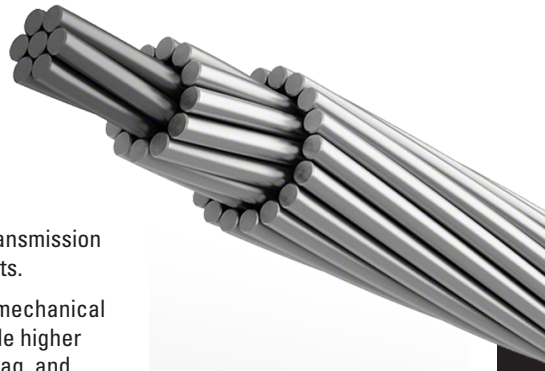
BareNRG™ ACSR Aluminum Conductor

CME wire and cable
A Viakable Company

CME Wire and Cable offers BareNRG ACSR overhead conductors with a variety of conductor designs and steel core coatings to address your application requirements for transmission and distribution projects.



Construction

ACSR, a non-homogenous conductor, is a concentric-lay-stranded conductor made from round aluminum 1350-H19 (extra hard) wires and round, coated steel core wire(s). Several combinations of aluminum and steel strands and layers are available when designing ACSR conductors for overhead lines. Commonly used sizes are included here. Class A zinc coating (ACSR/GA2) is usually adequate for ordinary environments to protect the steel core wires from corrosion.

Specifications

ACSR conductors are manufactured in accordance with the ASTM specification B232. Other ASTM referenced specifications include B230, B498, B500, B606, B802, B803, B957 and B958.

Features

The favorable strength/weight ratio, achieved by the lightweight, strong conductivity of aluminum coupled with the high tensile strength of steel, makes ACSR conductors a preferred choice for overhead power transmission and distribution projects.

Steel strands provide mechanical reinforcement to handle higher line tensions, reduce sag, and achieve longer span lengths. ACSR conductors are also recognized for their dependable performance under adverse weather conditions.

Options

ACSR/GA2 is standard.

Other possibilities shown below.

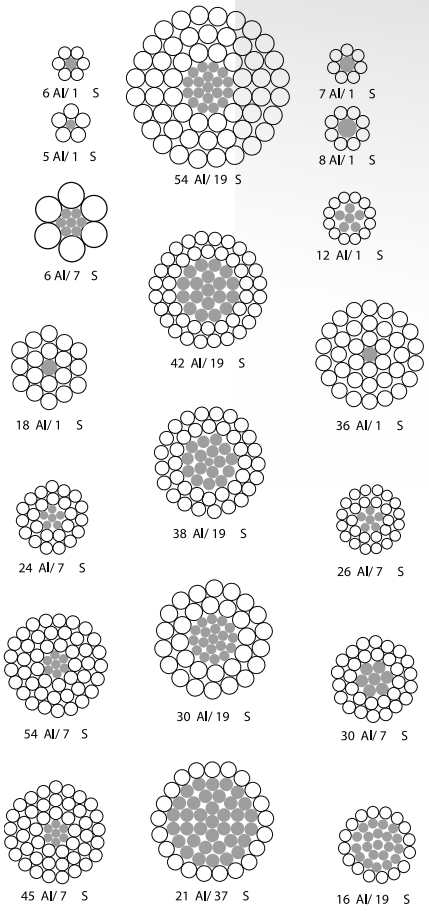
ALUMINUM CONDUCTOR

Technical Data

BareNRG™ Options

Steel Coating	Steel Strength			
	Standard	High	Extra High	Ultra High
Zinc	/GA2 /GC2	/GA3	/GA4	/GA5
Zinc – 5% Aluminum Mischmetal Alloy Coating	/MA2 /MC2	/MA3	/MA4	/MA5

/NS: Non-Specular finish available for all ACSR components.
/HC: High-Conductivity aluminum (62.0% IACS) for all ACSR products.
/TW: Trapezoidal-shaped aluminum wires – see ACSR/TW catalog sheet.
/AW: Aluminum-clad steel core for all ACSR components.



Bare Aluminum Conductors

Technical Data *continued*

BareNRG™

Code Word	Size AWG or kcmil	Stranding				Nominal Overall Diameter		Cross Section		Rated Strength
		Aluminum		Steel		CDR	Steel Core	Aluminum	Total	
		No.	Diameter	No.	Diameter	in		in²		lb
Turkey	6	6	0.0661	1	0.0661	0.198	0.0661	0.0206	0.0240	1190
Swan	4	6	0.0834	1	0.0834	0.250	0.0834	0.0328	0.0382	1860
Swanate	4	7	0.0772	1	0.1029	0.257	0.1029	0.0328	0.0411	2360
Sparrow	2	6	0.1052	1	0.1052	0.316	0.1052	0.0522	0.0608	2850
Sparate	2	7	0.0974	1	0.1299	0.325	0.1299	0.0522	0.0654	3640
Robin	1	6	0.1181	1	0.1181	0.354	0.1181	0.0657	0.0767	3550
Raven	1/0	6	0.1327	1	0.1327	0.398	0.1327	0.0830	0.0968	4380
Quail	2/0	6	0.1489	1	0.1489	0.447	0.1489	0.1045	0.1219	5300
Pigeon	3/0	6	0.1672	1	0.1672	0.502	0.1672	0.1317	0.1537	6620
Penguin	4/0	6	0.1878	1	0.1878	0.563	0.1878	0.1662	0.1939	8350
Waxwing	266.8	18	0.1217	1	0.1217	0.609	0.1217	0.2094	0.2210	6880
Partridge	266.8	26	0.1013	7	0.0788	0.642	0.2364	0.2095	0.2437	11300
Merlin	336.4	18	0.1367	1	0.1367	0.684	0.1367	0.2642	0.2789	8680
Linnet	336.4	26	0.1137	7	0.0884	0.720	0.2652	0.2640	0.3070	14100
Oriole	336.4	30	0.1059	7	0.1059	0.741	0.3177	0.2642	0.3259	17300
Chickadee	397.5	18	0.1486	1	0.1486	0.743	0.1486	0.3122	0.3295	9940
Ibis	397.5	26	0.1236	7	0.0961	0.783	0.2883	0.3120	0.3627	16300
Lark	397.5	30	0.1151	7	0.1151	0.806	0.3453	0.3121	0.3850	20300
Pelican	477	18	0.1628	1	0.1628	0.814	0.1628	0.3747	0.3955	11800
Flicker	477	24	0.1410	7	0.0940	0.846	0.2820	0.3747	0.4233	17200
Hawk	477	26	0.1354	7	0.1053	0.858	0.3159	0.3744	0.4353	19500
Hen	477	30	0.1261	7	0.1261	0.883	0.3783	0.3747	0.4621	23800
Osprey	556.5	18	0.1758	1	0.1758	0.879	0.1758	0.4369	0.4612	13700
Parakeet	556.5	24	0.1523	7	0.1015	0.914	0.3045	0.4372	0.4939	19800
Dove	556.5	26	0.1463	7	0.1138	0.927	0.3414	0.4371	0.5083	22600
Eagle	556.5	30	0.1362	7	0.1362	0.953	0.4086	0.4371	0.5391	27800
Peacock	605	24	0.1588	7	0.1059	0.953	0.3177	0.4745	0.5370	21600
Swift	636	36	0.1329	1	0.1329	0.930	0.1329	0.4994	0.5133	13800
Kingbird	636	18	0.1880	1	0.1880	0.940	0.1880	0.4997	0.5274	15700
Rook	636	24	0.1628	7	0.1085	0.977	0.3255	0.4996	0.5643	22600
Grosbeak	636	26	0.1564	7	0.1216	0.990	0.3648	0.4995	0.5808	25200
Egret	636	30	0.1456	19	0.0874	1.019	0.4370	0.4995	0.6135	31500
Flamingo	666.6	24	0.1667	7	0.1111	1.000	0.3333	0.5238	0.5917	23700

1. Code words shown are for standard ACSR/GA2 conductor. See the options for other applicable code word modifiers.
2. Rated strengths shown are applicable for ACSR/GA2 and ACSR/MA2 cores.
3. Direct current resistance is based on 61.2% IACS for 1350 wires (ASTM B230) and 8% IACS for the steel core (ASTM B498) at 20 °C using stranding increment as per ASTM B232.
4. Consult IEEE 738: Standard for Calculating the Current-Temperature of Bare Overhead Conductors or contact CME Wire and Cable for assistance.
5. The data are an estimate based on given criteria and subject to normal manufacturing tolerances.
6. Reactance is based on 1 ft equivalent spacing.

Technical Data *continued*

BareNRG™

Code Word	Size AWG or kcmil	Mass			Percent of Total Mass		Resistance			Reactance		
							dc	ac – 60 Hz			Inductive	
		Al	Steel	Total	Aluminum	Steel	20 °C	25 °C	75 °C	Capacitive	25°C	75°C
		lb/kft					Ω/kft			MΩ/kft	Ω/kft	
Turkey	6	24.4	11.6	36.0	67.8	32.2	0.6419	0.6553	0.8159	0.7513	0.1201	0.1439
Swan	4	39.0	18.4	57.4	67.9	32.1	0.4032	0.4119	0.5218	0.7149	0.1152	0.1369
Swanate	4	39.0	28.0	67.0	58.2	41.8	0.3989	0.4072	0.5165	0.7102	0.1153	0.1303
Sparrow	2	61.9	29.3	91.2	67.9	32.1	0.2534	0.2591	0.3360	0.6785	0.1100	0.1277
Sparate	2	61.9	44.7	106.6	58.1	41.9	0.2506	0.2563	0.3297	0.6737	0.1081	0.1206
Robin	1	78.1	36.9	115.0	67.9	32.1	0.2011	0.2059	0.2703	0.6600	0.1068	0.1224
Raven	1/0	98.6	46.6	145.2	67.9	32.1	0.1593	0.1633	0.2161	0.6421	0.1040	0.1163
Quail	2/0	124.1	58.7	182.8	67.9	32.1	0.1265	0.1301	0.1760	0.6241	0.1017	0.1135
Pigeon	3/0	156.4	74.1	230.5	67.9	32.1	0.1003	0.1034	0.1445	0.6056	0.0992	0.1095
Penguin	4/0	197.4	93.4	290.8	67.9	32.1	0.0795	0.0822	0.1157	0.5966	0.0964	0.1053
											Inductive	GMR
											Ω/kft	ft
Waxwing	266.8	249.9	39.2	289.1	86.4	13.6	0.0644	0.0657	0.0788	0.576	0.0934	0.0197
Partridge	266.8	251.3	115.6	366.9	68.5	31.5	0.0637	0.0652	0.0778	0.565	0.0881	0.0217
Merlin	336.4	315.3	49.5	364.8	86.4	13.6	0.0510	0.0523	0.0625	0.560	0.0877	0.0221
Linnet	336.4	316.5	145.5	462.0	68.5	31.5	0.0506	0.0517	0.0619	0.549	0.0854	0.0244
Oriole	336.4	317.7	208.7	526.4	60.4	39.6	0.0502	0.0513	0.0614	0.544	0.0843	0.0255
Chickadee	397.5	372.5	58.5	431.0	86.4	13.6	0.0432	0.0443	0.0528	0.544	0.0856	0.0240
Ibis	397.5	374.1	171.9	546.0	68.5	31.5	0.0428	0.0438	0.0525	0.539	0.0835	0.0265
Lark	397.5	375.2	246.6	621.8	60.4	39.6	0.0425	0.0434	0.0519	0.533	0.0824	0.0277
Pelican	477	447.1	70.2	517.3	86.4	13.6	0.0360	0.0369	0.0441	0.528	0.0835	0.0263
Flicker	477	449.4	164.5	613.9	73.2	26.8	0.0358	0.0367	0.0439	0.524	0.0818	0.0283
Hawk	477	448.9	206.4	655.3	68.5	31.5	0.0357	0.0366	0.0438	0.522	0.0814	0.0290
Hen	477	450.4	296.0	746.4	60.4	39.6	0.0354	0.0362	0.0434	0.517	0.0803	0.0304
Osprey	556.5	521.4	81.9	603.3	86.4	13.6	0.0309	0.0318	0.0379	0.518	0.0818	0.0284
Parakeet	556.5	524.3	191.8	716.1	73.2	26.8	0.0307	0.0314	0.0377	0.512	0.0801	0.0306
Dove	556.5	524.2	241.0	765.2	68.5	31.5	0.0305	0.0314	0.0375	0.510	0.0795	0.0313
Eagle	556.5	525.4	345.3	870.7	60.4	39.6	0.0300	0.0311	0.0371	0.505	0.0786	0.0328
Peacock	605	570.1	208.7	778.8	73.2	26.8	0.0282	0.0290	0.0347	0.505	0.0792	0.0319
Swift	636	596.0	46.8	642.8	92.7	7.3	0.0267	0.0281	0.0334	0.509	0.0806	0.0300
Kingbird	636	596.3	93.6	689.9	86.4	13.6	0.0269	0.0278	0.0332	0.507	0.0805	0.0301
Rook	636	599.1	219.1	818.2	73.2	26.8	0.0268	0.0277	0.0330	0.502	0.0786	0.0327
Grosbeak	636	599.0	275.2	874.2	68.5	31.5	0.0267	0.0275	0.0328	0.500	0.0780	0.0335
Egret	636	600.5	386.7	987.2	60.8	39.2	0.0266	0.0273	0.0326	0.495	0.0769	0.0351
Flamingo	666.6	628.2	229.7	857.9	73.2	26.8	0.0256	0.0263	0.0314	0.498	0.0780	0.0335

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6. Reactance is based on 1 ft equivalent spacing.

Technical Data *continued*

BareNRG™

Code Word	Size AWG or kcmil	Stranding				Nominal Overall Diameter		Cross Section		Rated Strength
		Aluminum		Steel		CDR	Steel Core	Aluminum	Total	
		No.	Diameter	No.	Diameter					
			in		in	in		in^2		lb
Starling	715.5	26	0.1659	7	0.1290	1.051	0.3870	0.5620	0.6535	28400
Redwing	715.5	30	0.1544	19	0.0926	1.081	0.4630	0.5617	0.6897	34600
Coot	795	36	0.1486	1	0.1486	1.040	0.1486	0.6244	0.6417	16800
Tern	795	45	0.1329	7	0.0886	1.063	0.2658	0.6242	0.6674	22100
Cuckoo	795	24	0.1820	7	0.1213	1.092	0.3639	0.6244	0.7053	27900
Condor	795	54	0.1213	7	0.1213	1.092	0.3639	0.6240	0.7049	28200
Drake	795	26	0.1749	7	0.1360	1.108	0.4080	0.6247	0.7263	31500
Mallard	795	30	0.1628	19	0.0977	1.140	0.4885	0.6245	0.7669	38400
Ruddy	900	45	0.1414	7	0.0943	1.131	0.2829	0.7066	0.7555	24400
Canary	900	54	0.1291	7	0.1291	1.162	0.3873	0.7069	0.7985	31900
Corncrake	954	20	0.2184	7	0.0971	1.165	0.2913	0.7492	0.8011	25600
Redbird	954	24	0.1994	7	0.1329	1.196	0.3987	0.7495	0.8466	33500
Rail	954	45	0.1456	7	0.0971	1.165	0.2913	0.7492	0.8011	25900
Cardinal	954	54	0.1329	7	0.1329	1.196	0.3987	0.7491	0.8462	33800
Ortolan	1033.5	45	0.1515	7	0.1010	1.212	0.3030	0.8112	0.8673	27700
Curlew	1033.5	54	0.1383	7	0.1383	1.245	0.4149	0.8112	0.9164	36600
Bluejay	1113.0	45	0.1573	7	0.1049	1.259	0.3147	0.8745	0.9350	29800
Finch	1113.0	54	0.1436	19	0.0862	1.293	0.4310	0.8746	0.9854	39100
Bunting	1192.5	45	0.1628	7	0.1085	1.302	0.3255	0.9367	1.0014	32000
Grackle	1192.5	54	0.1486	19	0.0892	1.338	0.4460	0.9365	1.0553	41900
Bittern	1272.0	45	0.1681	7	0.1121	1.345	0.3363	0.9987	1.0678	34100
Pheasant	1272.0	54	0.1535	19	0.0921	1.382	0.4605	0.9993	1.1259	43600
Dipper	1351.5	45	0.1733	7	0.1155	1.386	0.3465	1.0614	1.1348	36200
Martin	1351.5	54	0.1582	19	0.0949	1.424	0.4745	1.0614	1.1958	46300
Bobolink	1431.0	45	0.1783	7	0.1189	1.427	0.3567	1.1236	1.2013	38300
Plover	1431.0	54	0.1628	19	0.0977	1.465	0.4885	1.1241	1.2665	49100
Lapwing	1590.0	45	0.1880	7	0.1253	1.504	0.3759	1.2492	1.3355	42200
Falcon	1590.0	54	0.1716	19	0.1030	1.545	0.5150	1.2489	1.4072	54500
Chukar*	1780.0	84	0.1456	19	0.0874	1.602	0.4370	1.3986	1.5126	51000
Bluebird*	2156.0	84	0.1602	19	0.0961	1.762	0.4805	1.6931	1.8310	60300
Kiwi*	2167.0	72	0.1735	7	0.1157	1.735	0.3471	1.7022	1.7758	49800
Thrasher*	2312.0	76	0.1744	19	0.0814	1.802	0.4070	1.8155	1.9144	56700
Joree*	2515.0	76	0.1819	19	0.0850	1.880	0.4250	1.9750	2.0826	61700

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6. Reactance is based on 1 ft equivalent spacing.

* Contact CME to review availability.

Technical Data *continued*

BareNRG™

Code Word	Size AWG or kcmil	Mass			Percent of Total Mass		Resistance			Reactance		
							dc	ac – 60 Hz				
		Aluminum	Steel	Total	Aluminum	Steel	20 °C	25 °C	75 °C	Capacitive	Inductive	GMR
		lb/kft					Ω/kft			MΩ/kft	Ω/kft	ft
Starling	715.5	674.0	309.7	983.7	68.5	31.5	0.0238	0.0244	0.0292	0.490	0.0767	0.0355
Redwing	715.5	675.3	434.0	1109.3	60.8	39.2	0.0236	0.0242	0.0290	0.486	0.0756	0.0372
Coot	795	745.1	58.5	803.6	92.7	7.3	0.0217	0.0225	0.0268	0.492	0.0780	0.0335
Tern	795	749	146	895	83.7	16.3	0.0216	0.0225	0.0267	0.488	0.0764	0.0352
Cuckoo	795	749	274.0	1023	73.2	26.8	0.0215	0.0223	0.0266	0.484	0.0763	0.0361
Condor	795	748	274.0	1022	73.2	26.8	0.0215	0.0222	0.0265	0.484	0.0759	0.0368
Drake	795	749	344	1093	68.5	31.5	0.0214	0.0222	0.0263	0.482	0.0756	0.0375
Mallard	795	750.7	483.2	1233.9	60.8	39.2	0.0213	0.0220	0.0261	0.477	0.0744	0.0392
Ruddy	900	848	165	1013	83.7	16.3	0.0191	0.0200	0.0237	0.479	0.0755	0.0374
Canary	900	848	310	1158	73.2	26.8	0.0190	0.0197	0.0235	0.474	0.0744	0.0392
Corncrake	954	899	175	1074	83.7	16.3	0.0180	0.0188	0.0224	0.474	0.0751	0.0378
Redbird	954	899	329	1228	73.2	26.8	0.0179	0.0186	0.0221	0.470	0.0742	0.0396
Rail	954	899	176	1075	83.7	16.3	0.0180	0.0188	0.0223	0.474	0.0748	0.0385
Cardinal	954	898.4	328.7	1227.1	73.2	26.8	0.0179	0.0186	0.0222	0.470	0.0757	0.0404
Ortolan	1033.5	973	190	1163	83.7	16.3	0.0167	0.0175	0.0208	0.468	0.0739	0.0401
Curlew	1033.5	973	356	1329	73.2	26.8	0.0165	0.0172	0.0201	0.464	0.0729	0.0420
Bluejay	1113.0	1049	205	1254	83.7	16.3	0.0155	0.0163	0.0193	0.462	0.0731	0.0416
Finch	1113.0	1054	376	1430	73.7	26.3	0.0154	0.0161	0.0191	0.458	0.0702	0.0436
Bunting	1192.5	1123	219	1342	83.7	16.3	0.0144	0.0152	0.0181	0.456	0.0723	0.0431
Grackle	1192.5	1128	403	1531	73.7	26.3	0.0144	0.0151	0.0179	0.452	0.0710	0.0451
Bittern	1272.0	1198	234	1432	83.7	16.3	0.0135	0.0144	0.0170	0.451	0.072	0.0445
Pheasant	1272.0	1205	429	1634	73.7	26.3	0.0135	0.0142	0.0169	0.447	0.070	0.0466
Dipper	1351.5	1273	248	1521	83.7	16.3	0.0127	0.0136	0.0161	0.447	0.071	0.0459
Martin	1351.5	1279	456	1735	73.7	26.3	0.0127	0.0134	0.0159	0.442	0.070	0.0480
Bobolink	1431.0	1348	263	1611	83.7	16.3	0.0120	0.0129	0.0152	0.442	0.070	0.0472
Plover	1431.0	1355	483	1838	73.7	26.3	0.0120	0.0127	0.0151	0.438	0.069	0.0495
Lapwing	1590.0	1498	292	1790	83.8	16.3	0.0108	0.0117	0.0138	0.434	0.069	0.0498
Falcon	1590.0	1505	537	2042	73.7	26.3	0.0108	0.0116	0.0137	0.430	0.068	0.0521
Chukar*	1780.0	1685	387	2072	81.3	18.7	0.0097	0.0106	0.0125	0.424	0.067	0.0534
Bluebird*	2156.0	2040	468	2508	81.3	18.7	0.0080	0.0090	0.0105	0.409	0.065	0.0588
Kiwi*	2167.0	2052	249	2301	89.2	10.8	0.0080	0.0092	0.0106	0.411	0.068	0.0570
Thrasher*	2312.0	2188	335	2523	86.7	13.3	0.0075	0.0086	0.0100	0.405	0.065	0.0600
Joree*	2515.0	2383	366	2749	86.7	13.3	0.0069	0.0081	0.0093	0.399	0.064	0.0621

1. Code words shown are for standard ACSR/GA2 conductor. See the options for other applicable code word modifiers.
2. Rated strengths shown are applicable for ACSR/GA2 and ACSR/MA2 cores.
3. Direct current resistance is based on 61.2% IACS for 1350 wires (ASTM B230) and 8% IACS for the steel core (ASTM B498) at 20 °C using stranding increment as per ASTM B232.
4. Consult IEEE 738: Standard for Calculating the Current-Temperature of Bare Overhead Conductors or contact CME Wire and Cable for assistance.
5. The data are an estimate based on given criteria and subject to normal manufacturing tolerances.
6. Reactance is based on 1 ft equivalent spacing.

* Contact CME to review availability.

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