

# ACSS Aluminum Conductor Steel Supported



A Viakable Company

CME Wire and Cable offers ACSS conductors with various conductor designs and steel core coatings to address your application requirements for transmission and distribution projects.

## Construction

ACSS, a non-homogenous conductor, is a concentric-lay-stranded conductor made from round aluminum 1350-O wires and round, coated steel core wire(s). Steel wires are coated with Class A coating of zinc – 5% aluminum mischmetal alloy. Other Classes of coatings are also available for additional protection from corrosion. Standard, High, Extra and Ultra High Strength steel are also available.

## Specifications

ACSS conductors are manufactured in accordance with the ASTM specification B856.

## Features

ACSS conductors are preferred over ACSR conductors for specific transmission line applications:

With zinc – 5% aluminum mischmetal alloy coating on steel wires, ACSS conductors can be operated up to 250 °C.

ACSS conductors carry more current than ACSR conductors due to:

Minimum average conductivity of 63% IACS for 1350-O aluminum wires vs. an average conductivity of 61.2% for 1350-H19 aluminum wires in ACSR.

ACSS conductors can be operated up to 250 °C vs. the maximum operating temperature for an ACSR conductor does not exceed 100 °C.

ACSS conductors are prone to resist the effects of aeolian vibration due to very little or no mechanical load on the annealed aluminum wires.

Long term creep is not a factor when designing with ACSS conductors.

## Applications

ACSS conductors are useful for:

- **Reconductoring lines:** Increase ampacity with existing tensions and clearances.
- **New lines:** Optimize structures due to low sag. Also, provide higher emergency loading capability.
- **Lines:** Where aeolian vibration is an issue.

## Options

ACSS/MA2 is standard.

*Other possibilities shown below.*



ALUMINUM CONDUCTOR

## Technical Data

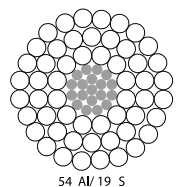
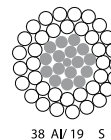
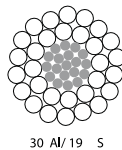
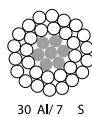
### ACSS Options

Steel Coating	Steel Strength			
	Standard	High	Extra High	Ultra High
Zinc – 5% Aluminum Mischmetal Alloy Coating	/MA2 /MC2	/MA3	/MA4	/MA5

/NS: Non-Specular finish available for all ACSS products.

/AW: Aluminum-clad steel core – see ACSS/AW catalog sheet.

/TW: Trapezoidal-shaped aluminum wires – see ACSS/TW catalog sheet.



Technical Data *continued*

ACSS

Code Word	Size kcmil	Stranding						Nominal Overall Diameter in	Cross Section		Rated Strength		
		Aluminum			Steel				Al	Total	/MA2	/MA3	/MA5
		No.	Diameter in	Layers	No.	Diameter in	Layers						
Partridge/ACSS	266.8	26	0.1013	2	7	0.0788	1	0.642	0.2095	0.2437	8.9	9.7	11.4
Oriole/ACSS	336.4	30	0.1059	2	7	0.1059	1	0.741	0.2642	0.3259	14.8	16.3	19.1
Linnet/ACSS	336.4	26	0.1137	2	7	0.0884	1	0.720	0.2640	0.3070	11.2	12.3	14.4
Lark/ACSS	397.5	30	0.1151	2	7	0.1151	1	0.806	0.3121	0.3850	17.5	19.3	22.6
Ibis/ACSS	397.5	26	0.1236	2	7	0.0961	1	0.783	0.3120	0.3627	13.0	14.2	16.5
Hen/ACSS	477.0	30	0.1261	2	7	0.1261	1	0.883	0.3747	0.4621	21.0	22.7	26.7
Hawk/ACSS	477.0	26	0.1354	2	7	0.1053	1	0.858	0.3744	0.4353	15.6	17.1	19.8
Flicker/ACSS	477.0	24	0.1410	2	7	0.0940	1	0.846	0.3747	0.4233	13.0	14.2	16.4
Eagle/ACSS	556.5	30	0.1362	2	7	0.1362	1	0.953	0.4371	0.5391	24.5	26.5	31.1
Dove/ACSS	556.5	26	0.1463	2	7	0.1138	1	0.927	0.4371	0.5083	18.2	19.9	23.1
Parakeet/ACSS	556.5	24	0.1523	2	7	0.1015	1	0.914	0.4372	0.4939	15.2	16.6	19.1
Peacock/ACSS	605.0	24	0.1588	2	7	0.1059	1	0.953	0.4753	0.5370	16.5	18.1	20.8
Egret/ACSS	636.0	30	0.1456	2	19	0.0874	2	1.019	0.4995	0.6135	28.0	30.9	36.6
Grosbeak/ACSS	636.0	26	0.1564	2	7	0.1216	1	0.990	0.4995	0.5808	20.7	22.4	26.0
Rook/ACSS	636.0	24	0.1628	2	7	0.1085	1	0.977	0.4996	0.5643	17.3	19.0	21.9
Flamingo/ACSS	666.6	24	0.1667	2	7	0.1111	1	1.000	0.5238	0.5917	18.2	19.9	22.9
Redwing/ACSS	715.5	30	0.1544	2	19	0.0926	2	1.081	0.5617	0.6897	30.8	34.0	39.8
Starling/ACSS	715.5	26	0.1659	2	7	0.1290	1	1.051	0.5620	0.6535	23.3	25.2	29.3
Mallard/ACSS	795.0	30	0.1628	2	19	0.0977	2	1.140	0.6245	0.7669	34.3	37.9	44.3
Condor/ACSS	795.0	54	0.1213	3	7	0.1213	1	1.092	0.6240	0.7049	21.7	23.3	26.9
Tern/ACSS	795.0	45	0.1329	3	7	0.0886	1	1.063	0.6242	0.6674	14.2	15.2	17.4
Drake/ACSS	795.0	26	0.1749	2	7	0.1360	1	1.108	0.6247	0.7263	25.9	28.0	32.6
Cuckoo/ACSS	795.0	24	0.1820	2	7	0.1213	1	1.092	0.6244	0.7053	21.7	23.3	26.9
Canary/ACSS	900.0	54	0.1291	3	7	0.1291	1	1.162	0.7069	0.7985	24.6	26.4	30.5
Ruddy/ACSS	900.0	45	0.1414	3	7	0.0943	1	1.131	0.7066	0.7555	15.8	17.0	19.2
Cardinal/ACSS	954.0	54	0.1329	3	7	0.1329	1	1.196	0.7491	0.8462	26.0	28.0	32.3
Rail/ACSS	954.0	45	0.1456	3	7	0.0971	1	1.165	0.7492	0.8011	16.7	18.0	20.4
Curlew/ACSS	1033.5	54	0.1383	3	7	0.1383	1	1.245	0.8112	0.9164	28.2	30.3	35.0
Ortolan/ACSS	1033.5	45	0.1515	3	7	0.1010	1	1.212	0.8112	0.8673	18.1	19.5	22.0
Finch/ACSS	1113.0	54	0.1436	3	19	0.0862	2	1.293	0.8746	0.9854	30.4	33.2	38.7
Bluejay/ACSS	1113.0	45	0.1573	3	7	0.1049	1	1.259	0.8745	0.9350	19.5	21.1	23.8
Grackle/ACSS	1192.5	54	0.1486	3	19	0.0892	2	1.338	0.9365	1.0553	32.6	35.5	41.5
Bunting/ACSS	1192.5	45	0.1628	3	7	0.1085	1	1.302	0.9367	1.0014	21.4	23.5	25.4
Pheasant/ACSS	1272.0	54	0.1535	3	19	0.0921	2	1.382	0.9993	1.1259	34.1	37.3	43.0
Bittern/ACSS	1272.0	45	0.1681	3	7	0.1121	1	1.345	0.9987	1.0678	22.3	24.0	27.1
Martin/ACSS	1351.0	54	0.1582	3	19	0.0949	2	1.424	1.0614	1.1958	36.2	39.6	45.6
Dipper/ACSS	1351.0	45	0.1733	3	7	0.1155	1	1.386	1.0614	1.1348	23.7	25.5	28.8
Plover/ACSS	1431.0	54	0.1628	3	19	0.0977	2	1.465	1.1241	1.2665	38.4	41.9	48.3
Bobolink/ACSS	1431.0	45	0.1783	3	7	0.1189	1	1.427	1.1236	1.2013	25.1	27.0	30.5
Falcon/ACSS	1590.0	54	0.1716	3	19	0.1030	2	1.545	1.2489	1.4072	42.6	46.6	53.7
Lapwing/ACSS	1590.0	45	0.1880	3	7	0.1253	1	1.504	1.2492	1.3355	27.9	29.6	33.5
Chukar/ACSS*	1780.0	84	0.1456	4	19	0.0874	2	1.602	1.3986	1.5126	35.4	38.2	43.9
Bluebird/ACSS*	2156.0	84	0.1602	4	19	0.0961	2	1.762	1.6931	1.8310	42.1	45.5	51.7
Kiwi/ACSS*	2167.0	72	0.1735	4	7	0.1157	1	1.735	1.7022	1.7758	29.0	30.8	34.1
Thrasher/ACSS*	2312.0	76	0.1744	4	19	0.0814	2	1.802	1.8155	1.9144	35.6	38.1	43.0

- Code words shown are for standard ACSS/MA2 conductor. See the options for other applicable code word modifiers.
  - Rated strengths shown are applicable for ACSS/MA2 and ACSS/MA3 cores.
  - Direct current resistance is based on 63.0% IACS for 1350-O wires and 8% IACS for the steel core at 20 °C.
  - Consult IEEE 738: Standard for Calculating the Current-Temperature of Bare Overhead Conductors or contact CME Wire and Cable for assistance.
  - The above data are an estimate based on given criteria and subject to normal manufacturing tolerances.
- \* Contact CME to review availability.

Technical Data *continued*

# ACSS

Code Word	Size kcmil	Mass			Percent of Total Mass		Resistance			Reactance		
		Al	Steel	Total	Al	Steel	dc	ac – 60 Hz		Capacitive	Inductive	
							20 °C	25 °C	75 °C		25 °C	GMR
		lb/kft					Ω/kft			MΩ/kft	Ω/kft	ft
Partridge/ACSS	266.8	251.3	115.6	366.9	68.49	31.51	0.0619	0.0633	0.0762	0.565	0.088	0.0217
Oriole/ACSS	336.4	317.7	208.7	526.4	60.35	39.65	0.0488	0.0499	0.0601	0.544	0.084	0.0255
Linnet/ACSS	336.4	316.6	145.4	462	68.53	31.47	0.0492	0.0503	0.0605	0.549	0.085	0.0244
Lark/ACSS	397.5	375.3	246.5	621.8	60.36	39.64	0.0413	0.0423	0.0509	0.533	0.082	0.0277
Ibis/ACSS	397.5	374.1	171.9	546	68.52	31.48	0.0416	0.0426	0.0512	0.539	0.084	0.0265
Hen/ACSS	477.0	450.4	296	746.4	60.34	39.66	0.0344	0.0353	0.0424	0.517	0.080	0.0304
Hawk/ACSS	477.0	449	206.3	655.3	68.52	31.48	0.0347	0.0355	0.0427	0.522	0.081	0.0290
Flicker/ACSS	477.0	449.4	164.5	613.9	73.20	26.80	0.0348	0.0357	0.0429	0.524	0.082	0.0283
Eagle/ACSS	556.5	525.5	345.2	870.7	60.35	39.65	0.0295	0.0303	0.0364	0.505	0.079	0.0328
Dove/ACSS	556.5	524.2	241	765.2	68.50	31.50	0.0297	0.0305	0.0367	0.510	0.080	0.0313
Parakeet/ACSS	556.5	524.3	191.8	716.1	73.22	26.78	0.0298	0.0307	0.0368	0.512	0.080	0.0306
Peacock/ACSS	605.0	570.1	208.7	778.8	73.20	26.80	0.0274	0.0282	0.0339	0.505	0.079	0.0319
Egret/ACSS	636.0	600.5	386.7	987.2	60.83	39.17	0.0258	0.0266	0.0319	0.495	0.077	0.0351
Grosbeak/ACSS	636.0	599	275.2	874.2	68.52	31.48	0.026	0.0268	0.0321	0.500	0.078	0.0335
Rook/ACSS	636.0	599.1	219.1	818.2	73.22	26.78	0.0261	0.0269	0.0323	0.502	0.079	0.0327
Flamingo/ACSS	666.6	628.2	229.7	857.9	73.23	26.77	0.0249	0.0257	0.0308	0.498	0.078	0.0335
Redwing/ACSS	715.5	675.3	434	1109	60.88	39.12	0.023	0.0237	0.0284	0.486	0.076	0.0372
Starling/ACSS	715.5	674	309.7	983.7	68.52	31.48	0.0231	0.0238	0.0286	0.490	0.077	0.0355
Mallard/ACSS	795.0	750.7	483.2	1234	60.84	39.16	0.0207	0.0213	0.0256	0.477	0.074	0.0392
Condor/ACSS	795.0	748.4	273.6	1022	73.23	26.77	0.0209	0.0216	0.0267	0.484	0.076	0.0368
Tern/ACSS	795.0	748.6	146.4	895	83.64	16.36	0.021	0.0218	0.0263	0.488	0.076	0.0352
Drake/ACSS	795.0	749.1	343.9	1093	68.54	31.46	0.0208	0.0215	0.0258	0.482	0.076	0.0375
Cuckoo/ACSS	795.0	748.8	274.2	1023	73.20	26.80	0.0209	0.0216	0.0259	0.484	0.076	0.0361
Canary/ACSS	900.0	847.7	310.3	1158	73.20	26.80	0.0184	0.0192	0.0236	0.474	0.074	0.0392
Ruddy/ACSS	900.0	847.4	165.6	1013	83.65	16.35	0.0186	0.0194	0.0233	0.479	0.076	0.0374
Cardinal/ACSS	954.0	898.3	328.8	1227	73.21	26.79	0.0174	0.0181	0.0223	0.470	0.076	0.0404
Rail/ACSS	954.0	898.5	175.5	1074	83.66	16.34	0.0175	0.0183	0.0221	0.474	0.075	0.0385
Curlew/ACSS	1033.5	972.8	356.2	1329	73.20	26.80	0.0161	0.0168	0.0206	0.464	0.073	0.0420
Ortolan/ACSS	1033.5	972.8	190.2	1163	83.65	16.35	0.0162	0.017	0.0204	0.468	0.074	0.0401
Finch/ACSS	1113.0	1053.9	376.1	1430	73.70	26.30	0.015	0.0157	0.0193	0.458	0.070	0.0436
Bluejay/ACSS	1113.0	1048.7	205.3	1254	83.63	16.37	0.015	0.0159	0.019	0.462	0.073	0.0416
Grackle/ACSS	1192.5	1128.6	402.4	1531	73.72	26.28	0.014	0.0147	0.018	0.452	0.071	0.0451
Bunting/ACSS	1192.5	1123.0	219	1342	83.68	16.32	0.014	0.0149	0.0178	0.456	0.072	0.0431
Pheasant/ACSS	1272.0	1204.3	429.7	1634	73.70	26.30	0.0131	0.0139	0.0169	0.447	0.070	0.0466
Bittern/ACSS	1272.0	1197.7	234.3	1432	83.64	16.36	0.0132	0.014	0.0167	0.451	0.072	0.0445
Martin/ACSS	1351.0	1279.2	455.8	1735	73.73	26.27	0.012	0.013	0.016	0.442	0.070	0.0480
Dipper/ACSS	1351.0	1272.9	248.1	1521	83.69	16.31	0.0124	0.0132	0.0158	0.447	0.071	0.0459
Plover/ACSS	1431.0	1354.6	483.4	1838	73.70	26.30	0.012	0.012	0.015	0.438	0.069	0.0495
Bobolink/ACSS	1431.0	1347.5	263.5	1611	83.64	16.36	0.012	0.013	0.015	0.442	0.070	0.0472
Falcon/ACSS	1590.0	1505.0	537	2042	73.70	26.30	0.011	0.011	0.014	0.430	0.068	0.0521
Lapwing/ACSS	1590.0	1498.1	291.9	1790	83.69	16.31	0.011	0.012	0.014	0.434	0.069	0.0498
Chukar/ACSS*	1780.0	1685.5	386.5	2072	81.35	18.65	0.009	0.01	0.012	0.424	0.067	0.0534
Bluebird/ACSS*	2156.0	2040.4	467.6	2508	81.36	18.64	0.008	0.009	0.01	0.409	0.065	0.0588
Kiwi/ACSS*	2167.0	2051.4	249.6	2301	89.15	10.85	0.008	0.009	0.01	0.411	0.068	0.0570
Thrasher/ACSS*	2312.0	2187.9	335.1	2523	86.72	13.28	0.007	0.009	0.01	0.405	0.065	0.0600

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**Technical Data *continued***

**ACSS**

**Ampacity of ACSR and ACSS Conductors**

(Estimates based on conductor temperature rise of 50 °C for ACSR and 175 °C and 225 °C for ACSS over 25 °C ambient, 2 ft/s crosswind, 0.5 coefficient of emissivity, no sun, @ 60 Hz)

