/7	35	3	7	0.1121	1432	24.0	22.3	26.1	27.2	21.6	22.3	1.22
1272.0	13	Pheasant/ACSS/TW	1272.0	54/19	39	3	19	0.0921	1630	37.3	34.1	41.1	43.0	32.8	34.1	1.26
1272.0	13	Pheasant/ACSS/TW	1272.0	54/19	39	3	19	0.0921	1630	37.3	34.1	41.1	43.0	32.8	34.1	1.26
1351.5	7	Dipper/ACSS/TW	1351.5	45/7	35	3	7	0.1155	1521	25.5	23.7	27.7	28.8	23.0	23.7	1.26
1351.5	7	Dipper/ACSS/TW	1351.5	45/7	35	3	7	0.1155	1521	25.5	23.7	27.7	28.8	23.0	23.7	1.26
1351.5	13	Martin/ACSS/TW	1351.5	54/19	39	3	19	0.0949	1732	39.6	36.2	43.6	45.6	34.9	36.2	1.30
1351.5	13	Martin/ACSS/TW	1351.5	54/19	39	3	19	0.0949	1732	39.6	36.2	43.6	45.6	34.9	36.2	1.30
1431.0	7	Bobolink/ACSS/TW	1431.0	45/7	36	3	7	0.1189	1611	27.0	25.1	29.4	30.5	24.3	25.1	1.29
1431.0	7	Bobolink/ACSS/TW	1431.0	45/7	36	3	7	0.1189	1611	27.0	25.1	29.4	30.5	24.3	25.1	1.29
1431.0	13	Plover/ACSS/TW	1431.0	54/19	39	3	19	0.0977	1834	41.9	38.4	46.2	48.3	36.9	38.4	1.34
1431.0	13	Plover/ACSS/TW	1431.0	54/19	39	3	19	0.0977	1834	41.9	38.4	46.2	48.3	36.9	38.4	1.34
1590.0	7	Lapwing/ACSS/TW	1590.0	45/7	36	3	7	0.1253	1790	29.6	27.9	32.2	33.5	27.0	27.5	1.36
1590.0	7	Lapwing/ACSS/TW	1590.0	45/7	36	3	7	0.1253	1790	29.6	27.9	32.2	33.5	27.0	27.5	1.36
1590.0	13	Falcon/ACSS/TW	1590.0	54/19	42	3	19	0.1030	2038	46.6	42.6	51.3	53.7	41.1	42.6	1.41
1590.0	13	Falcon/ACSS/TW	1590.0	54/19	42	3	19	0.1030	2038	46.6	42.6	51.3	53.7	41.1	42.6	1.41
1780.0	8	Chukar/ACSS/TW	1780.0	84/19	37	3	19	0.0874	2061	38.2	35.3	41.6	43.9	33.6	35.3	1.45
1780.0	8	Chukar/ACSS/TW	1780.0	84/19	37	3	19	0.0874	2061	38.2	35.3	41.6	43.9	33.6	35.3	1.45
2156.0	8	Bluebird/ACSS/TW	2156.0	84/19	64	4	19	0.0961	2512	45.5	42.1	49.6	51.7	40.7	42.1	1.61

<sup>A</sup> Conversion factors:  
 1 cmil = 5.067E-04 mm<sup>2</sup> (0.0005067 mm<sup>2</sup>)  
 1 in. = 2.54E+01 mm (25.4 mm)  
 1 lb/1000ft = 1.488 kg/km  
 1 ft = 3.048E-01 m (0.3048 m)  
 1 lb = 4.536E-01 kg (0.4536 kg)  
 1 lbf = 4.448E-03 kN (0.0044448 kN)  
<sup>B</sup> Code Words shown in this column are obtained from "Publication 50, Code Words for Overhead Aluminum Electrical Conductors," by the Aluminum Association. They are provided for information only.  
<sup>C</sup> See Explanatory Note 4.

**TABLE 2 Construction Requirements for Shaped Wire Compact Concentric-Lay-Stranded Aluminum Conductors, Coated Steel Supported<sup>A</sup>**

Note 1—Sized to have a diameter equal to a concentric round ACSR or ACSS, Class AA conductor.

ACSS/TW Conductor Size	kcmil <sup>C</sup>	Type	Code Word <sup>B</sup>	Size and Stranding of ACSS with Equal Overall Conductor Diameter	kcmil Stranding	Number of Aluminum Wires	Number of Layers	Number of Wires	Individual Strand Wire Diameter, in.	GAX Core lb/1000 ft	ACSS/MS/ TW/A3 KIPS	ACSS/GA4 /TW MA4 AGKIPSS	GA5 / MA/ TW/5 KIPS	-AW2 AGKIPSS/	AW/TW/3 KIPS	Nominal Mass ACSS/MS/ TW; lb/4000-ft	Nominal Outside Diameter-in:
574-7	43		Mohawk/ACSS/TW	247	48	2	2	7	0-1099	734	17-1	18-8	19-7	45-9	15.6	0-85	
571-7	13		Mohawk/ACSS/TW	247	18	2	2	7	0.1030	734	17.1	18.8	19.7	15.0	15.6	0.85	
565-3	16		Gelume/ACSS/TW	267	20	2	2	7	0-1146	776	20-2	22-4	23-5	47-7	18.4	0-86	
565-3	16		Calume/ACSS/TW	267	20	2	2	7	0.1146	776	20.2	22.4	23.5	47.7	18.4	0.86	
666-6	43		Mystic/ACSS/TW	247	20	2	2	7	0-1111	856	19-9	21-9	22-9	47-5	18.2	0-91	
666-6	13		Mystic/ACSS/TW	247	20	2	2	7	0-1244	913	23-4	26-0	27-2	17-5	17.5	0-93	
664-8	16		Oswego/ACSS/TW	267	20	2	2	7	0.1244	913	23.4	26.0	27.2	20.9	21.3	0.93	
768-2	43		Maumee/ACSS/TW	247	20	2	2	7	0-1195	987	23-0	25-3	26-5	20-2	21.0	0-98	
768-2	13		Maumee/ACSS/TW	247	20	2	2	7	0.1195	987	23.0	25.3	26.5	20.2	21.0	0.98	
762-8	16		Wabash/ACSS/TW	267	20	2	2	7	0-1331	1047	26-8	29-7	31-2	23-4	24.4	0-99	
762-8	16		Wabash/ACSS/TW	267	20	2	2	7	0.1331	1047	26.8	29.7	31.2	23.4	24.4	0.99	
987-2	7		Kettle/ACSS/TW	457	32	3	3	7	0-0973	1078	18-1	19-7	20-4	46-3	16.8	1-06	
987-2	7		Kettle/ACSS/TW	457	32	3	3	7	0.0973	1078	18.1	19.7	20.4	46.3	16.8	1.06	
946-7	40		Fraser/ACSS/TW	227	36	3	3	7	0-1154	1140	22-9	25-1	26.2	20-3	21.1	1-08	
946-7	10		Fraser/ACSS/TW	227	36	3	3	7	0.1154	1140	22.9	25.1	26.2	20.3	21.1	1.08	
986-2	43		Columbia/ACSS/TW	547	21	2	2	7	0-1338	1240	28-3	31-3	32.8	24-9	25.9	1-09	
986-2	13		Columbia/ACSS/TW	547	21	2	2	7	0.1338	1240	28.3	31.3	32.8	24.9	25.9	1.09	
959-6	46		Suwannee/ACSS/TW	267	22	2	2	7	0-1493	1317	33-1	36-8	38.6	28-2	30.0	1-11	
959-6	16		Suwannee/ACSS/TW	267	22	2	2	7	0.1493	1317	33.1	36.8	38.6	28.2	30.0	1.11	
1080-0	7		...	457	20	2	2	7	0.1033	1211	20-4	22-2	23-1	18-4	18.9	1-13	
1080-0	7		...	457	20	2	2	7	0.1033	1211	20.4	22.2	23.1	18.4	18.9	1.13	
1168-1	5		Cheyenne/ACSS/TW	427	30	3	3	7	0-0926	1259	18-3	19-7	20-4	46-7	17.1	1-16	
1168-1	5		Cheyenne/ACSS/TW	427	30	3	3	7	0.0926	1259	18.3	19.7	20.4	46.7	17.1	1.16	
1158-0	7		Genesee/ACSS/TW	457	33	3	3	7	0-1078	1307	22-1	24-9	25-9	19-9	20.5	1-17	
1158-0	7		Genesee/ACSS/TW	457	33	3	3	7	0.1078	1307	22.1	24.9	25.9	19.9	20.5	1.17	
1158-4	13		Hudson/ACSS/TW	547	25	2	2	7	0-1467	1488	33-5	37-0	38.8	28-7	30.5	1-20	
1158-4	13		Hudson/ACSS/TW	547	25	2	2	7	0.1467	1488	33.5	37.0	38.8	28.7	30.5	1.20	
1272-0	5		Gatawba/ACSS/TW	427	30	3	3	7	0-0967	1371	20-0	21-5	22-3	18-2	18.7	1-20	
1272-0	5		Gatawba/ACSS/TW	427	30	3	3	7	0.0967	1371	20.0	21.5	22.3	18.2	18.7	1.20	
1257-1	7		Nelson/ACSS/TW	457	35	3	3	7	0-1115	1416	23-8	25-8	26-9	21-4	22.1	1-21	
1257-1	7		Nelson/ACSS/TW	457	35	3	3	7	0.1115	1416	23.8	25.8	26.9	21.4	22.1	1.21	
1233-6	43		Yukon/ACSS/TW	547	38	3	3	19	0-0910	1584	36-3	40-0	41-9	32-0	33.2	1-25	
1233-6	43		Yukon/ACSS/TW	547	38	3	3	19	0.0910	1584	36.3	40.0	41.9	32.0	33.2	1.25	
1372-5	5		Truckee/ACSS/TW	427	30	3	3	7	0.1004	1479	21-5	23-2	24-0	19-6	20.2	1-25	
1372-5	5		Truckee/ACSS/TW	427	30	3	3	7	0.1004	1479	21.5	23.2	24.0	19.6	20.2	1.25	
1359-7	7		Mackenzie/ACSS/TW	457	36	3	3	7	0-1159	1531	25-7	27-9	29-0	23-1	23.8	1-26	
1359-7	7		Mackenzie/ACSS/TW	457	36	3	3	7	0.1159	1531	25.7	27.9	29.0	23.1	23.8	1.26	
1334-6	43		Thames/ACSS/TW	547	39	3	3	19	0-0944	1711	39-1	43-1	45-1	34-5	35.8	1-29	
1334-6	43		Thames/ACSS/TW	547	39	3	3	19	0.0944	1711	39.1	43.1	45.1	34.5	35.8	1.29	
1467-8	5		St. Croix/ACSS/TW	427	33	3	3	7	0-1041	1583	23-1	24-9	25-8	21-0	21.6	1-29	
1467-8	5		St. Croix/ACSS/TW	427	33	3	3	7	0.1041	1583	23.1	24.9	25.8	21.0	21.6	1.29	
1455-3	7		Miramichi/ACSS/TW	457	36	3	3	7	0-1200	1699	27-1	29-5	30-7	24-8	25.2	1-30	
1455-3	7		Miramichi/ACSS/TW	457	36	3	3	7	0.1200	1699	27.1	29.5	30.7	24.8	25.2	1.30	
1433-6	13		Merrimack/ACSS/TW	547	39	3	3	19	0-0978	1898	42-0	46-3	48-4	37-0	38.4	1-34	
1433-6	13		Merrimack/ACSS/TW	547	39	3	3	19	0.0978	1898	42.0	46.3	48.4	37.0	38.4	1.34	
1569-0	5		Platte/ACSS/TW	427	33	3	3	7	0-1074	1691	24-6	26-5	27-5	22-4	23.1	1-33	
1569-0	5		Platte/ACSS/TW	427	33	3	3	7	0.1074	1691	24.6	26.5	27.5	22.4	23.1	1.33	
1557-4	7		Potomac/ACSS/TW	457	36	3	3	7	0.1241	1754	29-0	31-6	32.8	26.5	26.9	1-35	
1557-4	7		Potomac/ACSS/TW	457	36	3	3	7	0.1241	1754	29.0	31.6	32.8	26.5	26.9	1.35	
1533-3	13		Rio Grande/ACSS/TW	547	39	3	3	19	0-1012	1966	45-0	49-6	51-9	39-6	41.2	1-38	
1533-3	13		Rio Grande/ACSS/TW	547	39	3	3	19	0.1012	1966	45.0	49.6	51.9	39.6	41.2	1.38	

**TABLE 3 Comparison of ACSS/TW With Equivalent Stranding of ACSR<sup>A</sup> and ACSS<sup>B</sup>**

ACSS/TW Type Number <sup>C</sup>	Conventional ACSR and ACSS Stranding <sup>D</sup>
5	42/7
7	45/7
8	84/19
10	22/7
13	54/7
13	24/7
16	26/7
23	30/7
23	30/19

<sup>A</sup> The equivalent stranding is that stranding of conventional ACSR that has the same area of aluminum and steel as a given ACSS/TW type.

<sup>B</sup> The equivalent stranding is that stranding of conventional ACSS that has the same area of aluminum and steel as a given ACSS/TW type.

<sup>C</sup> ACSS/TW type number is the approximate ratio of the steel area to the aluminum area in percent.

<sup>D</sup> See Specifications B232/B232M, B549, and B856.

[B802/B802M Specification for Zinc5 % Aluminum-Mischmetal Alloy-Coated Steel Core Wire for Aluminum Conductors, Steel Reinforced \(ACSR\)](#)

[B803 Specification for High-Strength Zinc5 % Aluminum-Mischmetal Alloy-Coated Steel Core Wire for Use in Overhead Electrical Conductors](#)

[B856 Specification for Concentric-Lay-Stranded Aluminum Conductors, Coated Steel Supported \(ACSS\)](#)

[B957 Specification for Extra-High-Strength and Ultra-High-Strength Zinc-Coated \(Galvanized\) Steel Core Wire for Overhead Electrical Conductors](#)

[B958 Specification for Extra-High-Strength and Ultra-High-Strength Class A Zinc5% Aluminum-Mischmetal Alloy-Coated Steel Core Wire for Use in Overhead Electrical Conductors](#)

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

[E527 Practice for Numbering Metals and Alloys in the Unified Numbering System \(UNS\)](#)

2.3 *Other Standards:*

NBS *Handbook 100*—Copper Wire Tables of the National Bureau of Standards<sup>3</sup>

Aluminum Association Publication 50 *Code Words for Overhead Aluminum Electrical Conductors*<sup>4</sup>

### 3. Terminology

3.1 *Definitions*—For definitions of terms relating to conductors, also refer to definitions found in Specification B354.

3.1.1 *aluminized*—aluminum coated.

3.1.2

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *aluminum-clad*—aluminum bonded.

3.2.2

3.2.2 *galvanized*—zinc coated.

3.2.3

3.2.3 *Zn-5Al-MM*—zinc-5 % aluminum-mischmetal alloy coated.

3.3 *Abbreviations:*

3.2.1

3.3.1 *ACSS/TW*—shaped wire aluminum conductor, steel supported.

3.2.2 *ACSS/TW/AZ*—supported with aluminized steel core wire in accordance with Specification B341/B341M.

3.2.3 *ACSS/TW/AW*—supported with aluminum-clad core wire in accordance with Specification

3.3.2 *ACSS/TW/AW2*—supported with regular strength aluminum-clad core wires in accordance with Specification B502.

3.2.4 *ACSS/TW/GA*—supported with galvanized steel core wire, coating Class A in accordance with Specification

3.3.3 *ACSS/TW/AW3*—supported with high-strength aluminum-clad core wires in accordance with Specification B502.

3.3.4 *ACSS/TW/GA2*—ACSS using Class A zinc-coated regular strength steel core wires in accordance with Specification B498/B498M.

3.2.5 *ACSS/TW/GB*—supported with galvanized steel core wire, coating Class B in accordance with Specification B498/B498M

3.3.5 *ACSS/TW/GA3*—ACSS using Class A zinc-coated high-strength steel core wires in accordance with Specification B606.

<sup>3</sup> Available from National Technical Information Service (NTIS), 5285 Port Royal Rd., Springfield, VA 22161, <http://www.ntis.gov>.

<sup>3</sup> Available from National Technical Information Service (NTIS), 5301 Shawnee Rd., Alexandria, VA 22312, <http://www.ntis.gov>.

<sup>4</sup> Available from Aluminum Association, Inc., 1525 Wilson Blvd., Suite 600, Arlington, VA 22209, <http://www.aluminum.org>.



~~3.2.6 ACSS/TW/GC—supported with galvanized steel core wire, coating Class C in accordance with Specification B498/B498M~~  
~~3.3.6 ACSS/TW/GA4—ACSS using Class A zinc-coated extra-high-strength steel core wires in accordance with Specification B957.~~

~~3.2.7 ACSS/TW/HS—supported with high-strength galvanized steel core wire in accordance with Specification B606~~

~~3.3.7 ACSS/TW/GA5—ACSS using Class A zinc-coated ultra-high-strength steel core wires in accordance with Specification B957.~~

~~3.2.8 ACSS/TW/MA—supported with Zn-5Al-MM coated steel core wire, coating Class A in accordance with Specification~~

~~3.3.8 ACSS/TW/GC2—ACSS using Class C zinc-coated regular strength steel core wires in accordance with Specification B498/B498M.~~

~~3.3.9 ACSS/TW/MA2—ACSS using Class A Zn-5Al-MM coated regular strength steel core wires in accordance with Specification B802/B802M.~~

~~3.2.9 ACSS/TW/MB—supported with Zn-5Al-MM coated steel core wire, coating Class B in accordance with Specification B802/B802M~~

~~3.3.10 ACSS/TW/MA3—ACSS using Class A Zn-5Al-MM coated high strength steel core wires in accordance with Specification B803.~~

~~3.2.10 ACSS/TW/MC—supported with Zn-5Al-MM coated steel core wire, coating Class C in accordance with Specification B802/B802M~~

~~3.3.11 ACSS/TW/MA4—ACSS using Class A Zn-5Al-MM coated extra-high-strength steel core wires in accordance with Specification B958.~~

~~3.2.11 ACSS/TW/MS—supported with high-strength Zn-5Al-MM coated steel core wire in accordance with Specification B803~~

~~3.3.12 ACSS/TW/MA5—ACSS using Class A Zn-5Al-MM coated ultra-high-strength steel core wires in accordance with Specification B958.~~

~~3.2.12 Zn-5Al-MM—zinc-5% aluminum-mischmetal alloy.~~

#### 4. Ordering Information

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

4.1.1 Quantity of each size,

4.1.2 Conductor size, kcmil area and diameter,

4.1.3 Conductor type and number of wires, aluminum and steel, (Table 1 and Table 2),

4.1.4 Type of steel core wire and class (if applicable) of coating (see 5.2),

4.1.5 Direction of lay of outer layer of aluminum wires if other than right-hand (see 7.67.7),

4.1.6 Special tension test, if desired (see 14.3),

4.1.7 Package size and type (see 16.1),

4.1.8 Special package markings, if required (see 16.4),

4.1.9 Heavy wood lagging, if required (see 16.3), and

4.1.10 Place of inspection (see Section 15).

#### 5. Requirement for Wires

5.1 After stranding, the trapezoidal aluminum wires (see Definitions B354) ~~shall conform to the requirements of Specification ) shall conform to the requirements of O Temper in accordance with Specification B609/B609M except for shape and diameter tolerance requirements. The tensile strength and elongation requirements of trapezoidal wires shall be the same as for round wires of equal area. The area tolerances for trapezoidal wires shall be such that the finished conductor conforms to Section 13. The elongation shall not be less than 20 % after stranding.~~

5.2 Before stranding, the steel core wire shall meet the requirements of Specifications ~~B341/B341M, B498/B498M, B502, B606, B802/B802M, or B803, B957, or B958~~ whichever is applicable.

5.3 The stranded steel core shall meet the requirements of Specification B500/B500M or B549, as applicable.

#### 6. Joints

6.1 Electric-butt welds, cold-pressure welds, and electric-butt, cold upset welds in the finished individual aluminum wires composing the conductor may be made during the stranding process. No weld shall occur within 50 ft (15 m) of a weld in the same wire or in any other wire of the completed conductor (see Explanatory Note 2).

6.2 There shall be no joints of any kind made in the finished coated steel wires.

#### 7. Lay

7.1 The preferred lay of the outside layer of aluminum wires of shaped wire compact aluminum conductors, steel supported, having a ~~stranded steel core of 7 or 19 wires~~ and having multiple layers of aluminum wires is 11 times the outside diameter of the conductor but the lay shall not be less than 10 nor more than 13 times that diameter (see Explanatory Note 3).

~~7.2 The preferred lay of the layer immediately beneath the outside layer of aluminum wires is 13 times the outside diameter of such layer but the lay shall be not less than 10 nor more than 16 times that diameter.~~