



Hard Drawn Copper Conductors

Hard drawn copper conductors manufactured to AS 1746
Physical and Mechanical Properties

Stranding and wire diameter	Nominal Overall diameter	Cross sectional area	Approximate mass	Minimum breaking load	Modulus of elasticity	Coefficient of linear expansion
No/mm	mm	mm ²	kg/km	kN	GPa	x10 ⁻⁶ /°C
7/1.00	3.00	5.5	49.3	2.32	120	17.0
7/1.25	3.75	8.59	76.9	3.59	120	17.0
7/1.75	5.25	16.8	151	6.89	120	17.0
7/2.00	6.00	22.0	197	8.89	120	17.0
7/2.75	8.25	41.6	375	16.2	120	17.0
19/1.75	8.75	45.7	413	18.3	118	17.0
19/2.00	10.0	59.7	538	23.6	118	17.0
7/3.50	10.5	67.4	607	25.4	120	17.0
7/3.75	11.3	77.3	696	28.8	120	17.0
37/1.75	12.3	89.0	806	35.6	117	17.0
19/2.75	13.8	113	1020	43.1	118	17.0
19/3.00	15.0	134	1210	50.8	118	17.0
37/2.50	17.5	182	1640	70.3	117	17.0
37/2.75	19.3	220	1990	83.9	117	17.0
97/3.00	21.0	262	2370	98.9	117	17.0
61/2.75	24.8	362	3290	138	117	17.0

Electrical Properties

Stranding and wire diameter	DC resist at 20°C	AC Resist at 50Hz 75°C	Inductive reactance to 0.3m at 50Hz	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	
	Ω/km	Ω/km	Ω/km													
7/1.00	3.25	3.91	0.351	49	97	102	41	82	90	51	88	109	36	80	92	
7/1.25	2.09	2.50	0.337	65	118	135	54	105	129	67	119	135	52	105	123	
7/1.75	1.06	1.27	0.315	102	182	208	77	163	195	109	182	209	71	162	195	
7/2.00	0.815	0.984	0.311	118	213	242	90	185	219	128	209	248	88	187	222	
7/2.75	0.433	0.522	0.287	181	308	354	144	271	322	195	311	350	125	269	318	
19/1.75	0.395	0.477	0.280	192	322	363	149	294	345	209	385	388	135	288	347	
19/2.00	0.303	0.365	0.273	228	378	439	171	342	412	249	398	452	152	335	395	
7/3.50	0.268	0.322	0.278	245	415	474	180	366	435	268	423	486	161	359	426	
7/3.75	0.233	0.281	0.271	269	448	520	201	390	472	285	458	558	177	393	465	
37/1.75	0.203	0.244	0.260	310	492	566	222	432	515	322	515	578	196	425	513	
19/2.75	0.160	0.192	0.252	349	568	658	259	499	596	381	592	678	229	490	584	
19/3.00	0.134	0.161	0.248	392	633	731	285	563	663	425	652	752	252	544	649	
37/2.50	0.0996	0.122	0.237	481	757	882	342	669	782	529	788	912	308	648	775	
37/2.75	0.0823	0.101	0.234	549	859	993	396	751	880	603	892	1028	331	729	872	
37/3.00	0.0691	0.0843	0.278	623	953	1121	445	824	988	688	1002	1144	386	792	969	
61/2.75	0.0500	0.0617	0.218	778	1158	1388	536	997	1199	852	1226	1428	475	954	1158	

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