ACSS /TW

Aluminum Conductor Steel Supported / Trapezoidal Shaped

Complete Conductor:

ACSS/TW is a trapezoidal aluminum conductor steel-supported concentric-lay-stranded conductor. The aluminum strands are trapezoidal in shape.

The wedge-shaped aluminum strands enable a more compact alignment of the aluminum wires. Conductor designs that maintain the same circular mil cross-sectional area of aluminum as a conventional round conductor result in a TW conductor that is 10 to 15 percent smaller in overall diameter. Conductor designs that maintain the same overall diameter as a conventional round conductor result in a TW conductor that has 20% to 25% more aluminum cross-sectional area packed in.

The ACSS/TW conductors are manufactured in accordance with the requirements of the latest issue of ASTM B857.

The steel strands form the central core of the conductor, around which is stranded two, three or four layers of aluminum 1350-O temper annealed wires. The steel core may consist of a concentric stranded cable of 7, 19 or more wires. Numerous combinations of aluminum and steel strands and layers are possible. The sizes and constructions listed on the following pages are common examples used in overhead lines.

For ACSS/TW conductors, the standard class A galvanized coating is usually adequate for ordinary environments.

Features and Benefits:

ACSS/TW conductors are similar to conventional ACSR/TW conductors but have very important additional significant advantages. ACSS/TW conductors can operate continuously at high temperatures (200°c) without any damages. It sags less than ACSR/TW under emergency electrical loadings, it has self damping properties and its final sags are not affected by long-term creep of aluminum. ACSS/TW conductors produced with equivalent aluminum circular mil cross-sectional area provide a conductor that is smaller in overall diameter than the equivalent conventional round wire ACSS conductor.

The reduced conductor diameter helps to reduce ice and wind loading effect on the conductor. ACSS/TW conductors produced with equivalent overall diameter enhances greater circular mil cross-sectional area of aluminum within the conductor, allowing a significant increase in conductor current-carrying capacity.

Applications:

Trapezoidal aluminum conductors steel-supported (ACSS/TW) are used for overhead transmission lines. They are specifically useful in re-conductoring operations requiring increased current with existing tensions; new line products are applicable where structures need to be economized to reduce sags, high emergency loadings or lines where aeolian vibration is a problem.

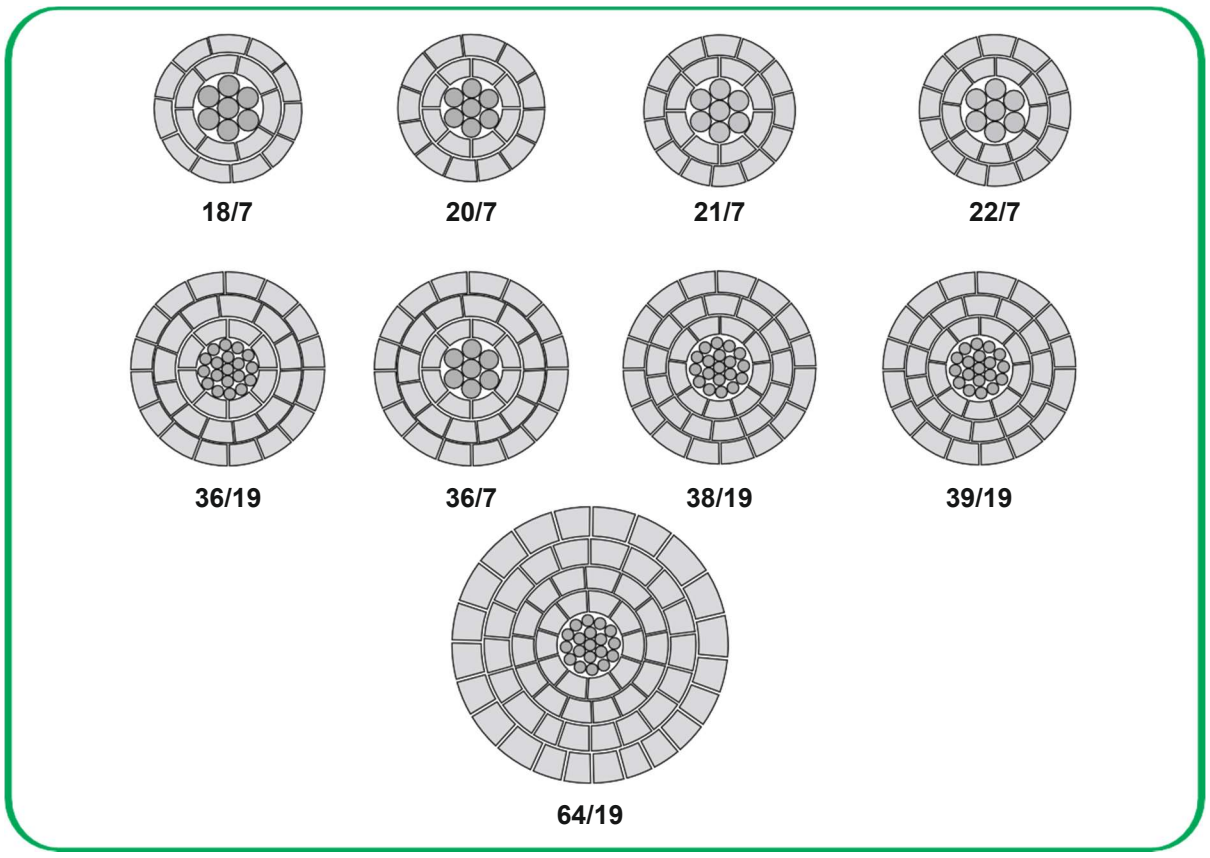
Electrical Parameters:

The electrical parameters for the trapezoidal ACSS equivalent circular mil area and equivalent overall diameter conductors may be found in the last table of this section.

Options:

- High-strength class A galvanized steel core (/HS)
- Extra-high-strength class A galvanized steel core (/EHS)
- Ultra-high-strength class A galvanized steel core (/UHS)
- Regular-strength class A zinc-5% aluminum misch-metal alloy-coated steel core (/MA)
- High-strength class A zinc-5% aluminum misch-metal alloy-coated steel core (/MS)
- Extra-high-strength class A zinc-5% aluminum misch-metal alloy-coated steel core (/EMS)
- Ultra-high-strength class A zinc-5% aluminum misch-metal alloy-coated steel core (/UMS)
- Aluminum-clad steel core (/AW)
- High-strength Aluminum-clad steel core (/HSAW)

ACSS/TW cross section according to the number of layers:



ASTM B857

Area Equal to standart ASCR size

Code Word	Size (kcmil)	Type No.	Cross Sectional Area		Stranding			Diameter	
			Aluminum	Total	No. of Layers of Aluminum	No. of Aluminum Wires	No. & Diameter Individual Steel Wire	Steel Core	Complete Cable
			mm^2		No.		No. x Di.	mm	
Linnet	336.4	16	170.39	198.06	2	18	7 x 2.2453	6.7361	16.7386
Oriole	336.4	23	170.45	210.19	2	16	7 x 2.6898	8.0696	17.6022
Flicker	477	13	241.74	273.1	2	18	7 x 2.3876	7.1628	19.7104
Hawk	477	16	241.68	281.03	2	18	7 x 2.6746	8.0239	20.0406
Hen	477	23	241.74	298.13	2	16	7 x 3.2029	9.6088	20.955
Parakeet	556.5	13	282	318.52	2	18	7 x 2.5781	7.7343	21.209
Dove	556.5	16	282	327.93	2	20	7 x 2.8905	8.6716	21.6408
Rook	636	13	322.26	364.06	2	18	7 x 2.7559	8.2677	22.606
Grosbeak	636	16	322.26	374.71	2	20	7 x 3.0886	9.2659	23.0632
Seater	636	23	322.26	397.42	2	18	7 x 3.6982	11.0947	24.2062
Tern	795	7	402.84	430.64	2	17	7 x 2.2504	6.7513	24.384
Puffin	795	11	402.84	446.39	2	18	7 x 2.6822	8.0467	24.892
Condor	795	13	402.84	455.03	2	20	7 x 3.0810	9.2431	25.2222
Drake	795	16	402.84	468.45	2	20	7 x 3.4544	10.3632	25.654
Canary	900	13	456.06	515.03	2	20	7 x 3.2791	9.8374	26.797
Phoenix	954	5	483.42	508.13	3	30	7 x 2.1259	6.3779	26.5176
Rail	954	7	483.42	516.84	3	32	7 x 2.4663	7.399	26.9494
Cardinal	954	13	483.42	546.06	2	20	7 x 3.3756	10.127	27.5336
Snowbird	1033.5	5	523.68	550.58	3	30	7 x 2.2123	6.637	27.6606
Ortolan	1033.5	7	523.68	559.87	3	32	7 x 2.5654	7.6962	27.9908
Curlew	1033.5	13	523.68	591.55	2	20	7 x 3.5128	10.5385	28.6766
Avocet	1113	5	564	592.97	3	30	7 x 2.2961	6.8885	28.6766
Bluejay	1113	7	564	603.03	3	33	7 x 2.6644	7.99	29.03
Finch	1113	13	564.06	635.61	3	38	19 x 2.1894	10.95	30.1
Oxbird	1192.5	5	604.26	635.35	3	30	7 x 2.3774	7.13	29.64
Bunting	1192.5	7	604.26	646	3	33	7 x 2.7559	8.27	30
Grackle	1192.5	13	604.26	680.9	3	38	19 x 2.2656	11.33	31.12
Scissortail	1272	5	644.58	677.74	3	30	7 x 2.4561	7.37	30.56
Bittern	1272	7	644.51	689.1	3	35	7 x 2.8473	8.54	30.99
Pheasant	1272	13	644.51	726.19	3	39	19 x 2.3393	11.7	32.11
Dipper	1351.5	7	684.84	732.13	3	35	7 x 2.9337	8.8	31.9
Martin	1351.5	13	684.84	771.55	3	39	19 x 2.4104	12.05	33.02
Bobolink	1431	7	724.9	775.29	3	36	7 x 3.0200	9.06	32.79
Plover	1431	13	725.1	817.03	3	39	19 x 2.4815	12.41	33.96
Lapwing	1590	7	805.68	861.35	3	36	7 x 3.1826	9.55	34.49
Falcon	1590	13	805.68	907.8	3	42	19 x 2.6162	13.08	35.76
Chukar	1780	8	902.32	975.87	3	37	19 x 2.2199	11.1	36.7
Bluebird	2156	8	1092.45	1181.22	4	64	19 x 2.4409	12.2	40.84

Weight			Rated Breaking Strength			Resistance		Ampacity (amps)				
Aluminum	Steel	Total	Standard Strength	High Strength	HS-285	DC at 20°c	AC at 75°c	75°c	100°c	150°c	200°c	250°c
kg/km			kg			ohms/km		A				
470.11	216.53	686.64	5080	5579	6532	0.1608	0.1977	523	638	801	921	1021
470.41	310.58	780.99	6713	7394	8664	0.1594	0.1958	533	650	816	940	1043
666.4	244.8	911.2	5897	6441	7439	0.1138	0.1401	648	793	998	1151	1279
666.85	307.16	974	7076	7756	8981	0.1134	0.1396	652	799	1005	1159	1289
667.14	440.5	1107.64	9525	10297	12111	0.1124	0.1383	663	813	1024	1181	1315
777.42	285.43	1062.85	6895	7530	8664	0.0975	0.1202	713	874	1102	1271	1415
778.16	358.65	1136.81	8255	9026	10478	0.0972	0.1198	719	881	1111	1282	1427
888.43	326.06	1214.49	7847	8618	9934	0.0853	0.1054	775	951	1200	1386	1544
889.33	409.54	1298.87	9389	10160	11793	0.0851	0.1049	781	958	1210	1398	1557
889.33	587.23	1476.56	12428	13472	15876	0.0843	0.1039	795	976	1234	1427	1591
1108.98	217.42	1326.4	6441	6895	7893	0.0687	0.0853	878	1080	1366	1580	1762
1110.02	340.05	1450.07	8029	8709	9979	0.0684	0.0848	886	1090	1378	1595	1778
1110.62	407.61	1517.93	9843	10569	12202	0.0682	0.0846	890	1095	1386	1604	1789
1111.66	512.37	1623.59	11748	12701	14787	0.068	0.0842	896	1103	1396	1616	1803
1257.35	461.63	1718.83	11158	11975	13835	0.0603	0.0749	962	1185	1501	1739	1942
1335.92	194.06	1529.83	6441	6895	7756	0.0576	0.0738	967	1189	1503	1740	1940
1337.26	261.17	1598.29	7575	8165	9253	0.0575	0.0735	972	1196	1512	1750	1953
1332.65	489.16	1821.51	11793	12701	14651	0.0569	0.0707	997	1229	1558	1806	2016
1447.24	210.13	1657.81	6985	7439	8391	0.0532	0.0682	1016	1251	1584	1834	2048
1447.24	282.6	1729.25	8210	8845	9979	0.0531	0.068	1021	1257	1592	1843	2058
1443.67	529.79	1973.31	12791	13744	15876	0.0525	0.0654	1048	1293	1641	1903	2126
1558.11	226.35	1784.31	7394	7938	8845	0.0493	0.0635	1063	1310	1661	1925	2150
1559.6	304.78	1864.67	8845	9525	10795	0.0493	0.0633	1068	1317	1669	1935	2161
1564.06	559.7	2123.61	13789	15059	17554	0.049	0.0628	1084	1336	1695	1965	2196
1669.72	242.72	1912.29	7938	8482	9480	0.046	0.0595	1108	1367	1735	2013	2249
1671.21	326.06	1997.12	9480	10206	11521	0.046	0.0593	1114	1374	1744	2023	2261
1675.67	599.43	2275.4	14787	16103	18824	0.0458	0.0587	1130	1395	1771	2055	2298
1781.33	258.94	2040.27	8482	9072	10115	0.0432	0.0559	1152	1423	1807	2098	2346
1782.82	348.08	2131.05	10115	10886	12292	0.0431	0.0557	1159	1431	1817	2110	2360
1787.28	639.02	2425.71	15467	16919	19504	0.0429	0.0551	1176	1452	1846	2143	2398
1894.43	369.51	2263.5	10750	11567	13063	0.0406	0.0526	1202	1485	1888	2194	2455
1898.9	678.45	2577.5	16420	17962	20684	0.0404	0.052	1220	1508	1918	2228	2494
2004.56	391.54	2397.43	11385	12247	13835	0.0383	0.0498	1243	1538	1958	2276	2549
2010.51	719.08	2729.29	17418	19006	21909	0.0382	0.0493	1263	1562	1989	2313	2590
2229.27	434.84	2663.81	12655	13426	15195	0.0345	0.0452	1324	1640	2092	2435	2730
2233.73	799.14	3032.88	19323	21137	24358	0.0344	0.0446	1346	1668	2127	2477	2777
2492.67	575.47	3068.59	16012	17327	19913	0.0308	0.0405	1421	1764	2255	2630	2952
3043.3	695.72	3738.27	19096	20638	23451	0.0256	0.0337	1601	1999	2573	3014	3396

ASTM B857

Diameter Equal to standart ASCR size

Code Word	Size (kcmil)	Type No.	Cross Sectional Area		Stranding		Diameter		
			Aluminum	Total	No. of Layers of Aluminum	No. of Aluminum Wires	No. & Diameter Individual Steel Wire	Steel Core	Complete Cable
			mm^2		No.		No. x Di.	mm	
Mohawk	571.7	13	289.68	327.35	2	18	7 x 2.6162	7.8486	21.4884
Calumet	565.3	16	286.39	333.03	2	20	7 x 2.9108	8.7401	21.7932
Mystic	666.6	13	337.81	381.55	2	20	7 x 2.8219	8.4658	23.1902
Oswego	664.8	16	336.84	391.74	2	20	7 x 3.1597	9.4793	23.5458
Maumee	768.2	13	389.29	439.93	2	20	7 x 3.0353	9.1059	24.8158
Wabash	762.8	16	386.58	449.42	2	20	7 x 3.3807	10.1422	25.146
Kettle	957.2	7	485.03	518.58	3	32	7 x 2.4714	7.4143	26.924
Fraser	946.7	10	479.74	526.97	3	35	7 x 2.9311	8.7935	27.3558
Columbia	966.2	13	489.61	553.1	2	21	7 x 3.3985	10.1956	27.7368
Suwannee	959.6	16	486.26	565.29	2	22	7 x 3.7922	11.3767	28.1432
Cheyenne	1168.1	5	591.93	622.32	3	30	7 x 2.3520	7.0561	29.337
Genesee	1158	7	586.77	627.93	3	33	7 x 2.7381	8.2144	29.591
Hudson	1158.4	13	586.97	663.29	2	25	7 x 3.7261	11.1785	30.3784
Catawba	1272	5	644.58	677.74	3	30	7 x 2.4561	7.3685	30.5562
Nelson	1257.1	7	637.03	681.1	3	35	7 x 2.8321	8.4963	30.8102
Yukon	1233.6	13	625.1	704.84	3	38	19 x 2.3114	11.557	31.623
Truckee	1372.5	5	695.48	731.22	3	30	7 x 2.5501	7.6505	31.6992
Mackenzie	1359.7	7	688.97	736.64	3	36	7 x 2.9438	8.8316	31.9786
Thames	1334.6	13	676.13	761.87	3	39	19 x 2.3977	11.9888	32.766
St. Croix	1467.8	5	743.8	782.19	3	33	7 x 2.6441	7.9324	32.8168
Miramichi	1455.3	7	737.42	788.51	3	36	7 x 3.048	9.144	33.0708
Merrimack	1433.6	13	725.81	817.87	3	39	19 x 2.4841	12.42	34.04
Platte	1569	5	795.03	835.93	3	33	7 x 2.7279	8.18	33.88
Potomac	1557.4	7	789.16	843.8	3	36	7 x 3.1521	9.46	34.16
Rio Grande	1533.3	13	776.97	875.55	3	39	19 x 2.5704	12.85	35.1
Schuylkill	1657.4	7	840	898.06	3	36	7 x 3.2512	9.75	35.2
Pecos	1622	13	821.87	930.9	3	39	19 x 2.7025	13.51	36.17
Pee Dee	1758.6	7	890.97	952.9	3	37	7 x 3.3502	10.05	36.25
James	1730.6	13	876.77	988	3	34	19 x 2.7305	13.65	37.34
Athabaska	1949.6	7	987.87	1056.58	3	42	7 x 3.5356	10.61	38.2
Cumberland	1926.9	13	976.39	1099.93	3	42	19 x 2.8778	14.39	39.24
Powder	2153.8	8	1091.09	1180	4	64	19 x 2.4409	12.2	40.69
Santee	2627.3	8	1330.97	1436.64	4	64	19 x 2.6974	13.49	44.75

AAC

Sim Noor Yazdan Co.

ACSS/TW

Weight			Rated Breaking Strength			Resistance		Ampacity (amps)				
Aluminum	Steel	Total	Standard Strength	High Strength	HS-285	DC at 20°c	AC at 75°c	75°c	100°c	150°c	200°c	250°c
kg/km			kg			ohms/km		A				
798.5	293.9	1092.5	7076	7756	8936	0.0949	0.1171	725	889	1121	1294	1441
790.5	363.7	1154.2	8346	9163	10659	0.0957	0.1179	725	890	1122	1295	1442
931.1	341.8	1273	8255	9026	10387	0.0814	0.1006	798	980	1238	1431	1595
929.5	428.6	1358.1	9843	10614	12338	0.0813	0.1004	802	985	1244	1439	1604
1073.1	395.6	1468.7	9525	10433	12020	0.0706	0.0874	872	1072	1356	1569	1750
1066.6	490.6	1556.6	11294	12156	14152	0.0709	0.0877	873	1074	1359	1573	1755
1341.7	262.2	1604.2	7620	8210	9253	0.0573	0.0733	973	1197	1514	1753	1955
1328.3	368.9	1698	9571	10387	11884	0.0578	0.0738	974	1199	1517	1756	1959
1349.6	495.9	1845.3	11975	12837	14878	0.0562	0.0698	1005	1239	1571	1822	2035
1341.7	617.4	1959.9	13925	15014	17509	0.0564	0.07	1008	1243	1576	1828	2042
1635.5	237.5	1873.6	7802	8301	9299	0.047	0.0608	1095	1350	1712	1986	2219
1623.6	321.9	1945	9299	10024	11340	0.0473	0.061	1094	1350	1712	1985	2218
1617.6	596.2	2214.4	9299	15195	17599	0.0469	0.0586	1124	1389	1766	2051	2295
1781.3	258.9	2040.3	9299	9072	10115	0.0432	0.0559	1152	1423	1807	2098	2346
1762	344.4	2105.8	9299	10795	12202	0.0436	0.0564	1150	1420	1804	2094	2342
1733.7	623.8	2357.3	9299	16465	19006	0.0442	0.0568	1154	1425	1810	2101	2350
1922.7	279.2	2201	9299	9752	10886	0.04	0.0521	1206	1491	1896	2203	2466
1906.3	372	2278.4	9299	11657	13154	0.0403	0.0523	1206	1490	1895	2202	2465
1875.1	671.3	2546.2	9299	17735	20457	0.0409	0.0526	1210	1495	1902	2209	2472
2055.2	300.2	2355.8	9299	10478	11703	0.0374	0.0489	1256	1554	1979	2302	2578
2041.8	398.8	2440.6	9299	12292	13925	0.0377	0.0491	1269	1573	2007	2338	2577
2018	646	2738	17418	19051	21954	0.0381	0.0492	1277	1584	2021	2354	2595
2200	320	2519	10478	11158	12474	0.035	0.046	1319	1637	2092	2439	2692
2185	427	2612	12383	13154	14878	0.0352	0.046	1321	1639	2094	2441	2694
2156	772	2929	18688	20412	23541	0.0356	0.0461	1329	1650	2108	2456	2710
2326	454	2780	13200	14016	15830	0.0331	0.0435	1370	1702	2177	2539	2805
2281	854	3136	20412	22362	25809	0.0336	0.0437	1377	1710	2187	2551	2816
2467	482	2950	14016	14878	16828	0.0312	0.0412	1418	1763	2259	2637	2916
2435	871	3305	21047	23042	26535	0.0316	0.0412	1430	1778	2277	2657	2937
2732	537	3269	15558	16556	18733	0.0281	0.037	1505	1873	2403	2808	3157
2707	967	3674	23405	25583	29484	0.0283	0.0373	1508	1875	2400	2802	3148
3040	696	3735	19096	20638	23451	0.0256	0.0337	1599	1996	2569	3009	3391
3709	850	4557	23269	25220	28622	0.021	0.0285	1784	2237	2894	3403	3846