ACSS/AW

Aluminum Conductor, Aluminum-Clad Steel Supported

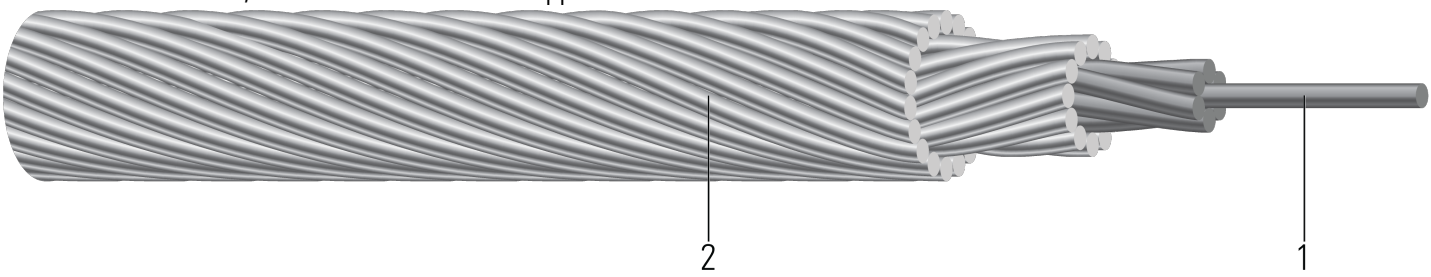

Image not to scale. See Table 1 for dimensions.

CONSTRUCTION:

1. **Core:** Steel strands form the central core of the conductor with one or more layers of aluminum 1350-0 wire stranded around it.
2. **Stranding:** ACSS/AW is a composite concentric-lay-stranded conductor.

- The steel core carries most or all of the mechanical load of the conductor due to the "0" (fully annealed or soft) temper aluminum.
- Steel core wires are protected from corrosion by an aluminum coating.

APPLICATIONS AND FEATURES:

ACSS/AW is used for overhead distribution and transmission lines. It is designed to operate continuously at elevated temperatures up to 250°C without loss of strength; it sags less under emergency electrical loadings than ACSR/AW; it is self-damping if prestretched during installation; and its final sags are not affected by long term creep of aluminum. The advantages make ACSS/AW especially useful in reconductoring applications requiring increased current with existing tensions and clearances, new line applications where structures can be economized because of reduced conductor sag, new line applications requiring high emergency loadings, and lines where aeolian vibration is a problem. ACSS/AW offers strength characteristics similar to ACSS, along with slightly greater ampacity and resistance to corrosion due to aluminum-cladding of the steel core wires.

SPECIFICATIONS:

- ASTM B502 Aluminum-Clad Steel Core Wire for Aluminum conductors, Aluminum-Clad Steel Reinforced
- ASTM B609 Standard Specification for Aluminum 1350 Round Wire, Annealed and Intermediate Tempers, for Electrical Purposes
- ASTM B856 Concentric-Lay-Stranded Aluminum Conductors, Coated Steel Supported (ACSS)

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Table 1 – Weights and Measurements

Code Word	Size	Stranding	AL Strand Dia	Steel Strand Dia	Steel Core	Overall OD	AL Weight	Steel Weight	Overall Weight
	(AWG or kcmil)	(Al/Stl)	inch	inch	inch	inch	lbs/1,000'	lbs/1,000'	lbs/1,000'
Junco/ACSS/AW	266.8	30/7	0.0943	0.0943	0.2829	0.66	252	140	392
Ostrich/ACSS/AW	300	26/7	0.1074	0.0835	0.2506	0.68	283	110	393
Linnet/ACSS/AW	336.4	26/7	0.1137	0.0885	0.2654	0.72	317	123	440
Oriole/ACSS/AW	336.4	30/7	0.1059	0.1059	0.3177	0.741	318	177	494
Brant/ACSS/AW	397.5	24/7	0.1287	0.0858	0.2574	0.772	374	116	490
Ibis/ACSS/AW	397.5	26/7	0.1236	0.0962	0.2885	0.783	374	146	520
Lark/ACSS/AW	397.5	30/7	0.1151	0.1151	0.3453	0.806	375	209	584
Flicker/ACSS/AW	477	24/7	0.141	0.094	0.2819	0.846	449	139	589
Hawk/ACSS/AW	477	26/7	0.1354	0.1053	0.316	0.858	449	175	624
Hen/ACSS/AW	477	30/7	0.1261	0.1261	0.3783	0.883	450	251	701
Parakeet/ACSS/AW	556.5	24/7	0.1523	0.1015	0.3045	0.914	524	163	687
Dove/ACSS/AW	556.5	26/7	0.1463	0.1138	0.3413	0.927	524	204	728
Eagle/ACSS/AW	556.5	30/7	0.1362	0.1362	0.4086	0.953	525	293	818
Peacock/ACSS/AW	605	24/7	0.1588	0.1058	0.3175	0.953	570	177	746
Squab/ACSS/AW	605	26/7	0.1525	0.1186	0.3559	0.966	570	222	792
Wood Duck/ACSS/AW	605	30/7	0.142	0.142	0.426	0.994	571	318	889
Teal/ACSS/AW	605	30/19	0.142	0.0852	0.426	0.994	571	311	883
Rook/ACSS/AW	636	24/7	0.1628	0.1085	0.3256	0.977	599	186	785
Grosbeak/ACSS/AW	636	26/7	0.1564	0.1216	0.3649	0.991	599	233	832
Scoter/ACSS/AW	636	30/7	0.1456	0.1456	0.4368	1.019	600	334	935
Egret/ACSS/AW	636	30/19	0.1456	0.0874	0.4368	1.019	600	327	928
Flamingo/ACSS/AW	666.6	24/7	0.1667	0.1111	0.3333	1	628	195	823
Gannet/ACSS/AW	666.6	26/7	0.1601	0.1245	0.3736	1.014	628	245	872
Stilt/ACSS/AW	715.5	24/7	0.1727	0.1151	0.3453	1.036	674	209	883
Starling/ACSS/AW	715.5	26/7	0.1659	0.129	0.3871	1.051	674	263	936
Redwing/ACSS/AW	715.5	30/19	0.1544	0.0927	0.4633	1.081	676	368	1044
Cuckoo/ACSS/AW	795	24/7	0.182	0.1213	0.364	1.092	749	232	981
Drake/ACSS/AW	795	26/7	0.1749	0.136	0.408	1.107	749	292	1040
Macaw/ACSS/AW	795	42/7	0.1376	0.0764	0.2293	1.055	749	92	841
Tern/ACSS/AW	795	45/7	0.1329	0.0886	0.2658	1.063	749	124	873
Condor/ACSS/AW	795	54/7	0.1213	0.1213	0.364	1.092	749	232	981
Mallard/ACSS/AW	795	30/19	0.1628	0.0977	0.4884	1.139	751	409	1160
Ruddy/ACSS/AW	900	45/7	0.1414	0.0943	0.2828	1.131	848	140	988
Canary/ACSS/AW	900	54/7	0.1291	0.1291	0.3873	1.162	848	263	1111
Rail/ACSS/AW	954	45/7	0.1456	0.0971	0.2912	1.165	899	149	1047
Towhee/ACSS/AW	954	48/7	0.141	0.1097	0.329	1.175	899	190	1088
Cardinal/ACSS/AW	954	54/7	0.1329	0.1329	0.3987	1.196	899	279	1177
Canvasback/ACSS/AW	954	30/19	0.1783	0.107	0.535	1.248	901	491	1392
Snowbird/ACSS/AW	1033.5	42/7	0.1569	0.0871	0.2614	1.203	973	120	1093
Curlew/ACSS/AW	1033.5	54/7	0.1383	0.1383	0.415	1.245	973	302	1275
Bluejay/ACSS/AW	1113	45/7	0.1573	0.1048	0.3145	1.258	1048	173	1222

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Code Word	Size	Stranding	AL Strand Dia	Steel Strand Dia	Steel Core	Overall OD	AL Weight	Steel Weight	Overall Weight
	(AWG or kcmil)	(Al/Stl)	inch	inch	inch	inch	lbs/1,000'	lbs/1,000'	lbs/1,000'
Finch/ACSS/AW	1113	54/19	0.1436	0.0861	0.4307	1.292	1053	318	1372
Bunting/ACSS/AW	1192.5	45/7	0.1628	0.1085	0.3256	1.302	1123	186	1309
Grackle/ACSS/AW	1192.5	54/19	0.1486	0.0892	0.4458	1.337	1129	341	1470
Bittern/ACSS/AW	1272	45/7	0.1681	0.1121	0.3362	1.345	1198	198	1396
Pheasant/ACSS/AW	1272	54/19	0.1535	0.0921	0.4604	1.381	1204	364	1568
Dipper/ACSS/AW	1351	45/7	0.1733	0.1155	0.3465	1.386	1272	210	1483
Martin/ACSS/AW	1351	54/19	0.1582	0.0949	0.4745	1.424	1279	386	1665
Bobolink/ACSS/AW	1431	45/7	0.1783	0.1189	0.3566	1.427	1348	223	1571
Plover/ACSS/AW	1431	54/19	0.1628	0.0977	0.4884	1.465	1354	409	1764
Nuthatch/ACSS/AW	1510	45/7	0.1832	0.1221	0.3664	1.465	1422	235	1657
Parrot/ACSS/AW	1510	54/19	0.1672	0.1003	0.5017	1.505	1429	432	1861
Lapwing/ACSS/AW	1590	45/7	0.188	0.1253	0.3759	1.504	1498	248	1745
Falcon/ACSS/AW	1590	54/19	0.1716	0.103	0.5148	1.544	1505	455	1960
Chukar/ACSS/AW	1780	84/19	0.1456	0.0873	0.4367	1.601	1685	327	2012
Mockingbird/ACSS/AW	2034.5	72/7	0.1681	0.1121	0.3362	1.681	1926	198	2124
Roadrunner/ACSS/AW	2057	76/19	0.1645	0.0768	0.3839	1.7	1947	253	2200
Bluebird/ACSS/AW	2156	84/19	0.1602	0.0961	0.4806	1.762	2041	396	2437
Kiwi/ACSS/AW	2167	72/7	0.1735	0.1157	0.347	1.735	2051	211	2262
Thrasher/ACSS/AW	2312	76/19	0.1744	0.0814	0.407	1.802	2188	284	2472
Joree/ACSS/AW	2515	76/19	0.1819	0.0849	0.4245	1.88	2380	309	2689

(1) Data based on a nominal cable manufactured in accordance with ASTM B 856.
(2) Resistance and ampacity based on an aluminum conductivity of 63% IACS at 20°C, and an aluminum-clad steel conductivity of 20.3% IACS at 20°C.
(3) Ampacity based on a 200°C conductor temperature, 25°C ambient temperature, 2 ft/sec wind, in sun, with emissivity of 0.5 and a coefficient of solar absorption of 0.5, at sea level.
(4) Rated strengths based on aluminum-clad steel core wire in accordance with ASTM B 502.

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Table 2 - Electrical and Engineering Data

Code Word	Size	Rated Strength	DC Resistance @ 20C	AC Resistance @ 75C	Allowable Ampacity
	(AWG or kcmil)	lbs	Ohms/1,000'	Ohms/1,000'	Amps
Junco/ACSS/AW	266.8	11200	0.0589	0.0723	841
Ostrich/ACSS/AW	300	9360	0.0534	0.0656	891
Linnet/ACSS/AW	336.4	10500	0.0476	0.0585	960
Oriole/ACSS/AW	336.4	14200	0.0467	0.0573	979
Brant/ACSS/AW	397.5	10400	0.0407	0.0501	1061
Ibis/ACSS/AW	397.5	12400	0.0403	0.0496	1071
Lark/ACSS/AW	397.5	16700	0.0395	0.0486	1092
Flicker/ACSS/AW	477	12500	0.0339	0.0418	1195
Hawk/ACSS/AW	477	14900	0.0336	0.0413	1207
Hen/ACSS/AW	477	20100	0.0329	0.0405	1231
Parakeet/ACSS/AW	556.5	14600	0.0291	0.0359	1323
Dove/ACSS/AW	556.5	17500	0.0288	0.0355	1336
Eagle/ACSS/AW	556.5	22900	0.0282	0.0348	1362
Peacock/ACSS/AW	605	15900	0.0267	0.033	1397
Squab/ACSS/AW	605	19000	0.0265	0.0327	1411
Wood Duck/ACSS/AW	605	24400	0.026	0.032	1439
Teal/ACSS/AW	605	25000	0.026	0.032	1438
Rook/ACSS/AW	636	16700	0.0255	0.0314	1444
Grosbeak/ACSS/AW	636	19900	0.0252	0.0311	1458
Scoter/ACSS/AW	636	25100	0.0247	0.0305	1487
Egret/ACSS/AW	636	26300	0.0247	0.0305	1486
Flamingo/ACSS/AW	666.6	17500	0.0243	0.03	1489
Gannet/ACSS/AW	666.6	20900	0.024	0.0297	1504
Stilt/ACSS/AW	715.5	18800	0.0226	0.028	1559
Starling/ACSS/AW	715.5	22000	0.0224	0.0277	1576
Redwing/ACSS/AW	715.5	29500	0.022	0.0272	1605
Cuckoo/ACSS/AW	795	20900	0.0204	0.0252	1671
Drake/ACSS/AW	795	24400	0.0202	0.025	1688
Macaw/ACSS/AW	795	11400	0.0209	0.026	1630
Tern/ACSS/AW	795	13500	0.0208	0.026	1620
Condor/ACSS/AW	795	15800	0.0204	0.026	1639
Mallard/ACSS/AW	795	32900	0.0198	0.0245	1721
Ruddy/ACSS/AW	900	15300	0.0183	0.023	1767
Canary/ACSS/AW	900	23200	0.018	0.023	1779
Rail/ACSS/AW	954	16200	0.0173	0.0218	1836
Towhee/ACSS/AW	954	19000	0.0172	0.0214	1858
Cardinal/ACSS/AW	954	24600	0.017	0.0217	1848
Canvasback/ACSS/AW	954	39400	0.0165	0.0205	1939
Snowbird/ACSS/AW	1033.5	14800	0.0161	0.0202	1934
Curlew/ACSS/AW	1033.5	26100	0.0157	0.0201	1948
Bluejay/ACSS/AW	1113	18900	0.0148	0.0088	2031

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	(AWG or kcmil)	lbs	Ohms/1,000'	Ohms/1,000'	Amps
Finch/ACSS/AW	1113	28800	0.0146	0.0188	2040
Bunting/ACSS/AW	1192.5	20300	0.0138	0.0176	2124
Grackle/ACSS/AW	1192.5	30800	0.0137	0.0176	2135
Bittern/ACSS/AW	1272	21600	0.013	0.0165	2215
Pheasant/ACSS/AW	1272	32800	0.0128	0.0165	2227
Dipper/ACSS/AW	1351	23000	0.0122	0.0156	2304
Martin/ACSS/AW	1351	34900	0.012	0.0156	2307
Bobolink/ACSS/AW	1431	24300	0.0115	0.0148	2391
Plover/ACSS/AW	1431	36900	0.0114	0.0148	2405
Nuthatch/ACSS/AW	1510	25700	0.0109	0.0141	2476
Parrot/ACSS/AW	1510	38900	0.0108	0.0141	2491
Lapwing/ACSS/AW	1590	27000	0.0104	0.0134	2560
Falcon/ACSS/AW	1590	41100	0.0102	0.0134	2576
Chukar/ACSS/AW	1780	33600	0.0093	0.012	2772
Mockingbird/ACSS/AW	2034.5	26500	0.0082	0.0109	2972
Roadrunner/ACSS/AW	2057	30300	0.0081	0.0108	3007
Bluebird/ACSS/AW	2156	40700	0.0077	0.0102	3130
Kiwi/ACSS/AW	2167	28200	0.0077	0.0104	3092
Thrasher/ACSS/AW	2312	34100	0.0072	0.0097	3235
Joree/ACSS/AW	2515	37100	0.0066	0.0091	3407

(1) Data based on a nominal cable manufactured in accordance with ASTM B 856.
(2) Resistance and ampacity based on an aluminum conductivity of 63% IACS at 20°C, and an aluminum-clad steel conductivity of 20.3% IACS at 20°C.
(3) Ampacity based on a 200°C conductor temperature, 25°C ambient temperature, 2 ft/sec wind, in sun, with emissivity of 0.5 and a coefficient of solar absorption of 0.5, at sea level.
(4) Rated strengths based on aluminum-clad steel core wire in accordance with ASTM B 502.

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