

Aluminum Conductor Steel Reinforced (ACSR) Cables

ASTM B 232/B 232M

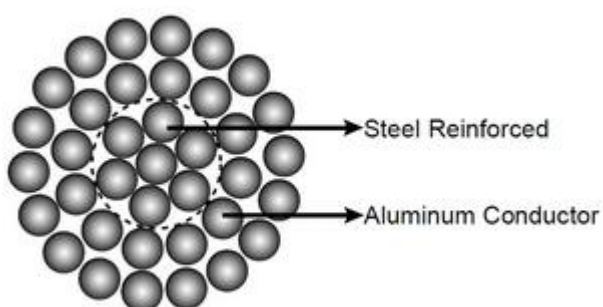
Application

ACSR conductors are widely used for electrical power transmission over long distances, since they are ideal for long overhead lines spans. They are also used as a messenger for supporting overhead electrical cables.

Standard

Basic design to ASTM B 232/B 232M standards

Cable Construction



ACSR conductors are formed by several wires of aluminium and galvanized steel, stranded in concentric layers. The wire or wires which form the core, are made of galvanized steel and the external layer or layers, are of aluminium. Galvanized steel core consist normally of 1, 7 or 19 wires. The diameters of steel and aluminium wires can be the same, or different.

By varying the relative proportions of aluminium and steel, the required characteristics for any particular application can be reached. A higher U. T. S. Can be obtained, by increasing steel content, and a higher current carrying capacity by increasing aluminium content

Electrical Properties

Density@20°C	Aluminium: 2.703 kg/dm
	Galvanised Steel: 7.80 kg/dm
Temperature Coefficient@20°C	Aluminium: 0.00403 (°C)
Resistivity@20°C	Aluminium: Should not exceed 0.028264
Linear Expansivity	Aluminium: 23 x10 (°C)
	Galvanized Steel: 11.5 x10 (1/°C)

Service Conditions

Ambient Temperature	-5°C - 50°C
Wind Pressure	80 - 130kg/m ²
Seismic Acceleration	0.12 - 0.05g
Isokeraunic Level	10 - 18
Relative Humidity	5 - 100%

Technical Data

Numbers of Wires		Final Modules of Elasticity		Coefficient of linear Expansion	
AL	Steel	Kg/mm ²	lb/in ²	1/C ^o	1/F ^o
6	1	81	11.5 x106	19.1 x10-6	10.6 x10-6
6	7	77	11.0 x106	19.8 x10-6	11.0 x10-6
12	7	107	15.2 x106	15.3 x10-6	8.5 x10-6
18	1	67	9.5 x106	21.2 x10-6	11.8 x10-6
24	7	74	10.5 x106	19.6 x10-6	10.9 x10-6
26	7	77	10.9 x106	18.9 x10-6	10.5 x10-6
28	7	79	11.2 x106	18.4 x10-6	10.2 x10-6
30	7	82	11.6 x106	17.8 x10-6	9.9 x10-6
30	19	80	11.4 x106	18.0 x10-6	10.0 x10-6
32	19	82	11.7 x106	17.5 x10-6	9.7 x10-6
54	7	70	9.9 x106	19.3 x10-6	10.7 x10-6
54	19	68	9.7 x106	19.4 x10-6	10.8 x10-6

Construction Parameters

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Code	Stranding		Stranding			Overall Diameter	Weight	Breaking Load	Electrical Resistance @20°C	Current Rating*
	AL	Steel	AL	Steel	Total					
	No./mm	No./mm	mm ²	mm ²	mm ²	mm	Kg/Km	KN	Ω/Km	A
Turkey	6/1.68	1/1.68	13.3	2.22	15.52	5.04	53.6	4.98	2.1499	76
Swan	6/2.12	1/2.12	21.18	3.53	24.71	6.36	85.3	7.83	1.3501	101
Swanate	7/1.96	1/2.61	21.12	5.35	26.47	6.53	99.6	9.79	1.3539	102
Sparrow	6/2.67	1/2.67	33.59	5.6	39.19	8.01	135.7	11.92	0.8512	135
Separate	7/2.47	1/3.30	33.54	8.55	42.09	8.24	158.7	15.08	0.8525	135
Robin	6/3.00	1/3.00	42.41	7.07	49.48	9	171.1	14.86	0.6742	156
Raven	6/3.37	1/3.37	53.52	8.92	62.44	10.11	216.1	18.33	0.5343	180
Quail	6/3.78	1/3.78	67.33	11.22	78.55	11.34	272	22.46	0.4247	207
Pigeon	6/4.25	1/4.25	85.12	14.19	99.31	12.75	343	28.02	0.3359	239
Penguin	6/4.77	1/4.77	107.22	17.87	125.09	14.31	432.7	35.36	0.2667	275
Waxwing	18/3.09	1/3.09	134.98	7.5	142.48	15.45	430.2	29.8	0.2129	313
Partridge	26/2.57	7/2.00	134.87	21.99	156.86	16.28	545.9	47.15	0.2141	316
Ostrich	26/2.73	7/2.12	152.19	24.71	176.9	17.28	613.4	53.38	0.1897	341
Merlin	18/3.47	1/3.47	170.22	9.46	179.68	17.35	542.8	37.36	0.1688	361
Linnet	26/2.89	7/2.25	170.55	27.83	198.38	18.31	687.5	59.16	0.1693	365

Oriole	30/2.69	7/2.69	170.5	39.78	210.28	18.83	783.3	72.06	0.1698	367
Chickadee	18/3.77	1/3.77	200.93	11.16	212.09	18.85	641.3	43.15	0.143	400
Brant	24/3.27	7/2.18	201.56	26.13	227.69	19.62	761	61.83	0.1433	403
Ibis	26/3.14	7/2.44	201.34	32.73	234.07	19.88	812.4	68.05	0.1434	404
Lark	30/2.92	7/2.92	200.9	46.88	247.78	20.44	925.2	84.07	0.1441	406
Pelican	18/4.14	1/4.14	242.31	13.46	255.77	20.7	769.7	51.15	0.1186	448
Flicker	24/3.58	7/2.39	241.58	31.4	272.98	21.49	913.5	72.06	0.1195	450
Hawk	26/3.44	7/2.67	241.65	39.19	280.84	21.77	975.1	81.84	0.1195	451
Hen	30/3.20	7/3.20	241.27	56.3	297.57	22.4	1110.6	98.3	0.12	453
Osprey	18/4.47	1/4.47	282.47	15.69	298.16	22.35	897.7	59.6	0.1017	492
Parakeet	24/3.87	7/2.58	282.31	36.6	318.91	23.22	1065.6	83.18	0.1023	495
Dove	26/3.72	7/2.89	282.59	45.92	328.51	23.55	1138.6	94.3	0.1022	497
Eagle	30/3.46	7/3.46	282.07	65.82	347.89	24.22	1295.6	114.76	0.1026	499
Peacock	24/4.03	7/2.69	306.13	39.78	345.91	24.19	1158.9	90.74	0.0943	520
Squab	26/3.87	7/3.01	305.83	49.81	355.64	24.51	1237	101.41	0.0944	521
Wood Duck	30/3.61	7/3.61	307.06	71.65	378.71	25.27	1408.4	121.43	0.0943	525
Teal*	30/3.61	19/2.16	307.06	69.62	376.68	25.24	1396.6	124.54	0.0943	525
Kingbird	18/4.78	1/4.78	323.01	17.95	340.96	23.9	1026.6	68.05	0.089	533
Swift	36/3.38	1 /3.38	323.02	8.97	331.99	23.66	956.5	60.05	0.089	532
Rook	24/4.14	7/2.76	323.07	41.88	364.95	24.84	1217.5	95.19	0.0894	537
Grosbeak	26/3.97	7/3.09	321.84	52.49	374.33	25.15	1300.8	104.97	0.0897	537
Scoter	30/3.70	7/3.70	322.56	75.26	397.82	25.9	1480.7	127.66	0.0897	541
Egret*	30/3.70	19/2.22	322.56	73.54	396.1	25.9	1469	130.77	0.0897	541
Flamingo	24/4.23	7/2.82	337.27	43.72	380.99	25.38	1276.6	99.64	0.0856	551
Gannet	26/4.07	7/3.16	338.26	54.9	393.16	25.76	1363.3	110.31	0.0854	553
Stilt	24/4.39	7/2.92	363.27	46.88	410.15	26.32	1370.4	107.2	0.0795	576
Starling	26/4.21	7/3.28	361.93	59.15	421.08	26.68	1463.7	118.32	0.0798	577
Redwing*	30/3.92	19/2.35	362.06	82.41	444.47	27.43	1650.6	143.23	0.0799	580
Coot	36/3.77	1/3.77	401.86	11.16	413.02	26.39	1195.8	73.39	0.0715	607
Tern	45/3.38	7/2.25	403.77	27.83	431.6	27.03	1331.8	94.3	0.0715	610
Condor	54/3.08	7/3.08	402.33	52.15	454.48	27.72	1520.7	118.32	0.0718	612
Cuckoo	24/4.62	7/3.08	402.33	52.15	454.48	27.72	1522.2	117.43	0.0718	612
Drake	26/4.44	7/3.45	402.56	65.44	468	28.11	1626.4	131.66	0.0717	615
Mallard*	26/4.44	7/3.45	403.84	91.78	495.62	28.96	1836	159.24	0.0717	619
Ruddy	45/3.59	7/2.40	455.5	31.67	487.17	28.74	1507.3	104.53	0.0634	656
Canary	54/3.28	7/3.28	456.28	59.15	515.43	29.52	1723.1	134.33	0.0633	660
Catbird	36/4.14	1/4.14	484.61	13.46	498.07	28.98	1434.4	86.74	0.0593	679
Rail	45/3.70	7/2.47	483.84	33.54	517.38	29.61	1598.1	110.76	0.0597	680
Cardinal	54/3.38	7/3.38	484.53	62.81	547.34	30.42	1825.9	142.34	0.0596	685

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Tanager	36/4.30	1/4.30	522.79	14.52	537.31	30.1	1553.5	93.85	0.055	710
Orotlan	45/3.85	7/2.57	523.87	36.31	560.18	30.81	1730.5	118.32	0.0551	713
Curlew	54/3.51	7/3.51	522.51	67.73	590.24	31.59	1977.6	153.9	0.0553	716
Bluejay	45/4.00	7/2.66	565.49	38.9	604.39	31.98	1866	127.66	0.0511	745
Finch*	54/3.65	19/2.19	565.03	71.57	636.6	32.85	2127.8	164.58	0.0514	748
Bunting	45/4.14	7/2.76	605.76	41.88	647.64	33.12	1996.9	136.55	0.0477	776
Grackle*	54/3.77	19/2.27	602.79	76.89	679.68	33.97	2278.1	176.59	0.0481	777
Skylark	36/4.78	1/4.78	646.02	17.95	663.97	33.46	1913.6	115.65	0.0445	804
Bittern	45/4.27	7/2.85	644.4	44.66	689.06	34.17	2130.8	145.89	0.0448	805
Pheasant*	54/3.90	19/2.34	645.08	81.71	726.79	35.1	2431.4	183.26	0.045	808
Dipper	45/4.40	7/2.93	684.24	47.2	731.44	35.19	2263.2	154.79	0.0422	834
Martin*	54/4.02	19/2.41	685.39	86.67	772.06	36.17	2581.7	194.82	0.0423	838
Bobolink	45/4.53	7/3.02	725.27	50.14	775.41	36.24	2397.2	164.13	0.0398	862
Plover*	54/4.14	19/2.48	726.92	91.78	818.7	37.24	2734.9	206.39	0.0399	866
Nuthatch	45/4.65	7/3.10	764.2	52.83	817.03	37.2	2529.6	171.25	0.0378	888
Parrot*	54/4.25	19/2.55	766.06	97.03	863.09	38.25	2883.7	217.51	0.0379	892
Lapwing	45/4.78	7/3.18	807.53	55.6	863.13	38.22	2663.5	180.14	0.0358	916
Falcon*	54/4.36	19/2.62	806.23	102.43	908.66	39.26	3038.5	229.52	0.036	919
Chukar*	84/3.70	19/2.22	903.18	73.54	976.72	40.7	3083.1	217.51	0.0321	976
Bluebird*	84/4.07	19/2.44	1092.84	88.84	1181.68	44.76	3731.9	256.65	0.0266	1083
Kiwi*	72/4.41	7/2.94	1099.76	47.52	1147.28	44.1	3423.9	215.28	0.0264	1083
Thrasher*	76/4.43	19/2.07	1171.42	63.94	1235.36	45.79	3754.2	243.75	0.0248	1122
Grouse**	8/2.54	1/4.24	40.54	14.12	54.66	9.32	221.4	21.75	0.7089	153
Petrel**	12/2.34	7/2.34	51.61	30.1	81.71	11.7	377.7	42.08	0.5595	181
Minorca**	12/2.44	7/2.44	56.11	32.73	88.84	12.2	411.1	45.81	0.5146	191
Leghorn**	12/2.69	7/2.69	68.2	39.78	107.98	13.45	499.2	55.16	0.4234	215
Guinea**	12/2.92	7/2.92	80.36	46.88	127.24	14.6	589.7	64.94	0.3593	238
Dotterel**	12/3.08	7/3.08	89.41	52.15	141.56	15.4	656.1	70.28	0.323	254
Dorking**	12/3.20	7/3.20	96.51	56.3	152.81	16	707.8	75.62	0.2992	267
Cochin**	12/3.37	7/3.37	107.04	62.44	169.48	16.85	783.9	84.07	0.2698	284
Brahma*& **	12/3.37	7/3.37	102.79	91.78	194.57	18.12	1003.8	114.76	0.2809	283

* The items, marked with "*" are not in our current product range and the details are for information only.

The items, marked with "" are ACSR Cables with high strength stranding.

(*) Note: The values of current rating mentioned in above Table are based on wind velocity of 0.6 metre/second, solar heat radiation of 1200 watt/metre², ambient temperature of 50°C & conductor temperature of 80°C.