

Covered Aerial Cables Application

AS/NZS 3675 standard covered conductor is covered with insulation material but without conductor or insulation screens. They must be used in a similar manner to open wire 11 to 33kV bare overhead systems.

Covered Aerial Cables Classification

There are two main types of covered conductors as follow: CC and CCT. We can provide perfect recommendations on the most suitable installation conditions and fittings for both systems.

Covered Conductor CC

CC covered conductors have a covering with a minimum average thickness of 2.0mm for use on all working voltages up to and including 19/33kV. CC can withstand intermittent contact with conductive material between phases or to ground. e.g. trees and branches, but should not remain in permanent contact.

1. Conductors:

conductors are available in aluminium, aluminium alloy and aluminium clad steel.

2. Water blocking:

water blocked with a special material meeting all the test requirements of AS/NZS 3675.

3. Covering:

conductors are covered with a track resistant UV stabilised XLPE.

4. Marking:

CC are marked on the external surface with "CC", logo, year of manufacture, and conductor material. They are also marked with sequential six-digit numbers at 1-metre intervals, with the lowest number at the inner end of the drum.

Covered Conductor CCT (FULL THICKNESS COVERING)

CCT covered conductors have a specified thickness of covering for each of the nominated working voltages. While still required to operate under similar principles to a bare wire or CC system, they have electrical and mechanical characteristics which permit them to remain in contact with tree limbs for an extended period dependent on abrasive characteristics of the tree, frequency and strength of prevailing winds and operating temperature.

CCT show better performance in polluted environments. They are suitable for use in spacer cable systems and in the Insulated Unscreened Conductor (IUC) systems.

1. Conductors:

conductors are available in aluminium, aluminium alloy and aluminium clad steel.

2. Water blocking:

water blocked with a special material meeting the test requirements of AS/NZS 3675.

3. Covering:

conductors are covered with a track resistant UV stabilized XLPE or with an inner layer of non-UV stabilized XLPE and an outer layer of UV stabilized High Density Polyethylene (HDPE). In the latter case, the average thickness of HDPE is not more than 40% of the specified minimum average thickness, and not less than 1.0mm.

4. Marking:

CCT are marked on the external surface with "CCT", logo, year of manufacture, and conductor material. They are also marked with sequential six-digit numbers at 1-metre intervals, with the lowest number at the inner end of the drum.

Specifications

AS/NZS 3675 Standard Covered Conductor

Conductor size No./mm	Conductor d.c. resistance at 20°C	Conductor a.c. resistance at 80°C	Reactance at 50 Hz (460 mm spacing)	Continuous capacity Based on ambient	current carrying Based on 30°C ambient	Fault current rating kA for 1 sec.*	Everday working tension kN	Maximum working tension (50% MBL) kN	Minimum breaking load kN	Minimum bending radius mm
	Ω/km	Ω/km	Ω/km	Still air	1.0	2.0				

														m/s	m/s														
														wind	wind														
Alloy 6201																													
7/2.75	0.799	0.988	0.331	125	210	235	110	185	210	3.5	1.51	5.8	11.6	200															
7/3.75	0.43	0.532	0.312	180	300	345	160	270	310	6.4	2.82	10.9	21.7	245															
7/4.75	0.268	0.331	0.297	245	410	465	220	365	415	10.3	4.52	17.4	34.8	290															
19/3.50	0.183	0.227	0.281	315	515	595	280	460	530	15.2	6.67	25.7	51.3	340															
Alloy 1120																													
7/2.75	0.713	0.881	0.331	130	220	250	115	195	225	3.7	1.49	4.96	9.91	200															
7/3.75	0.383	0.474	0.312	190	320	365	170	285	325	6.8	2.64	8.8	17.6	245															
7/4.75	0.239	0.296	0.297	260	430	485	230	385	435	11	4.07	13.6	27.1	290															
19/3.50	0.163	0.202	0.281	330	545	625	295	485	560	16.2	6.26	20.9	41.7	340															
TECHNICAL PERFORMANCE CHARACTERISTICS FOR COVERED CONDUCTORS (CCT)																													
Conductor size No./mm	Conductor d.c. resistance at 20°C	Conductor a.c. resistance at 80°C	Reactance at 50 Hz (460 mm spacing)	Continuous current carrying capacity Based on ambient		Based on 30°C ambient		Based on 40°C ambient		Fault current rating kA for 1 sec.*	Everday working tension kN	Maximum working tension (50% MBL) kN	Minimum breaking load kN	Minimum bending radius mm															
	Ω/km	Ω/km	Ω/km	Still air	1.0 m/s wind	2.0 m/s wind																							
11 kv covered conductor Alloy 6201																													
7/3.75	0.43	0.532	0.312	185	295	330	165	265	295	6.4	2.82	10.9	21.7	285															
7/4.75	0.268	0.331	0.297	245	390	440	220	350	395	10.3	4.52	17.4	34.8	330															
19/3.50	0.183	0.227	0.281	315	500	560	280	445	500	15.2	6.67	25.7	51.3	380															
22 kv covered conductor Alloy 6201																													
7/3.75	0.43	0.532	0.312	185	285	315	165	255	280	6.4	2.82	10.9	21.7	350															
7/4.75	0.268	0.331	0.297	245	375	420	220	335	375	10.3	4.52	17.4	34.8	395															
19/3.50	0.183	0.227	0.281	315	475	530	280	425	475	15.2	6.67	25.7	51.3	445															
33kv covered conductor Alloy 6201																													
7/3.75	0.43	0.532	0.312	185	270	295	165	240	265	6.4	2.82	10.9	21.7	425															
7/4.75	0.268	0.331	0.297	245	360	400	220	320	355	10.3	4.52	17.4	34.8	470															
19/3.50	0.183	0.227	0.281	315	455	505	280	405	450	15.2	6.67	25.7	51.3	520															
XLPE covered aerial cables Alloy 1120 conductors																													
Conductor size No./mm	Conductor d.c. resistance at 20°C	Conductor a.c. resistance at 80°C	Reactance at 50 Hz (460 mm spacing)	Continuous current carrying capacity Based on ambient		Based on 30°C ambient		Based on 40°C ambient		Fault current rating kA for 1 sec.*	Everday working tension kN	Maximum working tension (50% MBL) kN	Minimum breaking load kN	Minimum bending radius mm															
	Ω/km	Ω/km	Ω/km	Still air	1.0 m/s wind	2.0 m/s wind																							
11kv covered conductor Alloy 1120																													
7/2.75	0.713	0.881	0.331	130	215	240	115	190	215	3.7	1.49	4.96	9.9	230															
7/3.75	0.383	0.474	0.312	190	315	345	170	280	310	6.8	2.64	8.8	17.6	285															
7/4.75	0.239	0.296	0.297	260	415	470	230	370	420	11	4.07	13.6	27.1	330															
19/3.50	0.163	0.202	0.281	330	525	595	295	470	530	16.2	6.26	20.9	41.7	380															

22 kV covered conductor Alloy 1120														
7/2.75	0.713	0.881	0.331	135	205	225	120	185	200	3.7	1.49	4.96	9.9	300
7/3.75	0.383	0.474	0.312	190	295	330	170	265	295	6.8	2.64	8.8	17.6	350
7/4.75	0.239	0.296	0.297	260	400	440	230	355	395	11	4.07	13.6	27.1	395
19/3.50	0.163	0.202	0.281	330	505	560	295	450	500	16.2	6.26	20.9	41.7	445
33kv covered conductor Alloy 1120														
7/2.75	0.713	0.881	0.331	135	195	215	120	175	190	3.7	1.49	4.96	9.9	385
7/3.75	0.383	0.474	0.312	195	285	315	175	255	280	6.8	2.64	8.8	17.6	425
7/4.75	0.239	0.296	0.297	260	380	420	230	340	375	11	4.07	13.6	27.1	470
19/3.50	0.163	0.202	0.281	330	480	530	295	430	475	16.2	6.26	20.9	41.7	520

* Initial temperature 80°C, final temperature 210°C, constant K = 83.0 for alloy 6201 and 88.4 for alloy 1120. f 13% MBL for alloy 6201 and 15% MBL for alloy 1120.