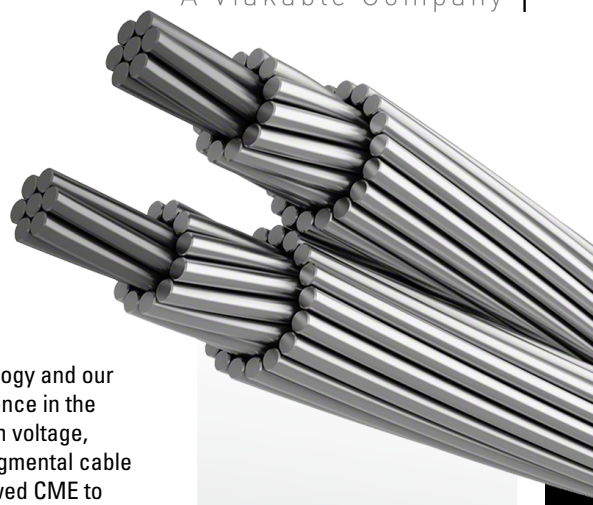
AcuTech²™ ACSR Aluminum Conductor

Steel Reinforced, Twisted Pair Conductors

CME wire and cable
A Viakable Company

CME Wire and Cable offers ACSR/TP conductors utilizing AcuTech² technology. This twisted pair technology allows our product to protect against the effect of aeolian vibration and ice galloping to which many transmission and distribution projects are exposed.



Aluminum Conductor

Construction

ACSR/TP consists of two ACSR conductors with long lay lengths twisted around each other in a figure 8 shape. Class A zinc coating (ACSR/TP/GA2) is usually adequate for ordinary environments to protect the steel core wires from corrosion.

Specifications

ASTM referenced specifications include B230, B232, B498, B500, B606, B802, B803 and B911.

Features

ACSR/TP has developed into a preferred solution for utilities in regions where wind-induced problems such as aeolian vibration and galloping regularly prove to be detrimental to the integrity of their overhead transmission and distribution systems. The varying diameter of the twisted conductor facing the wind helps prevent buildup of resonant vibration in the line, and its figure 8 shape offers low torsional stiffness, which helps to mitigate the effect of motion-causing wind forces on the conductor.

In addition, ACSR/TP conductors permit higher line tensions, which help reduce line costs by permitting lower sag and/or longer spans. ACSR/TP has a lower ac resistance than a single conventional conductor with the same aluminum area, which means that ACSR/TP operates at lower temperatures. Another advantage offered by ACSR/TP is its compact design that can help optimize right-of-way costs for utilities. Finally, conventional tools used for ACSR conductors are also suitable for ACSR/TP products.

Consult the Installation Guidelines from CME Wire and Cable for further details to facilitate the installation of ACSR/TP in your projects.

Options

ACSR/TP/GA2 is standard. Other possibilities shown below.

AcuTech² Technology

ACSR/TP conductors have been utilized successfully since their introduction to the market in 1972. Used most prevalently in the Central U.S., they have been greatly beneficial to utilities in the Great Plains area, where unusually high winds and ice loading contribute to excessive conductor galloping and aeolian vibration.

AcuTech² technology and our extensive experience in the production of high voltage, high precision segmental cable designs has allowed CME to reduce ACSR /TP conductor installation difficulties, which are usually common place in transmission and distribution projects of this type.

ACSR/TP AcuTech² technology is manufactured with rotating payoffs, take-up and capstan, and controlled lay length, twisting conductors around each other to ensure:

- No torsion in the steel core wires.
- Equal length of the component conductors (monitored and controlled during twisting).
- Equal tension in the component conductors (monitored and controlled during twisting).

Finally, the relative displacement between the component conductors is verified before shipment.

By applying AcuTech² to your next transmission project, you will increase the probability of success in limiting the amplitude of ice galloping and wind-induced vibration on your system. The faster, less complicated installation will save you time and money, allowing you to achieve quicker schedule completion.

AAAC-6201 Options

Steel Coating	Steel Strength	
	Standard	High
Zinc	/GA2 /GC2	/GC3
Zinc – 5% Aluminum – Mischmetal alloy coating	/MA2 /MC2	/MA3

/NS: Non-Specular finish available for all ACSR components.
/HC: High-Conductivity aluminum (62.0% IACS) for all ACSR components.
/AW: Aluminum-clad steel core for all ACSR components.

AcuTech²

Code Word	Equi. AWG or kcmil	Component Stranding					Nominal Overall Diameter			Cross Section		Rated Strength	Mass			Resistance		
		AWG or kcmil	Aluminum		Steel		Minor diam	Major diam	Equi diam	Al	Total		Al	Steel	Total	dc	ac – 60 Hz	
			No.	Diameter	No.	Diameter										20 °C	25 °C	75 °C
				in		in	in			in²		lb	lb/kft			Ω/kft		
Robin/TP	3/0	1	6	0.1181	1	0.1181	0.354	0.709	0.580	0.1315	0.1534	7110	156	74	230	0.1005	0.1207	0.1230
Raven/TP	4/0	1/0	6	0.1327	1	0.1327	0.398	0.796	0.651	0.1659	0.1935	8760	197	93	290	0.0797	0.0814	0.0975
Quail/TP	266.2	2/0	6	0.1489	1	0.1489	0.447	0.894	0.731	0.2091	0.2439	10600	248	118	366	0.0632	0.0646	0.0774
Pigeon/TP	335.6	3/0	6	0.1672	1	0.1672	0.502	1.003	0.821	0.2636	0.3075	13200	313	148	461	0.0501	0.0513	0.0614
Penguin/TP	423.2	4/0	6	0.1878	1	0.1878	0.563	1.127	0.922	0.3324	0.3878	16700	395	187	582	0.0398	0.0408	0.0488
Waxwing/TP	533.6	266.8	18	0.1217	1	0.1217	0.609	1.217	0.996	0.4191	0.4424	13800	500	79	579	0.0322	0.0331	0.0395
Partridge/TP	533.6	266.8	26	0.1013	7	0.0788	0.642	1.283	1.050	0.4191	0.4873	22600	503	231	734	0.0319	0.0327	0.0391
Merlin/TP	672.8	336.4	18	0.1367	1	0.1367	0.684	1.367	1.119	0.5284	0.5578	17400	631	99	730	0.0255	0.0264	0.0315
Linnet/TP	672.8	336.4	26	0.1137	7	0.0884	0.720	1.441	1.179	0.5284	0.6145	28200	634	291	925	0.0253	0.0261	0.0311
Chickadee/TP	795.0	397.5	18	0.1486	1	0.1486	0.743	1.486	1.216	0.6244	0.6591	19900	745	117	862	0.0216	0.0224	0.0267
Ibis/TP	795.0	397.5	26	0.1236	7	0.0961	0.783	1.566	1.282	0.6244	0.7261	32600	749	344	1093	0.0214	0.0221	0.0264
Pelican/TP	954.0	477.0	18	0.1628	1	0.1628	0.814	1.628	1.332	0.7493	0.7909	23500	894	141	1035	0.0180	0.0189	0.0224
Flicker/TP	954.0	477.0	24	0.1410	7	0.0940	0.846	1.692	1.384	0.7493	0.8464	34300	899	328	1227	0.0179	0.0187	0.0222
Hawk/TP	954.0	477.0	26	0.1354	7	0.1053	0.858	1.716	1.404	0.7493	0.8713	39100	899	413	1312	0.0178	0.0186	0.0221
Hen/TP	954.0	477.0	30	0.1261	7	0.1261	0.883	1.765	1.445	0.7493	0.9241	47600	901	592	1493	0.0177	0.0184	0.0219
Osprey/TP	1113.0	556.5	18	0.1758	1	0.1758	0.879	1.758	1.439	0.8741	0.9227	27400	1043	164	1207	0.0154	0.0163	0.0193
Parakeet/TP	1113.0	556.5	24	0.1523	7	0.1015	0.914	1.827	1.495	0.8741	0.9875	39600	1048	384	1432	0.0153	0.0161	0.0191
Dove/TP	1113.0	556.5	26	0.1463	7	0.1138	0.927	1.853	1.516	0.8741	1.0165	45200	1048	482	1530	0.0153	0.0160	0.0190
Swift/TP	1272.0	636.0	36	0.1329	1	0.1329	0.930	1.860	1.522	0.9988	1.0266	27,600	1192	93	1285	0.0133	0.0140	0.0167
Kingbird/TP	1272.0	636.0	18	0.1880	1	0.1880	0.940	1.880	1.538	0.9990	1.0545	31400	1192	187	1379	0.0135	0.0144	0.0170
Rook/TP	1272.0	636.0	24	0.1628	7	0.1085	0.977	1.953	1.599	0.9990	1.1285	45300	1198	439	1637	0.0135	0.0142	0.0168
Grosbeak/TP	1272.0	636.0	26	0.1564	7	0.1216	0.990	1.981	1.621	0.9990	1.1617	50400	1198	551	1749	0.0134	0.0141	0.0167
Egret/TP	1272.0	636.0	30	0.1456	19	0.0874	1.019	2.038	1.668	0.9990	1.2268	63000	1201	773	1974	0.0133	0.0140	0.0166
Flamingo/TP	1333.2	666.6	24	0.1667	7	0.1111	1.000	2.000	1.637	1.0471	1.1828	47500	1256	459	1715	0.0128	0.0136	0.0161
Starling/TP	1431.0	715.5	26	0.1659	7	0.1290	1.051	2.101	1.719	1.1239	1.3070	56700	1348	620	1968	0.0119	0.0127	0.0150
Redwing/TP	1431.0	715.5	30	0.1544	19	0.0926	1.081	2.162	1.769	1.1239	1.3802	69200	1351	869	2220	0.0118	0.0125	0.0148
Coot/TP	1590.0	795.0	36	0.1486	1	0.1486	1.040	2.080	1.702	1.2488	1.2835	33500	1490	117	1607	0.0108	0.0114	0.0135
Tern/TP	1590.0	795.0	45	0.1329	7	0.0886	1.063	2.127	1.740	1.2488	1.3351	44200	1498	292	1790	0.0108	0.0118	0.0139
Cuckoo/TP	1590.0	795.0	24	0.1820	7	0.1213	1.092	2.184	1.787	1.2488	1.4107	55800	1498	548	2046	0.0107	0.0116	0.0137
Condor/TP	1590.0	795.0	54	0.1213	7	0.1213	1.092	2.184	1.787	1.2488	1.4107	56400	1498	548	2046	0.0107	0.0116	0.0140
Drake/TP	1590.0	795.0	26	0.1749	7	0.1360	1.108	2.216	1.812	1.2488	1.4522	63000	1498	688	2186	0.0107	0.0115	0.0136
Mallard/TP	1590.0	795.0	30	0.1628	19	0.0977	1.140	2.279	1.865	1.2488	1.5335	76800	1501	966	2467	0.0106	0.0114	0.0134
Ruddy/TP	1800.0	900.0	45	0.1414	7	0.0943	1.131	2.263	1.852	1.4137	1.5115	48800	1695	331	2026	0.0096	0.0106	0.0125
Canary/TP	1800.0	900.0	54	0.1291	7	0.1291	1.162	2.324	1.902	1.4137	1.5970	63800	1695	621	2316	0.0095	0.0104	0.0125
Corncrake/TP	1908.0	954.0	20	0.2184	7	0.0971	1.165	2.330	1.906	1.4985	1.6021	51200	1797	351	2148	0.0090	0.0101	0.0118
Redbird/TP	1908.0	954.0	24	0.1994	7	0.1329	1.196	2.392	1.958	1.4985	1.6928	67000	1797	658	2455	0.0089	0.0099	0.0116
Towhee/TP	1908.0	954.0	48	0.1410	7	0.1097	1.175	2.350	1.923	1.4985	1.6307	57000	1797	448	2245	0.0090	0.0094	0.0112
Rail/TP	1908.0	954.0	45	0.1456	7	0.0971	1.165	2.330	1.906	1.4985	1.6021	51800	1797	351	2148	0.0090	0.0101	0.0118
Cardinal/TP	1908.0	954.0	54	0.1329	7	0.1329	1.196	2.392	1.958	1.4985	1.6928	67600	1797	658	2455	0.0089	0.0099	0.0119
Ortolan/TP	2067.0	1033.5	45	0.1515	7	0.1010	1.092	2.184	1.787	1.2488	1.4107	55400	1947	380	2327	0.0083	0.0094	0.0110
Curlew/TP	2067.0	1033.5	54	0.1383	7	0.1383	1.107	2.215	1.812	1.2488	1.4522	73300	1947	712	2659	0.0083	0.0092	0.0110
Bluejay/TP	2226.0	1113.0	45	0.1573	7	0.1049	1.140	2.279	1.865	1.2488	1.5335	59600	2097	409	2506	0.0077	0.0089	0.0104
Finch/TP	2226.0	1113.0	54	0.1436	7	0.0862	1.131	2.263	1.852	1.4137	1.5115	78100	2107	751	2858	0.0077	0.0087	0.0104

1. Code words shown are for standard ACSR/TP conductor with GA2 galvanized steel core. See the options for other applicable code word modifiers.
2. Rated strengths shown are applicable for ACSR/GA2 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. For alternating current resistance values for ACSR/TP conductors using single-layer component conductors, the effects of core magnetization is assumed to be mitigated by twisting.
4. Consult IEEE 738: Standard for Calculating the Current-Temperature of Bare Overhead Conductors or contact CME Wire and Cable for assistance.
5. The above data are an estimate based on given criteria and subject to normal manufacturing tolerances.