ACSS/TW/HS285®

Aluminum Conductor, Ultra-High-Strength Steel Supported, Trapezoidal Wire

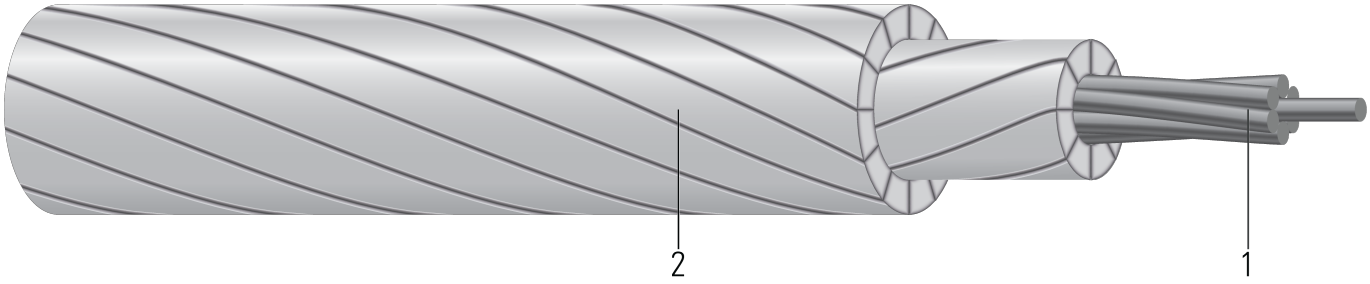

Image not to scale. See Table 1 for dimensions.

CONSTRUCTION:

1. **Core:** Stranded ultra-high-strength HS285® steel core with zinc-5% aluminum-mischmetal alloy coating for corrosion protection
2. **Stranding:** Annealed aluminum (1350-O) trapezoidal-shaped wires with 63% conductivity

APPLICATIONS AND FEATURES:

ACSS/TW/HS285® (Aluminum Conductor, Ultra-High-Strength Steel Supported, Trapezoidal Wire) combines a compact trapezoidal-wire aluminum construction with Southwire's ultra-high-strength HS285 steel core. The annealed aluminum provides electrical conductivity, while the HS285 core carries the mechanical load and provides maximum strength for demanding transmission applications.

The trapezoidal-wire design allows additional aluminum area within a specified conductor diameter or a reduced diameter for a specified aluminum area. Area-equivalent and diameter-equivalent designs provide flexibility when balancing ampacity, resistance, weight, diameter, wind loading, ice loading, and existing structure requirements.

ACSS/TW/HS285 is particularly well suited for high-capacity reconductoring, long spans, river crossings, heavily loaded lines, and projects where improved electrical performance and maximum mechanical strength are required within existing clearance or tension limits.

Southwire batch anneals the completed conductor after stranding, allowing the aluminum to be fully annealed while supporting tighter stranding and verification of finished conductor properties after heat exposure.

HS285 steel-core tensile properties are verified after heat exposure to account for the effects of ACSS manufacturing and high-temperature operation.

Continuous operating temperature - 250°C

SPECIFICATIONS:

- ASTM B500 Standard Specification for Metallic Coated or Aluminum-Clad Stranded Steel Core for Use in Overhead Electrical Conductors
- ASTM B609 Standard Specification for Aluminum 1350 Round Wire, Annealed and Intermediate Tempers, for Electrical Purposes

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- ASTM B857 Standard Specification for Shaped Wire Compact Concentric-Lay-Stranded Aluminum Conductors, Coated-Steel Supported (ACSS/TW)
- ASTM B958 Standard Specification for Extra-High-Strength and Ultra-High-Strength Class A Zinc–5% Aluminum-Mischmetal Alloy-Coated Steel Core Wire for Use in Overhead Electrical Conductors

RESOURCES:

Overhead Conductor Manual ↓	Advantages of ACSS and ACSS/HS285 Conductors White Paper ↓	Galvanized vs. Mischmetal Coating ↓
Batch Annealing vs. Bobbin Annealing ↓	Merrimak ACSS/TW/HS285 Conductor Tensile & Elongation Tests ↓	Cumberland ACSS/TW HS285 Conductor Tensile & Elongation Tests ↓
Fatigue Test of 0.135" Diameter HS285 Steel Wire ↓	Charpy Impact and Stress Corrosion Tests ↓	CenterPointe Energy Project Profile ↓
Western Area Power Administration Project Profile ↓	N1/Otra Project Profile ↓	ACSS/TW Data Tables ↓
Self-Damping Tests for Various Drake Conductors ↓	HS285® Overhead Conductor Sales Sheet ↓	Mischmetal Alloy-Coated (MA) Steel Core Sales Sheet ↓

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Area Equal to Standard ACSR Conductor - Weights, Measurements, Electrical and Engineering Data

Stock Number	Code Word	Conductor Size	Type No.	Stranding	Cross-Sectional Area		Layers of Al	Diameter			Weight		Rated Breaking Strength	DC Resistance @ 20°C
					Al	Total		Steel Strand	Steel Core	Complete Conductor	Al	Total		
		kcmil		Al/St	in²	in²		in	in	in	lb/ 1000ft	lb/ 1000ft	lb	Ω/mile
TBA	PARTRIDGE/ ACSS/TW	266.8	16	14/7	0.2095	0.2436	2	0.0788	0.2364	0.595	250.6	366	11,400	0.3263
TBA	LINNET/ACSS/ TW	336.4	16	16/7	0.2642	0.3072	2	0.0884	0.2652	0.659	316.1	461.7	14,400	0.2588
TBA	ORIOLE/ACSS/ TW	336.4	23	16/7	0.2642	0.3259	2	0.1059	0.3177	0.692	317.6	526.5	19,100	0.2577
TBA	IBIS/ACSS/TW	397.5	16	20/7	0.3122	0.363	2	0.0961	0.2883	0.725	373.5	545.5	16,500	0.219
TBA	LARK/ACSS/TW	397.5	23	16/7	0.3122	0.385	2	0.1151	0.3453	0.74	375.3	621.8	22,600	0.2181
TBA	FLICKER/ACSS/ TW	477	13	18/7	0.3746	0.4232	2	0.094	0.282	0.776	447.7	612.2	16,400	0.1831
TBA	HAWK/ACSS/TW	477	16	18/7	0.3746	0.4356	2	0.1053	0.3159	0.79	448.1	654.6	19,800	0.1825
TBA	HEN/ACSS/TW	477	23	20/7	0.3746	0.462	2	0.1261	0.3783	0.82	450.3	746.2	26,700	0.1817
TBA	PARAKEET/ ACSS/TW	556.5	13	18/7	0.4371	0.4937	2	0.1015	0.3045	0.84	522.4	714	19,100	0.1569
TBA	DOVE/ACSS/TW	556.5	16	20/7	0.4371	0.5083	2	0.1138	0.3414	0.85	522.9	763.9	23,100	0.1564
TBA	EAGLE/ACSS/TW	556.5	23	20/7	0.4371	0.5391	2	0.1362	0.4086	0.87	525.5	870.8	31,100	0.1558
TBA	SQUAB/ACSS/ TW	605	16	20/7	0.4752	0.5525	2	0.1186	0.3558	0.885	568.5	830.2	25,100	0.1439
TBA	TEAL/ACSS/TW	605	23	20/19	0.4752	0.5835	2	0.0852	0.426	0.916	571.3	938.7	34,700	0.1434
TBA	ROOK/ACSS/TW	636	13	20/7	0.4995	0.5642	2	0.1085	0.3255	0.893	597	816	21,900	0.1373
TBA	GROSBEAK/ ACSS/TW	636	16	20/7	0.4995	0.5808	2	0.1216	0.3648	0.909	597.6	872.8	26,000	0.1369
TBA	SCOTER/ACSS/ TW	636	23	22/7	0.4995	0.616	2	0.1456	0.4368	0.942	600.5	994.9	35,000	0.1363
TBA	EGRET/ACSS/TW	636	23	22/19	0.4995	0.6135	2	0.0874	0.437	0.942	600.5	987.2	36,600	0.1364
TBA	STARLING/ ACSS/TW	715.5	16	20/7	0.562	0.6535	2	0.129	0.387	0.958	672.3	982.1	29,300	0.1216
TBA	REDWING/ ACSS/TW	715.5	23	20/19	0.562	0.69	2	0.0926	0.463	0.994	675.6	1110	39,800	0.1212
TBA	TERN/ACSS/TW	795	7	20/7	0.6244	0.6676	2	0.0886	0.2658	0.96	745.2	891.5	17,400	0.1105
TBA	PUFFIN/ACSS/ TW	795	10	18/7	0.6244	0.6857	2	0.1056	0.3168	0.98	745.9	953.4	22,000	0.1102
TBA	CONDOR/ACSS/ TW	795	13	20/7	0.6244	0.7053	2	0.1213	0.3639	0.993	746.3	1020	26,900	0.1098
TBA	DRAKE/ACSS/ TW	795	16	20/7	0.6244	0.7261	2	0.136	0.408	1.01	747	1091	32,600	0.1095
TBA	MALLARD/ ACSS/TW	795	23	22/19	0.6244	0.7668	2	0.0977	0.4885	1.05	750.6	1234	44,300	0.1091
TBA	CANARY/ACSS/ TW	900	13	20/7	0.7069	0.7985	2	0.1291	0.3873	1.055	844.9	1155	30,500	0.097
TBA	PHOENIX/ACSS/ TW	954	5	30/7	0.7493	0.7878	3	0.0837	0.2511	1.044	897.7	1028	17,100	0.0927
TBA	RAIL/ACSS/TW	954	7	32/7	0.7493	0.8011	3	0.0971	0.2913	1.061	898.6	1074	20,400	0.0926

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Stock # 612923 | SPEC 80116

Stock Number	Code Word	Conductor Size	Type No.	Stranding	Cross-Sectional Area		Layers of Al	Diameter			Weight		Rated Breaking Strength	DC Resistance @ 20°C
					Al	Total		Steel Strand	Steel Core	Complete Conductor	Al	Total		
		kcmil		Al/St	in²	in²		in	in	in	lb/ 1000ft	lb/ 1000ft	lb	Ω/mile
TBA	CARDINAL/ ACSS/TW	954	13	20/7	0.7493	0.8464	2	0.1329	0.3987	1.08	895.5	1224	32,300	0.0915
TBA	CANVASBACK/ ACSS/TW	954	23	24/19	0.7493	0.9201	2	0.107	0.535	1.149	900.8	1480	53,100	0.0909
TBA	SNOWBIRD/ ACSS/TW	1033.5	5	30/7	0.8117	0.8535	3	0.0872	0.2616	1.089	972.5	1114	18,500	0.0856
TBA	ORTOLAN/ACSS/ TW	1033.5	7	34/7	0.8117	0.8678	3	0.101	0.303	1.102	973.4	1163	22,000	0.0854
TBA	CURLEW/ACSS/ TW	1033.5	13	22/7	0.8117	0.9169	2	0.1383	0.4149	1.131	970.1	1326	35,000	0.0845
TBA	AVOCET/ACSS/ TW	1113	5	30/7	0.8741	0.919	3	0.0904	0.2712	1.13	1047	1199	19,500	0.0794
TBA	BLUEJAY/ACSS/ TW	1113	7	34/7	0.8741	0.9346	3	0.1049	0.3147	1.143	1048	1253	23,800	0.0793
TBA	FINCH/ACSS/TW	1113	13	38/19	0.8741	0.985	3	0.0862	0.431	1.19	1051	1427	38,700	0.0789
TBA	OXBIRD/ACSS/ TW	1192.5	5	30/7	0.9366	0.9848	3	0.0936	0.2808	1.17	1122	1285	20,900	0.0741
TBA	BUNTING/ACSS/ TW	1192.5	7	34/7	0.9366	1.0013	3	0.1085	0.3255	1.181	1123	1342	25,400	0.074
TBA	GRACKLE/ACSS/ TW	1192.5	13	38/19	0.9366	1.0553	3	0.0892	0.446	1.225	1126	1529	41,500	0.0737
TBA	SCISSORTAIL/ ACSS/TW	1272	5	30/7	0.999	1.0504	3	0.0967	0.2901	1.203	1197	1371	22,300	0.0695
TBA	BITTERN/ACSS/ TW	1272	7	38/7	0.999	1.0681	3	0.1121	0.3363	1.224	1198	1432	27,200	0.0694
TBA	PHEASANT/ ACSS/TW	1272	13	39/19	0.999	1.1256	3	0.0921	0.4605	1.26	1201	1631	43,000	0.0691
TBA	DIPPER/ACSS/ TW	1351.5	7	36/7	1.0615	1.1348	3	0.1155	0.3465	1.256	1273	1521	28,800	0.0653
TBA	MARTIN/ACSS/ TW	1351.5	13	42/19	1.0615	1.1959	3	0.0949	0.4745	1.3	1276	1732	45,600	0.065
TBA	BOBOLINK/ ACSS/TW	1431	7	36/7	1.1239	1.2016	3	0.1189	0.3567	1.29	1348	1611	30,500	0.0617
TBA	PLOVER/ACSS/ TW	1431	13	44/19	1.1239	1.2663	3	0.0977	0.4885	1.337	1351	1834	48,300	0.0614
TBA	LAPWING/ACSS/ TW	1590	7	36/7	1.2488	1.3351	3	0.1253	0.3759	1.358	1498	1790	33,500	0.0555
TBA	FALCON/ACSS/ TW	1590	13	42/19	1.2488	1.4071	3	0.103	0.515	1.41	1501	2038	53,700	0.0553
TBA	CHUKAR/ACSS/ TW	1780	8	38/19	1.398	1.512	3	0.0874	0.437	1.445	1674	2061	43,900	0.0495
TBA	BLUEBIRD/ ACSS/TW	2156	8	64/19	1.6933	1.8311	4	0.0961	0.4805	1.608	2045	2512	51,700	0.0412

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Diameter Equal to Standard ACSR Conductor - Weights, Measurements, Electrical and Engineering Data

Stock Number	Code Word	Conductor Size	Type No.	Stranding	ACSR with Equal Diameter			Cross-Sectional Area		Layers of Al	Diameter			Weight		Rated Breaking Strength	DC Resistance @ 20°C
					Code Word	Size	Stranding	Al	Total		Steel Strand	Steel Core	Complete Conductor	Al	Total		
		kcmil		Al/St		kcmil	Al/St	in²	in²		in	in	in	lb/ 1000ft	lb/ 1000ft	lb	Ω/mile
TBA	CALUMET/ ACSS/TW	565.3	16	20/7	Hawk	477	26/7	0.444	0.5162	2	0.1146	0.3438	0.86	531.2	775.6	23,500	0.154
TBA	MOHAWK/ ACSS/TW	571.7	13	18/7	Flicker	477	24/7	0.449	0.5073	2	0.103	0.309	0.85	536.6	734	19,700	0.1527
TBA	OSWEGO/ ACSS/TW	664.8	16	20/7	Dove	556.5	26/7	0.5221	0.6072	2	0.1244	0.3732	0.927	624.6	912.7	27,200	0.1309
TBA	MYSTIC/ACSS/ TW	666.6	13	20/7	Parakeet	556.5	24/7	0.5235	0.5914	2	0.1111	0.3333	0.913	625.7	855.6	22,900	0.131
TBA	WABASH/ ACSS/TW	762.8	16	20/7	Grosbeak	636	26/7	0.5991	0.6965	2	0.1331	0.3993	0.99	716.7	1046	31,200	0.1141
TBA	MAUMEE/ ACSS/TW	768.2	13	20/7	Rook	636	24/7	0.6033	0.6818	2	0.1195	0.3585	0.977	721	986.8	26,500	0.1137
TBA	FRASER/ACSS/ TW	946.7	10	34/7	Puffin	795	22/7	0.7435	0.8167	3	0.1154	0.3462	1.077	892.5	1140	26,200	0.093
TBA	KETTLE/ACSS/ TW	957.2	7	32/7	Tern	795	45/7	0.7518	0.8038	3	0.0973	0.2919	1.06	901.6	1078	20,400	0.0922
TBA	SUWANNEE/ ACSS/TW	959.6	16	22/7	Drake	795	26/7	0.7537	0.8762	2	0.1493	0.4479	1.11	901.7	1316	38,600	0.0907
TBA	COLUMBIA/ ACSS/TW	966.2	13	22/7	Condor	795	54/7	0.7589	0.8573	2	0.1338	0.4014	1.092	907	1240	32,800	0.0904
TBA	GENESEE/ ACSS/TW	1158	7	34/7	Rail	954	45/7	0.9095	0.9734	3	0.1078	0.3234	1.165	1091	1307	25,000	0.0762
TBA	HUDSON/ ACSS/TW	1158.4	13	24/7	Cardinal	954	54/7	0.9098	1.0281	2	0.1467	0.4401	1.196	1087	1488	38,800	0.0754
TBA	CHEYENNE/ ACSS/TW	1168.1	5	30/7	Phoenix	954	42/7	0.9174	0.9645	3	0.0926	0.2778	1.155	1099	1259	20,500	0.0757
TBA	YUKON/ACSS/ TW	1233.6	13	38/19	Curlew	1033.5	54/7	0.9689	1.0925	3	0.091	0.455	1.245	1165	1584	41,900	0.0712
TBA	NELSON/ ACSS/TW	1257.1	7	36/7	Ortolan	1033.5	45/7	0.9873	1.0556	3	0.1115	0.3345	1.213	1184	1415	26,900	0.0702
TBA	CATAWBA/ ACSS/TW	1272	5	30/7	Snowbird	1033.5	42/7	0.999	1.0504	3	0.0967	0.2901	1.203	1197	1371	22,300	0.0695
TBA	THAMES/ ACSS/TW	1334.6	13	38/19	Finch	1113	54/19	1.0482	1.1812	3	0.0944	0.472	1.29	1260	1711	45,100	0.0658
TBA	MACKENZIE/ ACSS/TW	1359.7	7	38/7	Bluejay	1113	45/7	1.0679	1.1418	3	0.1159	0.3477	1.26	1281	1531	29,000	0.0649
TBA	TRUCKEE/ ACSS/TW	1372.5	5	30/7	Avocet	1113	42/7	1.078	1.1334	3	0.1004	0.3012	1.248	1292	1480	24,000	0.0644
TBA	MERRIMACK/ ACSS/TW	1433.6	13	39/19	Grackle	1192.5	54/19	1.1259	1.2686	3	0.0978	0.489	1.34	1354	1838	48,400	0.0613
TBA	MIRAMICHI/ ACSS/TW	1455.3	7	36/7	Bunting	1192.5	45/7	1.143	1.2222	3	0.12	0.36	1.302	1371	1639	30,700	0.0607
TBA	ST. CROIX/ ACSS/TW	1467.8	5	33/7	Oxbird	1192.5	42/7	1.1528	1.2124	3	0.1041	0.3123	1.292	1381	1583	25,800	0.0602
TBA	RIO GRANDE/ ACSS/TW	1533.3	13	38/19	Pheasant	1272	54/19	1.2043	1.3571	3	0.1012	0.506	1.38	1448	1966	51,900	0.0573

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Stock Number	Code Word	Conductor Size	Type No.	Stranding	ACSR with Equal Diameter			Cross-Sectional Area		Layers of Al	Diameter			Weight		Rated Breaking Strength	DC Resistance @ 20°C
					Code Word	Size	Stranding	Al	Total		Steel Strand	Steel Core	Complete Conductor	Al	Total		
		kcmil		Al/St		kcmil	Al/St	in²	in²		in	in	in	lb/ 1000ft	lb/ 1000ft	lb	Ω/mile
TBA	POTOMAC/ ACSS/TW	1557.4	7	36/7	Bittern	1272	45/7	1.2232	1.3079	3	0.1241	0.3723	1.35	1467	1754	32,800	0.0567
TBA	PLATTE/ACSS/ TW	1569	5	33/7	Scissortail	1272	42/7	1.2323	1.2957	3	0.1074	0.3222	1.334	1476	1691	27,500	0.0564
TBA	PECOS/ACSS/ TW	1622	13	39/19	Martin	1351.5	54/19	1.2739	1.4428	3	0.1064	0.532	1.42	1531	2104	56,900	0.0541
TBA	SCHUYLKILL/ ACSS/TW	1657.4	7	36/7	Dipper	1351.5	45/7	1.3017	1.3918	3	0.128	0.384	1.386	1561	1866	34,900	0.0533
TBA	JAMES/ACSS/ TW	1730.6	13	39/19	Plover	1431	54/19	1.3592	1.5316	3	0.1075	0.5375	1.47	1634	2219	58,500	0.0508
TBA	PEE DEE/ACSS/TW	1758.6	7	38/7	Bobolink	1431	45/7	1.3812	1.4768	3	0.1319	0.3957	1.43	1656	1980	37,100	0.0502
TBA	CUMBERLAND/ ACSS/TW	1926.9	13	42/19	Falcon	1590	54/19	1.5134	1.705	3	0.1133	0.5665	1.55	1819	2469	65,000	0.0456
TBA	ATHABASKA/ ACSS/TW	1949.6	7	44/7	Lapwing	1590	45/7	1.5312	1.6377	3	0.1392	0.4176	1.504	1836	2197	41,300	0.0453
TBA	POWDER/ ACSS/TW	2153.8	8	64/19	Chukar	1780	84/19	1.6916	1.8294	4	0.0961	0.4805	1.596	2043	2510	51,700	0.0412
TBA	SANTEE/ACSS/ TW	2627.3	8	64/19	Bluebird	2156	84/19	2.0635	2.2318	4	0.1062	0.531	1.761	2492	3063	63,100	0.0338

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