

Aluminium Conductors Steel Reinforced (Type ACSR/AC)



Aluminium conductors, aluminium-clad steel reinforced manufactured to AS 3607.
Physical and Mechanical Properties

Conductor code	Stranding and wire diameter No/mm		Nominal Overall diameter mm	Cross sectional area mm ²	Approximate mass kg/km	Minimum breaking load kN	Modulus of elasticity GPa	Coefficient of linear expansion x10 ⁻⁶ /°C
	Aluminum	Steel						
Angling	6/2.50	1/2.5	7.5	34.4	113	10.6	79	20.1
Aquatics	6/2.75	1/2.75	8.3	41.6	137	12.7	79	20.1
Archery	6/3.00	1/3.00	9.0	49.5	163	15.1	79	20.1
Baseball	6/3.75	1/3.75	11.3	77.3	254	22.3	79	20.1
Bowls	6/4.75	7/1.60	14.3	120	385	32.7	76	20.6
Cricket	30/2.50	7/2.50	17.5	182	636	64.4	82	19.4
Darts	30/3.00	7/3.00	21.0	262	913	91.6	82	19.4
Dice	30/3.25	7/3.25	22.8	307	1070	106	82	19.4
Diving	30/3.50	7/3.50	24.5	356	1240	122	82	19.4
Golf	54/3.00	7/3.00	27.0	431	1380	120	75	20.6
Gymnastics	54/3.25	7/3.25	29.3	506	1620	139	75	20.6
Hurdles	54/3.50	7/3.50	31.5	587	1880	159	75	20.6
Lacrosse	54/3.75	19/2.25	33.8	672	2150	180	74	20.7
Skating	3/1.75	4/1.75	5.3	16.8	83	12.3	119	15.3
Soccer	3/2.50	4/2.50	7.5	34.4	171	24.9	119	15.3
Swimming	4/3.00	3/3.00	9.0	49.5	218	28.9	106	16.5
Tennis	4/3.75	3/3.75	11.3	77.3	340	42.6	106	16.5

Electrical Properties

Conductor code	DC resist at 20°C Ω/km	AC Resist at 50Hz 75°C Ω/km	Inductive reactance to 0.3m at 50Hz Ω/km	Continuous current carrying capacity. A											
				Rural weathered						Industrial weathered					
				Winter night			Summer noon			Winter night			Summer noon		
				still air	1m/s wind	2m/s wind	still air	1m/s wind	2m/s wind	still air	1m/s wind	2m/s wind	still air	1m/s wind	2m/s wind
Angling	0.923	1.22	0.295	115	199	225	88	176	200	223	202	228	82	172	209
Aquatics	0.763	1.02	0.291	128	222	268	102	198	226	130	225	250	92	196	224
Archery	0.641	0.860	0.284	136	248	281	110	223	248	158	252	296	103	218	258
Baseball	0.410	0.550	0.272	198	323	373	149	294	336	209	333	388	138	288	336
Bowls	0.259	0.353	0.256	272	432	499	203	388	449	294	449	513	179	369	445
Cricket	0.182	0.244	0.241	350	548	629	258	473	562	372	558	644	224	458	549
Darts	0.126	0.152	0.223	466	710	828	322	613	736	500	744	849	289	596	718
Dice	0.108	0.133	0.220	518	773	919	369	674	790	565	828	946	311	655	783
Diving	0.0928	0.115	0.218	573	855	1024	399	738	881	634	899	1052	353	707	859
Golf	0.0726	0.0913	0.213	669	989	1188	464	830	1017	728	1038	1207	399	803	993
Gymnastics	0.0619	0.0781	0.208	749	1092	1320	512	915	1141	815	1146	1359	438	893	1113
Hurdles	0.0533	0.0670	0.203	828	1193	1467	559	1000	1250	910	1252	1502	486	960	1232
Lacrosse	0.0465	0.0592	0.197	913	1288	1588	614	1076	1388	998	1378	1659	526	1057	1345
Skating	2.75	3.60	0.345	56	100	117	47	90	107	60	104	121	41	90	107
Soccer	1.34	1.70	0.326	94	157	183	73	142	172	100	163	193	68	141	166
Swimming	0.807	1.07	0.300	129	216	250	98	190	223	136	220	258	93	188	226
Tennis	0.517	0.694	0.287	173	285	335	130	255	295	183	294	346	115	247	290

Note: Current ratings are based to the following conditions

- Conductor temperature rise above ambient of 40°C
 - Ambient air temp. of 35°C for summer noon or 10°C for winter night
 - Direct solar radiation intensity of 1000W/m² for summer noon or zero for winter night
 - Diffuse solar radiation intensity of 100W/m² for summer noon or zero for winter night
 - Ground reflectance of 0.2
 - Emissivity of 0.5 for rural weathered conductor or 0.85 for industrial weathered conductor
 - Solar absorption coefficient of 0.5 for rural weathered conductor or 0.85 for industrial weathered conductor
- Cross sections not to scale