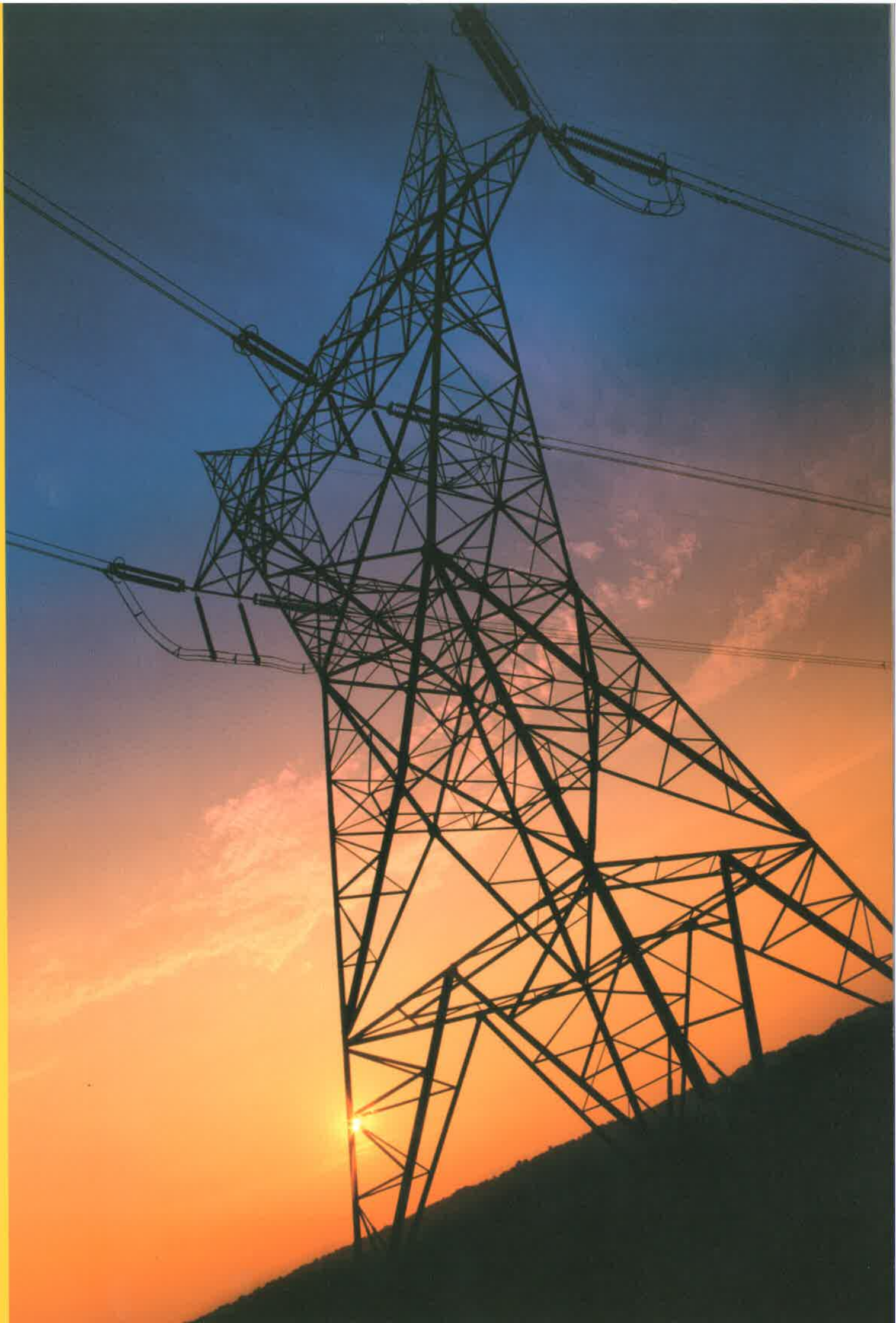


IEC



ITECO Wire & Cable

In accordance with IEC



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DESCRIPTION OF A.C.S.R.

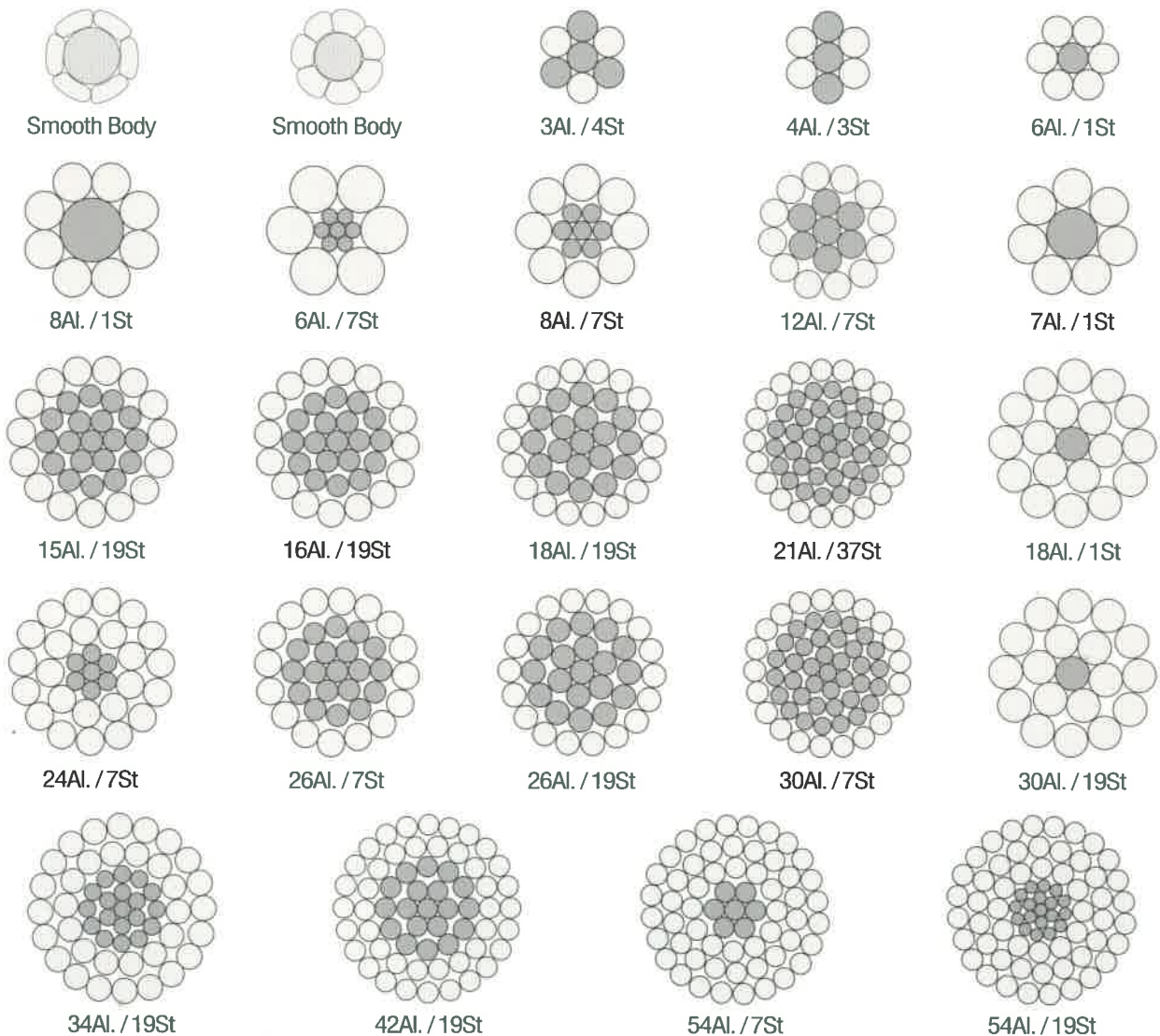


Application This standard covers aluminum stranded conductors steel reinforced which could withstand high tensile load to be used mainly for overhead transmission lines, overhead distribution lines.

Standard Conforms to ASTM B 232-97

Construction The Center wire or wires are of galvanized steel and the outer layer or layers of aluminum.

TYPICAL CONSTRUCTION FOR A. C. S. R.



OVERHEAD ELECTRICAL ALUMINUM CONDUCTORS

ACSR

Aluminum Conductor Steel Reinforced

Construction The center wire or wires are of galvanized steel and the outer layer of layers of aluminum

Standard Korean industrial standard & Korea electric power corporation specification

Nominal Cross Sectional Area (mm ²)	No. and Dia. of Strands(No./mm)		Approx. Overall Diameter (mm)	Nominal Braking Load (kgf)	Reference			
	Al(mm)	St(mm)			Ampacity (amp)	Weight (kg/km)	Electric Resistance (Ω/km)	Standard Length (m)
19	6/2.0	1/2.0	6	698	111	76.1	1.52	1000
32	6/2.0	1/2.6	7.8	1140	156	128.6	0.899	1000
58	6/3.5	1/3.5	10.5	1980	227	233.1	0.497	1000
65	12/2.6	7/2.6	13	5415	251	465	0.4565	200
80	6/4.2	1/4.2	12.6	2770	286	335.5	0.345	1000
95	6/4.5	1/4.5	13.5	3180	313	385.2	0.301	1300
97	12/3.2	7/3.2	16	10600	328	708.9	0.301	1000
120	12/3.5	7/3.5	17.5	9590	388	845.9	0.25	2000
120	30/2.3	7/2.3	16.1	5550	388	573.7	0.233	1300
160	30/2.6	7/2.6	18.2	6990	454	732.8	0.182	1900
200	30/2.9	7/2.9	20.3	8620	521	911.7	0.147	1400
240	30/3.2	7/3.2	22.4	10210	593	1,110	0.12	1400
330	26/4.0	7/3.1	25.3	10930	712	1,320	0.0888	1000
410	26/4.5	7/3.5	28.5	13890	828	1,673	0.0702	1000
480(Rail)	45/3.7	7/2.47	29.6	11800	891	1,599	0.0599	2000
520	54/3.5	7/3.8	34.2	18150	1,043	2,320	0.0474	1000
480(Cardinal)	54/3.38	7/3.38	30.42	15300	899	1,836	0.0599	1000, 2000

ACSR / AW

Aluminum Conductor Aluminum - Clad Steel Reinforced

Construction The center wire or wires are of aluminum-clad steel and the outer layer of layers of aluminum

Standard Korea electric power corporation specification

Nominal Cross Sectional Area (mm ²)	No. and Dia. of Strands(No./mm)		Approx. Overall Diameter (mm)	Nominal Braking Load (kgf)	Reference			
	Al(mm)	AW(mm)			Ampacity (amp)	Weight (kg/km)	Electric Resistance (Ω/km)	Standard Length (m)
32	6/2.6	1/2.6	7.8	1140	160	120.6	0.852	1000
58	6/3.5	1/3.5	10.5	1980	233	299.7	0.471	1000
65	12/2.6	7/2.6	13	5415	275	401	0.38	1000, 2000
95	6/4.5	1/4.5	13.5	3180	321	362	0.285	1000, 2000
97	12/3.2	7/3.2	16	10600	331	608	0.295	1000, 2000
120	12/3.5	7/3.5	17.5	9590	402	737	0.21	1000, 2000
160	30/2.6	7/2.6	18.2	6990	471	676.4	0.169	1000, 2000
240	30/3.2	7/3.2	22.4	10210	616	1,024	0.111	1000, 2000
330	26/4.0	7/3.1	25.3	10930	731	1,239	0.0842	1000, 2000
410	26/4.5	7/3.5	28.5	13890	850	1,578	0.0665	1000, 2000
480(Rail)	45/3.7	7/2.47	29.61	11800	900	1,544	0.0586	1000, 2000
520	54/3.5	7/3.5	31.5	15600	959	1,848	0.0536	1000, 2000
480(Cardinal)	54/3.38	7/3.38	30.42	15300	918	1,760	0.0574	1000, 2000

BUILDING WIRE

450/750V HIV

450/750V Heat - Resistant PVC Insulated Wire

- Application** Building wiring, for installation on insulator or in raceway, at maximum conductor temp. 90°C
- Standard** Korean industrial standard, IEC 60227 - 3
- Construction**
1. Conductor : Annealed copper solid or stranded wire sizes 1.5sqmm up to 400sqmm
 2. Insulation : Heat - resistant polyvinyl chloride
 3. Color : Any color as requested



0.6/1kV GV

0.6/1kV PVC Insulated Wire

- Application** GV is used for 1st class and 2nd class of earthing construction in accordance with ECR
- Standard** Korean technical standard
- Construction**
1. Conductor : Annealed copper solid or stranded wire sizes 2.5sqmm up to 300sqmm
 2. Insulation : Polyvinyl chloride
 3. Color : Green, Green / Yellow



450/750V HIV

Conductor			Insulation Thickness (mm)	Mean Overall Dia.		Max. Conductor Resistance (Ω /km, 20°C)	Min. Insulation Resistance (M Ω /km, 90°C)	Test Voltage (V/5min.)	Approx. Weight (kg/km)	Stranded Length (m)
Nominal Cross Sectional Area (mm ²)	No. and Dia. of Strands (No./mm)	Outer Dia. (mm)		Lower Limit (mm)	Upper Limit (mm)					
1.5	-	1.38	0.7	2.6	3.2	12.1	0.011	2500	20	300
2.5	-	1.78	0.8	3.2	3.9	7.41	0.009	2500	30	300
4	-	2.25	0.8	3.6	4.4	4.61	0.0085	2500	50	300
6	-	2.76	0.8	4.1	5.0	3.08	0.0070	2500	70	300
10	-	3.57	1.0	5.3	6.4	1.83	0.0070	2500	110	300
1.5	7/0.53	1.59	0.7	2.70	3.3	12.1	0.0100	2500	20	300
2.5	7/0.67	2.01	0.8	3.30	4.0	7.41	0.0090	2500	30	300
4	7/0.85	2.55	0.8	3.80	4.6	4.61	0.0077	2500	50	300
6	7/1.04	3.12	0.8	4.30	5.2	3.08	0.0065	2500	70	300
10	7/1.35	4.05	1.0	5.60	6.7	1.83	0.0065	2500	120	300
16	7/1.70	5.10	1.0	6.40	7.8	1.15	0.0050	2500	175	200
25	7/2.14	6.42	1.2	8.10	9.7	0.727	0.0050	2500	280	200
35	7/2.52	7.56	1.2	9.00	10.9	0.524	0.0043	2500	375	100
50	19/1.78	8.90	1.4	10.60	12.8	0.387	0.0043	2500	500	300
70	19/2.14	10.70	1.4	12.10	14.6	0.268	0.0035	2500	710	300
95	19/2.52	12.60	1.6	14.10	17.1	0.193	0.0035	2500	980	300
120	37/2.03	14.21	1.6	15.60	18.8	0.153	0.0032	2500	1,220	300
150	37/2.25	15.75	1.8	17.30	20.9	0.124	0.0032	2500	1,500	300
185	37/2.52	17.64	2.0	19.30	23.3	0.0991	0.0032	2500	1,880	300
240	61/2.25	20.25	2.0	22.00	26.6	0.0754	0.0032	2500	2,435	300
300	61/2.52	22.68	2.4	24.50	29.6	0.0601	0.0030	2500	3,075	300
400	61/2.85	25.65	2.6	27.50	33.2	0.0470	0.0028	2500	3,920	300

0.6/1KV GV

Conductor			Insulation Thickness (mm)	Approx. Overall Dia. (mm)	Max. Conductor Resistance (Ω /km, 20°C)	Test Voltage (V/5min.)	Approx. Weight (kg/km)	Stranded Length (m)
Nominal Cross Sectional Area (mm ²)	No. and Dia. of Strands (No./mm)	Outer Dia. (mm)						
2.5	7/0.67	2.01	2.2	6.50	7.41	3500	70	300
4	7/0.85	2.55	2.4	7.50	4.61	3500	100	300
6	7/1.04	3.12	2.4	8.00	3.08	3500	120	300
10	7/1.35	4.05	2.4	9.00	1.83	3500	170	300
16	C.C	4.70	2.4	10.00	1.15	3500	230	300
25	C.C	5.90	2.6	11.50	0.727	3500	340	300
35	C.C	6.90	2.6	12.50	0.524	3500	435	300
50	C.C	8.10	2.8	14.00	0.387	3500	575	300
70	C.C	9.80	2.8	15.50	0.268	3500	790	300
95	C.C	11.40	3.1	18.00	0.193	3500	1,070	300
120	C.C	12.90	3.1	19.50	0.153	3500	1,320	300
150	C.C	14.40	3.4	21.50	0.124	3500	1,620	200
185	C.C	15.90	3.7	23.50	0.0991	3500	2,010	200
240	C.C	18.30	4.0	26.50	0.0754	3500	2,620	200
300	C.C	20.50	4.3	29.50	0.0601	3500	3,260	150

C.C : Circular Compacted Conductor

BUILDING WIRE

600V THW

600V Heat - Resistant PVC Insulated Wire



- Application** Building wiring, for use in wet and dry location at 75°C
- Standard** UL 83
UL : Underwrites Laboratories
- Construction**
1. Conductor : Annealed copper solid or stranded wire sizes 14 AWG to 1,000 MCM
 2. Insulation : Abrasion, moisture and heat - resistant polyvinyl chloride
 3. Color : The standard color is black, when required other colors are available

600V THHN / THWN

600V Heat - Resistant PVC Insulated and Nylon Jacketed Wire

- Application** General purpose wiring for lighting and power residential building in accordance with NEC
- Standard** UL 83
Type THHN is suitable in dry location at 90°C
Type THWN is suitable in dry and wet location at 75°C
- Construction**
1. Conductor : Annealed copper solid or stranded wire sizes 14 AWG to 1,000 MCM
 2. Insulation : Flame - retardant, heat, abrasion and moisture - resistant PVC with polyamid nylon
 3. Color : The standard color is black, when required other colors are available



600V THW

Size		Conductor			Insulation Thickness		Approx. Overall Diameter		Approx. Weight		Ampacity *	Standard Length	
AWG or MCM	mm ²	No. of Strands	Diameter		mm	mils	mm	mils	kg / km	lbs / 1000ft	Dry & Wet	m	ft
14	2.08	1	1.63	64.1	0.76	30	3.2	126	27	18	15	915	3,000
14	2.08	7	1.85	72.7	0.76	30	3.5	138	29	19	15	915	3,000
12	3.31	1	2.05	80.8	0.76	30	3.7	146	39	26	20	915	3,000
12	3.31	7	2.32	91.5	0.76	30	3.9	155	42	28	20	915	3,000
10	5.26	1	2.588	101.9	0.76	30	4.2	165	59	40	30	915	3,000
10	5.26	7	2.95	116	0.76	30	4.5	178	62	42	30	915	3,000
8	8.37	7	3.71	146	1.14	45	6.1	240	104	70	50	915	3,000
6	13.3	7	4.67	184	1.52	60	7.9	310	169	114	65	915	3,000
4	21.2	7	5.89	232	1.52	60	9.1	357	250	168	85	915	3,000
3	26.7	7	6.60	260	1.52	60	9.8	386	306	206	100	915	3,000
2	33.6	7	7.42	292	1.52	60	10.6	418	377	253	115	915	3,000
1	42.4	19	8.43	332	2.03	80	12.7	501	492	331	130	457	1,500
1/0	53.5	19	9.45	372	2.03	80	13.7	539	600	403	150	457	1,500
2/0	67.4	19	10.62	418	2.03	80	14.9	578	744	500	175	457	1,500
3/0	85.0	19	11.94	470	2.03	80	16.2	638	917	616	200	457	1,500
4/0	107	19	13.41	528	2.03	80	17.7	697	1,133	761	230	457	1,500
250	127	37	14.61	575	2.41	95	19.7	776	1,357	912	255	457	1,500
300	152	37	16.00	630	2.41	95	21.1	831	1,606	1,079	285	457	1,500
350	177	37	17.30	681	2.41	95	22.4	882	1,849	1,242	310	457	1,500
400	203	37	18.49	728	2.41	95	23.6	929	2,094	1,407	335	457	1,500
500	253	37	20.65	813	2.41	95	25.7	1,012	2,580	1,734	380	305	1,000
600	304	61	22.68	893	2.79	110	28.6	1,126	3,126	2,101	420	305	1,000
750	380	61	25.35	998	2.79	110	31.3	1,232	3,866	2,598	475	305	1,000
1,000	507	61	29.26	1,152	2.79	110	35.1	1,382	5,065	3,404	545	305	1,000

* : Per Table 310 - 16 of the National Electrical Code, 1996 editions.

Conditions : Not more than three conductors in raceway or cable or earth(directly buried), based on ambient temperature of 30°C

600V THHN / THWN

Size		Conductor			Insulation Thickness		Jacket Thickness		Approx. Overall Diameter		Approx. Weight		* Ampacity	
AWG or MCM	mm ²	No. of Strands	Diameter		mm	mils	mm	mils	mm	mils	kg / km	lbs / 1000ft	THWN (75°C)	THHN (90°C)
14	2.08	1	1.63	61.1	0.38	15	0.1	4	2.7	106	24	16	15	15
14	2.08	19	1.85	72.7	0.38	15	0.1	4	2.9	114	24	16	15	15
12	3.31	1	2.05	80.8	0.38	15	0.1	4	3.2	126	38	24	20	20
12	3.31	19	2.32	91.5	0.38	15	.01	4	3.4	134	37	25	20	20
10	5.26	1	2.588	101.9	0.51	20	0.1	4	3.9	154	57	38	30	30
10	5.26	19	2.95	116	0.51	20	0.1	4	4.3	169	58	39	30	30
8	8.37	1	3.264	128.5	0.76	30	0.13	5	5.3	209	91	61	50	55
8	8.37	19	3.71	146	0.76	30	0.13	5	5.6	220	98	66	50	55
6	13.3	19	4.67	184	0.76	30	0.13	5	6.6	260	146	98	65	75
4	21.2	19	5.89	232	1.02	40	0.15	6	8.9	350	237	159	85	95
2	33.6	19	6.60	260	1.02	40	0.15	6	10.0	394	357	240	115	130
1	42.4	19	8.43	332	1.27	50	0.18	7	11.4	449	455	306	130	150
1/0	42.4	19	9.45	372	1.27	50	0.18	7	12.5	492	558	375	150	175
2/0	67.4	19	10.62	418	1.27	50	0.18	7	13.6	535	696	468	175	195
3/0	85.0	19	11.94	470	1.27	50	0.18	7	14.8	583	865	581	200	225
4/0	107	19	13.41	528	1.27	50	0.18	7	16.2	638	1,071	720	230	260
250	127	37	14.61	575	1.52	60	0.2	8	18.0	709	1,280	860	255	290
300	152	37	16.00	630	1.52	60	0.2	8	19.3	760	1,518	1,020	285	320
350	177	37	17.30	681	1.52	60	0.2	8	20.6	811	1,759	1,182	310	350
400	203	37	18.49	728	1.52	60	0.2	8	21.7	854	1,994	1,340	335	380
500	253	37	20.65	813	1.52	60	0.2	8	23.9	941	2,470	1,660	380	430
750	380	61	25.35	998	1.78	70	0.23	9	28.9	1,138	3,706	2,490	475	535
1,000	507	61	29.26	1,152	1.78	70	0.23	9	32.7	1,289	4,821	3,240	545	615

* : Per Table 310 - 16 of the National Electrical Code, 1996 editions.

Conditions : Not more than three conductors in raceway or cable or earth(directly buried), based on ambient temperature of 30°C

BUILDING WIRE

600V XHHW-2

600V Flame - Retardant XLPE Insulated Wire



- Application** General purpose building wiring insulated with cross - linked PE intended for righting power circuit
- Standard** UL 44
UL : Underwrites Laboratories
- Construction**
1. Conductor : Annealed copper solid or stranded wire sizes 14 AWG to 1,000 MCM
 2. Insulation : Flame - retardant , heat, abrasion and moisture - resistant crosslinked PE
 3. Color : The standard color is black,
When required other colors are available

600V TYPE USE-2

600V XLPE Insulated Service Entrance Wire

- Application** General purpose wiring for righting and power - residential commercial industrial building at conductor temp. not exceeding 90°C in wet or dry location
- Standard** UL 854 for Type USE-2
- Construction**
1. Conductor : Annealed copper solid or stranded wire sizes 14 AWG to 1,000 MCM
 2. Insulation : XLPE (Cross - linked PE) with carbon black
 3. Color : The standard color is black,
When required other colors are available



600V XHHW-2

Size		Conductor			Insulation Thickness		Approx. Overall Diameter		Approx. Weight		* Ampacity
AWG or MCM	mm ²	No. of Strands	Diameter		mm	mils	mm	mils	kg/km	lbs/1000ft	
			mm	mils							
14	2.08	1	1.63	64.1	0.76	30	3.3	132	25	17	15
14	2.08	7	1.85	72.7	0.76	30	3.5	140	25	17	15
12	3.31	1	2.05	80.8	0.76	30	3.7	148	35	24	20
12	3.31	7	2.32	91.5	0.76	30	4.0	160	40	27	20
10	5.26	1	2.588	102	0.76	30	4.2	188	22	37	30
10	5.26	7	2.95	116	0.76	30	4.5	180	60	40	30
8	8.37	1	3.264	129	1.14	45	5.7	228	95	64	55
8	8.37	7	3.71	146	1.14	45	6.2	248	100	67	55
6	13.3	7	4.67	184	1.14	45	7.1	284	150	100	75
4	21.2	7	5.89	232	1.14	45	8.3	332	220	150	95
3	26.7	7	6.60	260	1.14	45	9.1	364	280	190	110
2	38.6	7	7.42	292	1.14	45	9.9	396	350	240	130
1	42.4	19	8.43	332	1.40	55	11.5	460	440	300	150
1/0	53.5	19	9.45	372	1.40	55	12.5	500	550	370	170
2/0	67.4	19	10.62	418	1.40	55	13.7	548	690	460	195
3/0	85.0	19	11.94	470	1.40	55	15.0	600	850	570	225
4/0	107	19	13.41	528	1.40	55	16.4	656	1,060	710	260
250	127	37	14.61	575	1.65	65	18.3	732	1,270	850	290
300	152	37	16.00	630	1.65	65	19.8	792	1,520	1,020	320
350	177	37	17.30	680	1.65	65	21.0	840	1,760	1,180	350
400	203	37	18.49	728	1.65	65	22.2	888	1,990	1,340	360
500	253	37	20.65	813	1.65	65	24.3	972	2,470	1,660	430
600	304	61	22.58	893	2.03	80	27.3	1,092	3,000	2,020	475
750	380	61	25.35	998	2.03	80	30.0	1,200	3,730	2,510	535
1,000	507	61	29.26	1,152	2.03	80	33.9	1,356	4,900	3,290	615

* : Per Table 310-16 of the National Electrical Code, 1996 editions.

Conditions : Not more than three conductors in raceway or cable or earth(directly buried), based on ambient temperature of 30°C

600V TYPE USE-2

Size		Conductor			Insulation Thickness		Approx. Overall Diameter		Approx. Weight		* Ampacity
AWG or MCM	mm ²	No. of Strands	Diameter		mm	mils	mm	mils	kg/km	lbs/1000ft	
			mm	mils							
12	3.31	7	2.32	91.5	1.14	45	4.3	169	30	20.2	20
10	5.26	7	2.95	116	1.14	45	5.1	201	48	32.1	30
8	8.37	7	3.71	146	1.52	60	6.9	272	76	51.0	55
6	13.3	7	4.67	184	1.52	60	7.9	311	121	81.1	75
4	21.2	7	5.89	232	1.52	60	9.4	370	192	128.9	95
3	26.7	7	6.6	260	1.52	60	9.9	390	242	162.5	110
2	33.6	7	7.42	292	1.52	60	10.9	429	305	204.9	130
1	42.4	19	8.33	326	2.03	80	13	512	385	258.4	150
1/0	42.4	19	9.47	375	2.03	80	14.2	559	485	325.8	170
2/0	67.4	19	10.64	419	2.03	80	15.2	598	611	410.9	195
3/0	85.4	19	11.94	470	2.03	80	16.8	661	771	518.1	225
4/0	107	19	13.41	528	2.03	80	18.3	720	972	653.3	260
250	127	37	14.61	575	2.41	95	20.3	799	1,149	771.9	290
300	152	37	16	630	2.41	95	21.8	858	1,379	926.3	320
350	177	37	17.3	681	2.41	95	23.1	909	1,609	1,061	350
400	203	37	18.49	728	2.41	95	23.9	941	1,838	1,235	980
500	253	37	20.65	813	2.41	95	26.7	1,051	2,298	1,544	430
750	380	61	25.35	998	2.79	110	32.3	1,272	3,477	2,316	535

* : Per Table 310-16 of the National Electrical Code, 1996 editions.

Conditions : Not more than three conductors in raceway or cable or earth(directly buried), based on ambient temperature of 30°C

POWER CABLE

0.6 / 1kV CV (Single Core)

0.6 / 1kV XLPE Insulated PVC Sheathed Cable



Application Preferably used for installation exposed, or in raceway wet or dry location, or direct burial in ground.

Standard Korean industrial standard reference IEC 60228, IEC 60502-1

Classification Maximum conductor temp. 90°C
Current voltage does not exceed 1,000 volts

Construction

1. Conductor : Annealed copper compacted or circular stranded wire sizes 1.5sqmm to 630sqmm
2. Insulation : Cross - linked Polyethylene (XLPE)
3. Sheath : Black Polyvinyl Chloride

• Note : A special FR - PVC or Low Smoke Halogen Free flame retardant sheathed can be supplied in accordance with IEC 60332 - 3

0.6 / 1kV CE (Single Core)

0.6 / 1kV XLPE Insulated PE Sheathed Cable

Application Preferably used for installation exposed, or in raceway wet or dry location, or direct burial in ground.

Standard Korean industrial standard reference IEC 60228, IEC 60502-1

Classification Maximum conductor temp. 90°C
Current voltage does not exceed 1,000 volts

Construction

1. Conductor : Annealed copper compacted or circular stranded wire sizes 1.5sqmm to 630sqmm
2. Insulation : Cross - linked Polyethylene (XLPE)
3. Sheath : Black Polyethylene

• Note : A special FR - PVC or Low Smoke Halogen Free flame retardant sheathed can be supplied in accordance with IEC 60332 - 3



0.6/1kV CV & CE (Single Core)

No. of Cores	Conductor			Insulation Thickness (mm)	Sheath Thickness (mm)	Approx. Overall Dia. (mm)	Max. Conductor Resistance (Ω /km, 20°C)	Test Voltage (V/5min.)	Approx. Weight (kg/km)		Standard Length (m)
	Nominal Cross Sectional Area(mm ²)	No. and Dia. of Strands (No./mm)	Outer Dia. (mm)						CV	CE	
1	1.5	7/0.53	1.59	0.7	1.4	6.3	12.1	3,500	50	40	300
	2.5	7/0.67	2.01	0.7	1.4	6.7	7.41	3,500	70	55	300
	4	7/0.85	2.55	0.7	1.4	7.2	4.61	3,500	90	70	300
	6	7/1.04	3.12	0.7	1.4	7.8	3.08	3,500	110	90	300
	10	7/1.35	4.05	0.7	1.4	9.4	1.83	3,500	150	150	300
	16	C.C	4.7	0.7	1.4	10.0	1.15	3,500	210	180	300
	25	C.C	5.9	0.9	1.4	12.0	0.727	3,500	310	280	300
	35	C.C	6.9	0.9	1.4	13.0	0.524	3,500	410	370	300
	50	C.C	8.1	1.0	1.4	14.5	0.387	3,500	530	480	300
	70	C.C	9.8	1.1	1.4	16.0	0.268	3,500	740	680	300
	95	C.C	11.4	1.1	1.5	18.5	0.193	3,500	1,010	920	300
	120	C.C	12.9	1.2	1.5	20	0.153	3,500	1,250	1,150	300
	150	C.C	14.4	1.4	1.6	22	0.124	3,500	1,530	1,420	300
	185	C.C	15.9	1.6	1.6	24	0.0991	3,500	1,900	1,770	300
	240	C.C	18.3	1.7	1.7	27	0.0754	3,500	2,460	2,310	200
	300	C.C	20.5	1.8	1.8	30	0.0601	3,500	3,060	2,880	200
400	C.C	23.2	2.0	1.9	34	0.0470	3,500	3,890	3,680	150	
500	C.C	26.4	2.2	2.0	37	0.0366	3,500	4,960	4,710	150	
630	C.C	30.2	2.4	2.2	42	0.0283	3,500	6,380	6,060	150	

C.C: Circular Compacted Conductor

POWER CABLE

0.6 / 1kV CV (Multi Core)

0.6 / 1kV XLPE Insulated PVC Sheathed Cable



- Application** Preferably used for installation exposed, or in raceway wet or dry location, or direct burial in ground.
- Standard** Korean industrial standard reference IEC 60228, IEC 60502-1
- Classification** Maximum conductor temp. 90°C
Current voltage does not exceed 1,000 volts
- Construction**
1. Conductor : Annealed copper compacted or circular stranded wire sizes 1.5sqmm to 300sqmm
 2. Insulation : Cross - linked Polyethylene (XLPE)
 3. Assembly : Multi - cores of cable will be assembled to form a circular cable with filler
 4. Sheath : Black polyvinyl chloride

• Note : A special FR - PVC or Low Smoke Halogen Free flame retardant sheathed can be supplied in accordance with IEC 60332 - 3

0.6 / 1kV CE (Multi Core)

0.6 / 1kV XLPE Insulated PE Sheathed Cable

- Application** Preferably used for installation exposed, or in raceway wet or dry location, or direct burial in ground.
- Standard** Korean industrial standard reference IEC 60228, IEC 60502-1
- Classification** Maximum conductor temp. 90°C
Current voltage does not exceed 1,000 volts
- Construction**
1. Conductor : Annealed copper compacted or circular stranded wire sizes 1.5sqmm to 300sqmm
 2. Insulation : Cross - linked Polyethylene (XLPE)
 3. Assembly : Multi - cores of cable will be assembled to form a circular cable with filler
 4. Sheath : Black Polyethylene

• Note : A special FR - PVC or Low Smoke Halogen Free flame retardant sheathed can be supplied in accordance with IEC 60332 - 3



0.6 / 1kV CV & CE (Multi Core)

No. of Cores	Conductor			Insulation Thickness (mm)	Sheath Thickness (mm)	Approx. Overall Dia. (mm)	Max. Conductor Resistance (Ω /km, 20°C)	Test Voltage (V/5min.)	Approx. Weight (kg/km)		Standard Length (m)
	Nominal Cross Sectional Area(mm ²)	No. and Dia. of Strands (No./mm)	Outer Dia. (mm)						CV	CE	
2	1.5	7/0.53	1.59	0.7	1.8	11.0	12.1	3,500	120	90	300
	2.5	7/0.67	2.01	0.7	1.8	12.0	7.41	3,500	150	120	300
	4	7/0.85	2.55	0.7	1.8	13.0	4.61	3,500	190	160	300
	6	7/1.04	3.12	0.7	1.8	14.0	3.08	3,500	240	210	300
	10	7/1.35	4.05	0.7	1.8	17.0	1.83	3,500	350	290	300
	16	C.C	4.7	0.7	1.8	18.5	1.15	3,500	470	400	300
	25	C.C	5.9	0.9	1.8	22	0.727	3,500	700	600	300
	35	C.C	6.9	0.9	1.8	24	0.524	3,500	910	820	300
	50	C.C	8.1	1.0	1.8	27	0.387	3,500	1,180	1,080	300
	70	C.C	9.8	1.1	1.8	31	0.268	3,500	1,640	1,520	300
	95	C.C	11.4	1.1	1.8	35	0.193	3,500	2,200	2,070	300
	120	C.C	12.9	1.2	1.9	38	0.153	3,500	2,750	2,550	300
	150	C.C	14.4	1.4	2.2	43	0.124	3,500	3,390	3,160	300
	185	C.C	15.9	1.6	2.3	47	0.0991	3,500	4,210	3,940	300
240	C.C	18.3	1.7	2.5	53	0.0754	3,500	5,470	5,310	200	
300	C.C	20.5	1.8	2.6	58	0.0601	3,500	6,760	6,380	200	
3	1.5	7/0.53	1.59	0.7	1.8	11.5	12.1	3,500	140	120	300
	2.5	7/0.67	2.01	0.7	1.8	12.5	7.41	3,500	180	150	300
	4	7/0.85	2.55	0.7	1.8	13.5	4.61	3,500	240	210	300
	6	7/1.04	3.12	0.7	1.8	14.5	3.08	3,500	310	280	300
	10	7/1.35	4.05	0.7	1.8	18.0	1.83	3,500	450	410	300
	16	C.C	4.7	0.7	1.8	19.5	1.15	3,500	640	560	300
	25	C.C	5.9	0.9	1.8	23	0.727	3,500	950	840	300
	35	C.C	6.9	0.9	1.8	25	0.524	3,500	1,260	1,140	300
	50	C.C	8.1	1.0	1.8	29	0.387	3,500	1,640	1,480	300
	70	C.C	9.8	1.1	1.9	33	0.268	3,500	2,310	2,100	300
	95	C.C	11.4	1.1	2.0	37	0.193	3,500	3,110	2,850	300
	120	C.C	12.9	1.2	2.1	41	0.153	3,500	3,890	3,640	300
	150	C.C	14.4	1.4	2.3	46	0.124	3,500	4,800	4,500	300
	185	C.C	15.9	1.6	2.4	50	0.0991	3,500	5,960	5,630	300
240	C.C	18.3	1.7	2.6	57	0.0754	3,500	7,760	7,330	200	
300	C.C	20.5	1.8	2.7	62	0.0601	3,500	9,620	9,110	200	
4	1.5	7/0.53	1.59	0.7	1.8	12.5	12.1	3,500	170	140	300
	2.5	7/0.67	2.01	0.7	1.8	13.5	7.41	3,500	220	190	300
	4	7/0.85	2.55	0.7	1.8	14.5	4.61	3,500	290	260	300
	6	7/1.04	3.12	0.7	1.8	16.0	3.08	3,500	390	340	300
	10	7/1.35	4.05	0.7	1.8	20	1.83	3,500	570	530	300
	16	C.C	4.7	0.7	1.8	22	1.15	3,500	810	730	300
	25	C.C	5.9	0.9	1.8	26	0.727	3,500	1,220	1,110	300
	35	C.C	6.9	0.9	1.8	28	0.524	3,500	1,620	1,480	300
	50	C.C	8.1	1.0	1.9	32	0.387	3,500	2,130	1,970	300
	70	C.C	9.8	1.1	2.0	36	0.268	3,500	3,010	2,820	300
	95	C.C	11.4	1.1	2.1	42	0.193	3,500	4,070	3,830	300
	120	C.C	12.9	1.2	2.3	46	0.153	3,500	5,110	4,810	300
	150	C.C	14.4	1.4	2.4	51	0.124	3,500	6,280	5,940	300
	185	C.C	15.9	1.6	2.6	56	0.0991	3,500	7,830	7,430	300
240	C.C	18.3	1.7	2.8	63	0.0754	3,500	10,200	9,670	200	
300	C.C	20.5	1.8	3.0	70	0.0601	3,500	12,700	12,040	200	

C.C : Circular Compacted Conductor

POWER CABLE

0.6 / 1kV TFR - 8

0.6/1kV XLPE Insulated with Fire - Proof Layer and PVC Sheathed Fire - Resistant Cable



Application Preferably used for fire related equipment such as fire alarms, sprinkler system, emergence lighting required fire - resistant properties.

Standard Kyung an cable specification, IEC 60502 - 1

Classification Fire resistant test : 750°C/3 hours
Flammability test : Vertical Tray Flame Test (VTFT) to IEEE 383

Construction

1. Conductor : Annealed copper compacted or circular stranded wire sizes 1.5sqmm to 500sqmm
2. Fire - Proof Layer : The fire - proof layer shall be applied between the conductor and insulation
3. Insulation : Cross - linked polyethylene (XLPE)
4. Assembly : Multi - cores of cable will be assembled to form a circular cable with fire - proof filler
5. Sheath : Black polyvinyl chloride

• Note : A special FR - PVC or Low Smoke Halogen Free flame retardant sheathed can be supplied in accordance with IEC 60332 - 3

0.6 / 1KV TFR - 8 (Single Core Cable)

Conductor			Insulation Thickness (mm)	Sheath Thickness (mm)	Approx. Overall Dia. (mm)	Max. Conductor Resistance (Ω /km, 20°C)	Test Voltage (V/5min.)	Approx. Weight (kg/km)
Normal Cross Sectional Area (mm ²)	No. and Dia. of Strands (No./mm)	Outer Dia. (mm)						
1.5	7/0.53	1.59	0.7	1.4	7.0	12.1	3500	60
2.5	7/0.67	2.01	0.7	1.4	7.5	7.41	3500	75
4	7/0.85	2.55	0.7	1.4	8.0	4.61	3500	95
6	7/1.04	3.12	0.7	1.4	8.5	3.08	3500	120
10	7/1.35	4.05	0.7	1.4	9.5	1.83	3500	165
16	C.C	4.7	0.7	1.4	10.0	1.15	3500	220
25	C.C	5.9	0.9	1.4	11.5	0.727	3500	320
35	C.C	6.9	0.9	1.4	12.5	0.524	3500	420
50	C.C	8.1	1.0	1.4	14.0	0.387	3500	545
70	C.C	9.8	1.1	1.5	16.0	0.268	3500	765
95	C.C	11.4	1.1	1.5	18.0	0.193	3500	1020
120	C.C	12.9	1.2	1.6	20.0	0.153	3500	1290
150	C.C	14.4	1.4	1.7	22.5	0.124	3500	1585
185	C.C	15.9	1.6	1.7	24.5	0.0991	3500	1950
240	C.C	18.3	1.7	1.8	27.0	0.0754	3500	2535
300	C.C	20.5	1.8	1.9	29.5	0.0601	3500	3145
400	C.C	23.2	2.0	2.0	33.0	0.0470	3500	3985
500	C.C	26.4	2.2	2.1	34.0	0.0366	3500	5070

C.C : Circular Compacted Conductor

0.6/1kV TFR - 8 (Two Core Cable)

Conductor			Insulation Thickness (mm)	Sheath Thickness (mm)	Approx. Overall Dia. (mm)	Max. Conductor Resistance (Ω /km, 20°C)	Test Voltage (V/5min.)	Approx. Weight (kg/km)
Nominal Cross Sectional Area(mm ²)	No. and Dia. of Strands (No./mm)	Outer Dia. (mm)						
1.5	7/0.53	1.59	0.7	1.8	12.5	12.1	3500	170
2.5	7/0.67	2.01	0.7	1.8	13.5	7.41	3500	200
4	7/0.85	2.55	0.7	1.8	14.5	4.61	3500	240
6	7/1.04	3.12	0.7	1.8	15.5	3.08	3500	300
10	7/1.35	4.05	0.7	1.8	17.5	1.83	3500	410
16	C.C	4.7	0.7	1.8	18.5	1.15	3500	530
25	C.C	5.9	0.9	1.8	22.0	0.727	3500	770
35	C.C	6.9	0.9	1.8	24.0	0.524	3500	990
50	C.C	8.1	1.0	1.8	26.5	0.387	3500	1280
70	C.C	9.8	1.1	1.9	31.0	0.268	3500	1770
95	C.C	11.4	1.1	2.0	34.0	0.193	3500	2350
120	C.C	12.9	1.2	2.2	38.0	0.153	3500	2940
150	C.C	14.4	1.4	2.3	42.0	0.124	3500	3600
185	C.C	15.9	1.6	2.4	46.0	0.0991	3500	4440
240	C.C	18.3	1.7	2.6	52.0	0.0754	3500	5755
300	C.C	20.5	1.8	2.8	57.0	0.0601	3500	6025

C.C : Circular Compacted Conductor

0.6/1kV TFR - 8 (Three Core Cable)

Conductor			Insulation Thickness (mm)	Sheath Thickness (mm)	Approx. Overall Dia. (mm)	Max. Conductor Resistance (Ω /km, 20°C)	Test Voltage (V/5min.)	Approx. Weight (kg/km)
Nominal Cross Sectional Area(mm ²)	No. and Dia. of Strands (No./mm)	Outer Dia. (mm)						
1.5	7/0.53	1.59	0.7	1.8	13.0	12.1	3500	195
2.5	7/0.67	2.01	0.7	1.8	14.0	7.41	3500	240
4	7/0.85	2.55	0.7	1.8	15.0	4.61	3500	300
6	7/1.04	3.12	0.7	1.8	16.5	3.08	3500	375
10	7/1.35	4.05	0.7	1.8	18.5	1.83	3500	525
16	C.C	4.7	0.7	1.8	19.0	1.15	3500	700
25	C.C	5.9	0.9	1.8	23.0	0.727	3500	1025
35	C.C	6.9	0.9	1.8	25.5	0.524	3500	1330
50	C.C	8.1	1.0	1.9	28.5	0.387	3500	1750
70	C.C	9.8	1.1	2.0	33.0	0.268	3500	2440
95	C.C	11.4	1.1	2.1	36.5	0.193	3500	3260
120	C.C	12.9	1.2	2.3	40.5	0.153	3500	4090
150	C.C	14.4	1.4	2.4	45.0	0.124	3500	5020
185	C.C	15.9	1.6	2.5	49.5	0.0991	3500	6200
240	C.C	18.3	1.7	2.7	55.5	0.0754	3500	8065
300	C.C	20.5	1.8	2.9	61.0	0.0601	3500	10010

C.C : Circular Compacted Conductor

0.6/1kV TFR - 8 (Four Core Cable)

Conductor			Insulation Thickness (mm)	Sheath Thickness (mm)	Approx. Overall Dia. (mm)	Max. Conductor Resistance (Ω /km, 20°C)	Test Voltage (V/5min.)	Approx. Weight (kg/km)
Nominal Cross Sectional Area(mm ²)	No. and Dia. of Strands (No./mm)	Outer Dia. (mm)						
1.5	7/0.53	1.59	0.7	1.8	14.0	12.1	3500	230
2.5	7/0.67	2.01	0.7	1.8	15.0	7.41	3500	280
4	7/0.85	2.55	0.7	1.8	16.5	4.61	3500	360
6	7/1.04	3.12	0.7	1.8	18.0	3.08	3500	460
10	7/1.35	4.05	0.7	1.8	20.0	1.83	3500	660
16	C.C	4.7	0.7	1.8	21.5	1.15	3500	880
25	C.C	5.9	0.9	1.8	25.5	0.727	3500	1310
35	C.C	6.9	0.9	1.8	28.0	0.524	3500	1710
50	C.C	8.1	1.0	2.0	31.5	0.387	3500	2270
70	C.C	9.8	1.1	2.1	36.5	0.268	3500	3170
95	C.C	11.4	1.1	2.3	41.0	0.193	3500	4270
120	C.C	12.9	1.2	2.4	45.0	0.153	3500	5330
150	C.C	14.4	1.4	2.6	50.0	0.124	3500	6560
185	C.C	15.9	1.6	2.7	55.0	0.0991	3500	8480
240	C.C	18.3	1.7	2.9	62.0	0.0754	3500	10560
300	C.C	20.5	1.8	3.2	68.5	0.0601	3500	13150

C.C : Circular Compacted Conductor

Properties of Cross - Linked Polyethylene(XLPE)

This catalog provides constructional and technical information on cables for the voltages $U_0/U(U_m)$ as follows : 0.6/1kV - 1.8/3(3.6)kV - 3.6/6(7.2)kV - 6/10(12)kV - 8.7/15(17.5)kV - 12/20(24)kV - 18/30(36)kV

The structure of XLPE insulated cables, listed in tables hereinafter, is the representative one from IEC Pub. 60502(Extruded solid dielectric insulated power cables for rated voltages from 1kV up to 30kV). Other types of cables and extra high voltage cables, not listed in this catalog, can also be offered upon request.

XLPE, Cross-linked polyethylene, has stable intermolecular bonds between polyethylene particles created by thermochemical action, due to the presence of organic peroxide.

XLPE has the same electrical properties as the conventional polyethylene and, as a result of stable intermolecular bonds, has much better thermal and mechanical properties. This provides XLPE insulated cables to be used at maximum continuous conductor temperature of 90°C while conventional polyethylene insulated cables to be used at that of 75°C. This provides an important advantage in cable ratings and is of special significance in countries or situations where the ambient temperature is high and derating factors have to be applied.



Cable Specification

1. Scope

The cables included in this catalog are manufactured and tested in accordance with IEC Pub. 60502.

2. Construction and Material

1) Conductor

Cables are supplied normally with class 2 of compacted circular or circular stranded conductors in copper, or aluminum.

2) Conductor Screening

All cables of rated voltages above 1.8/3(3.6)kV are supplied with conductor screening which is nonmetallic and consists of either semi-conducting tape or a layer of extruded semi-conducting compound, or a combination of the two.

3) Insulation

Insulation is a layer of extruded cross-linked polyethylene(XLPE).

4) Insulation Screening

For cables at rated voltages above 1.8/3(3.6)kV, insulation screening consists of a non-metallic semi-conducting part in combination with a metallic part and for unarmored cables at rated voltage 1.8/3(3.6)kV, insulation screening consists of metallic screen.

The non-metallic part is applied directly on the insulation and consists of either semi tape or a layer of extruded semi conducting compound.

The extruded insulation screen is normally free strippable(easy removable) type but can be provided with bonded one upon request.

The metallic part is normally applied on the individual cores for rated voltage above 1.8/3(3.6)kV and on the core assembly for rated voltage 1.8/3(3.6)kV and consists of plain annealed copper tape. Instead of copper tape screen, a layer of copper wires, a lead alloy or corrugated aluminum sheath can be provided upon request.

5) Inner Covering or Separation Sheath(for armored cables)

A layer of PVC inner covering is applied under the armor, if there is no screen.

When the metallic screening and the armor are of different metals, an extruded separation sheath of PVC is provided in order to separate the different metals.

6) Metallic Armor

The armor, if required, consists of single layer of round wires or double tapes of galvanized steel or aluminum. Single core cables are normally armored with aluminum because non-magnetic armor is essential for single core cable for use on A.C circuit.

7) Outer Sheath

All cables are normally provided with an extruded PVC outer sheath, black colored(class ST2). Other materials can be available upon request, polyethylene, high flame retardant PVC and etc.

8) Core Identification

The multiple conductors are identified as follows

- For 0.6/1kV to 1.8/3(3.6)kV

Two core : Red, Black or 1(one), 2(two)

Three core : Red, Blue, Black or 1(one), 2(two), 3(three)

Four core : Red, Yellow, Blue, Black or 1(one), 2(two), 3(three), 4(four)

- For 3.6/6(7.2)kV to 18/30(36)kV

Three core : White, Red, Blue or 1(one), 2(two), 3(three)

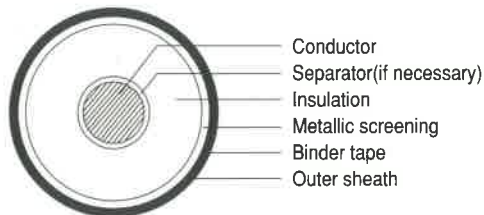
The above color formation will be changed by request.

3. Tests

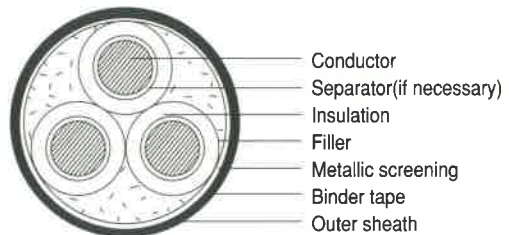
The finished cables meet all the appropriate test requirements specified in IEC Pub. 60502.

TYPICAL CONSTRUCTION OF CABLES

1.8/3(3.6)kV Unarmored Cable(XLPE/PVC)

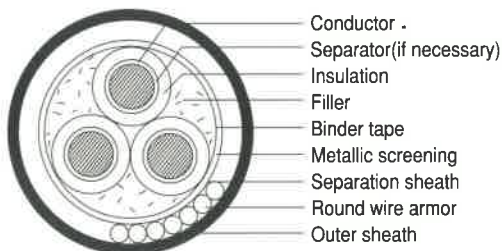


Single core cable

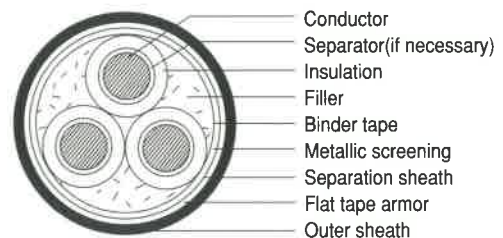


Three core cable

1.8/3(3.6)kV Armored Cable

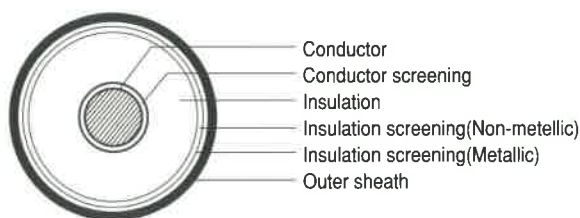


XLPE/SWA*/PVC

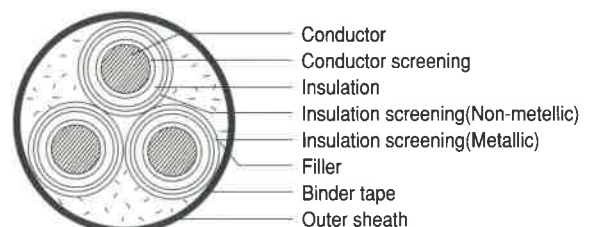


XLPE/DTA**/PVC

3.6/6(7.2)kV - 18/30(36)kV Unarmored Cable(XLPE/PVC)

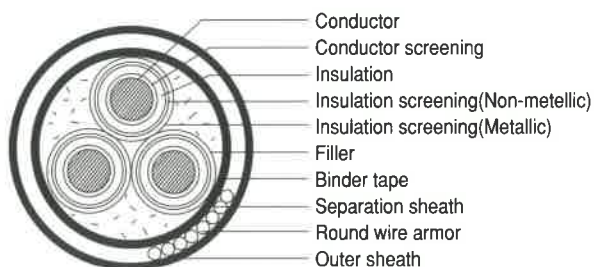


Single core cable

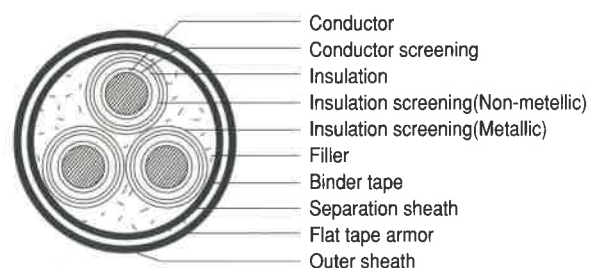


Three core cable

3.6/6(7.2)kV - 18/30(36)kV Armored Cable



XLPE/DTA*/PVC

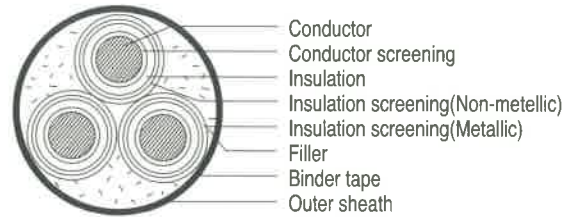


XLPE/DTA**/PVC

- Note : 1) ★ : Single layer of round wire armored. ★★ : Double layer of flat tape armored.
- 2) Water - tight cables can be available by the special request at any rated voltage.

6 / 10(12)kV

XLPE Insulated Unarmored Cable(XLPE / PVC)



Single Core

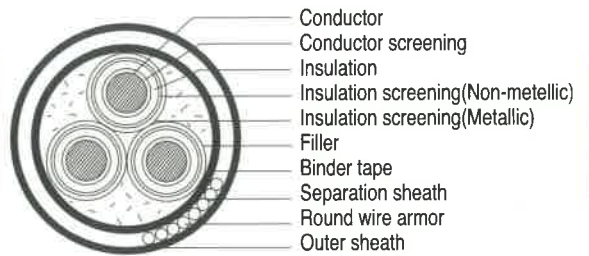
Conductor Nominal Area mm ²	Insulation Thickness mm	Outer Sheath Thickness mm	Approx. Overall Diameter mm	Approx. Cable Weight		Standard Length Per Drum m
				Copper	Aluminum	
				kg/km		
16	3.4	1.8	20	450	350	500
25	3.4	1.8	21	560	400	500
35	3.4	1.8	22	680	460	500
50	3.4	1.8	24	810	520	500
70	3.4	1.8	25	1,050	620	500
95	3.4	1.8	27	1,320	730	500
120	3.4	1.8	28	1,580	840	500
150	3.4	1.9	30	1,880	960	500
185	3.4	1.9	32	2,250	1,100	500
240	3.4	2.0	34	2,870	1,350	500
300	3.4	2.1	37	3,490	1,580	500
400	3.4	2.2	40	4,350	1,920	500
500	3.4	2.3	44	5,440	2,320	500
630	3.4	2.4	47	6,860	2,830	500
800	3.4	2.5	52	8,600	3,430	400
1,000	3.4	2.6	56	10,630	4,150	300

Three Core

Conductor Nominal Area mm ²	Insulation Thickness mm	Outer Sheath Thickness mm	Approx. Overall Diameter mm	Approx. Cable Weight		Standard Length Per Drum m
				Copper	Aluminum	
				kg/km		
16	3.4	2.1	39	1,410	1,100	500
25	3.4	2.2	42	1,800	1,320	500
35	3.4	2.3	45	2,170	1,500	500
50	3.4	2.4	47	2,630	1,730	500
70	3.4	2.5	51	3,400	2,110	500
95	3.4	2.6	55	4,310	2,510	500
120	3.4	2.7	58	5,150	2,890	500
150	3.4	2.9	62	6,100	3,300	500
185	3.4	3.0	66	7,310	3,810	500
240	3.4	3.1	71	9,290	4,680	400
300	3.4	3.3	76	11,240	5,450	300
400	3.4	3.5	83	14,040	6,660	250
500	3.4	3.7	91	17,530	8,050	200

6 / 10(12)kV

XLPE Insulated Wire Armored Cable(XLPE / SWA / PVC)

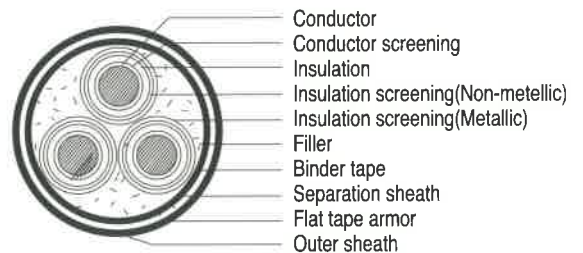


Three Core

Conductor Nominal Area	Insulation Thickness	Separation Sheath Thickness	Armor Wire Size	Outer Sheath Thickness	Approx. Overall Diameter	Approx. Cable Weight		Standard Length Per Drum
						Copper	Aluminum	
mm ²	mm	mm	mm	mm	mm	kg / km		m
16	3.4	1.3	2.5	2.4	47	3,700	2,700	500
25	3.4	1.3	2.5	2.5	50	3,900	3,430	500
35	3.4	1.3	2.5	2.6	53	4,430	3,770	500
50	3.4	1.4	2.5	2.7	56	5,080	4,190	500
70	3.4	1.5	2.5	2.8	60	6,050	4,750	500
95	3.4	1.5	2.5	2.9	64	7,180	5,380	500
120	3.4	1.6	2.5	3.0	67	8,230	5,960	400
150	3.4	1.7	3.15	3.2	72	10,100	6,580	300
185	3.4	1.7	3.15	3.3	76	11,610	8,110	300
240	3.4	1.8	3.15	3.5	82	14,110	9,510	250
300	3.4	1.9	3.15	3.7	87	16,420	10,630	200
400	3.4	2.0	4.0	4.0	96	21,700	12,880	200
500	3.4	2.2	4.0	4.2	104	25,280	15,800	200

6 / 10(12)kV

XLPE Insulated Tape Armored Cable(XLPE / DTA / PVC)

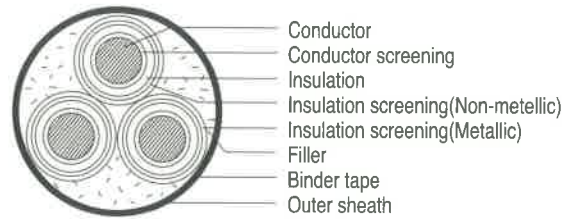


Three Core

Conductor Nominal Area	Insulation Thickness	Separation Sheath Thickness	Armor Wire Size	Outer Sheath Thickness	Approx. Overall Diameter	Approx. Cable Weight		Standard Length Per Drum
						Copper	Aluminum	
mm ²	mm	mm	mm	mm	mm	kg / km		m
16	3.4	1.3	0.5	2.3	44	2,200	1,900	500
25	3.4	1.3	0.5	2.4	47	2,660	2,180	500
35	3.4	1.3	0.5	2.5	50	3,110	2,440	500
50	3.4	1.4	0.5	2.6	53	3,650	2,750	500
70	3.4	1.5	0.5	2.7	56	4,510	3,220	500
95	3.4	1.5	0.5	2.8	60	5,510	3,710	500
120	3.4	1.6	0.5	2.9	64	6,450	4,180	500
150	3.4	1.7	0.5	3.1	68	7,500	4,700	400
185	3.4	1.7	0.5	3.2	71	8,830	5,330	400
240	3.4	1.8	0.5	3.3	77	10,960	6,360	300
300	3.4	1.9	0.5	3.5	82	13,090	7,300	250
400	3.4	2.0	0.8	3.8	91	16,910	9,530	200
500	3.4	2.2	0.8	4.0	99	20,720	11,250	200

8.7/15(17.5)kV

XLPE Insulated Unarmored Cable(XLPE / PVC)



Single Core

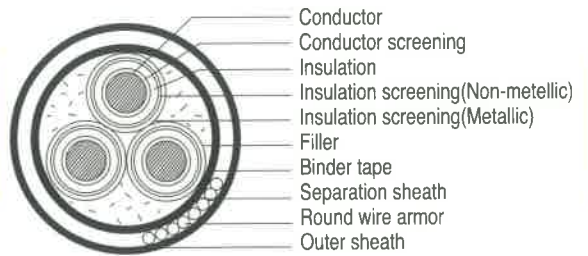
Conductor Nominal Area	Insulation Thickness	Outer Sheath Thickness	Approx. Overall Diameter	Approx. Cable Weight		Standard Length Per Drum
				Copper	Aluminum	
mm ²	mm	mm	mm	kg/km		m
25	4.5	1.8	24	640	480	500
35	4.5	1.8	25	760	540	500
50	4.5	1.8	26	900	610	500
70	4.5	1.8	28	1,140	710	500
95	4.5	1.8	29	1,420	830	500
120	4.5	1.9	31	1,700	950	500
150	4.5	1.9	32	1,990	1,070	500
185	4.5	2.0	34	2,380	1,230	500
240	4.5	2.1	37	3,010	1,490	500
300	4.5	2.1	39	3,620	1,720	500
400	4.5	2.2	42	4,490	2,070	500
500	4.5	2.3	46	5,600	2,480	500
630	4.5	2.5	50	7,050	3,010	500
800	4.5	2.6	54	8,800	3,630	400
1,000	4.5	2.7	58	10,850	4,370	300

Three Core

Conductor Nominal Area	Insulation Thickness	Outer Sheath Thickness	Approx. Overall Diameter	Approx. Cable Weight		Standard Length Per Drum
				Copper	Aluminum	
mm ²	mm	mm	mm	kg/km		m
25	4.5	2.4	47	2,100	1,620	500
35	4.5	2.5	50	2,510	1,840	500
50	4.5	2.6	52	2,980	2,080	500
70	4.5	2.7	56	3,760	2,470	500
95	4.5	2.8	60	4,700	2,900	500
120	4.5	2.9	63	5,590	3,320	500
150	4.5	3.0	67	6,560	3,760	500
185	4.5	3.1	71	7,800	4,300	400
240	4.5	3.3	76	9,820	5,220	300
300	4.5	3.5	81	11,800	6,010	300
400	4.5	3.7	88	14,620	7,240	250
500	4.5	3.9	96	18,150	8,680	200

8.7 / 15(17.5)kV

XLPE Insulated Wire Armored Cable(XLPE / SWA / PVC)

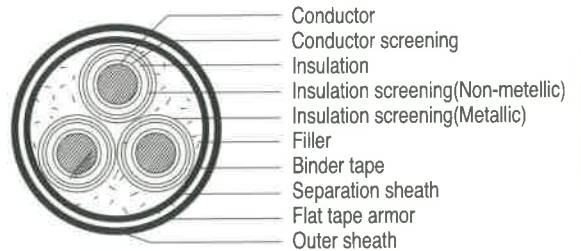


Three Core

Conductor Nominal Area	Insulation Thickness	Separation Sheath Thickness	Armor Wire Size	Outer Sheath Thickness	Approx. Overall Diameter	Approx. Cable Weight		Standard Length Per Drum
						Copper	Aluminum	
mm ²	mm	mm	mm	mm	mm	kg / km		m
25	4.5	1.4	2.5	2.7	55	4,560	4,080	500
35	4.5	1.4	2.5	2.8	58	5,080	4,410	500
50	4.5	1.5	2.5	2.9	61	5,740	4,840	500
70	4.5	1.6	2.5	3.0	65	6,770	5,480	500
95	4.5	1.6	2.5	3.1	69	7,890	6,100	400
120	4.5	1.7	3.15	3.3	74	10,900	6,700	400
150	4.5	1.8	3.15	3.4	77	11,030	8,220	300
185	4.5	1.8	3.15	3.5	81	12,490	8,980	250
240	4.5	1.9	4.0	3.7	89	17,500	10,440	250
300	4.5	2.0	4.0	3.9	84	20,100	12,130	200
400	4.5	2.1	4.0	4.1	101	23,600	13,970	200

8.7 / 15(17.5)kV

XLPE Insulated Tape Armored Cable(XLPE / DTA / PVC)

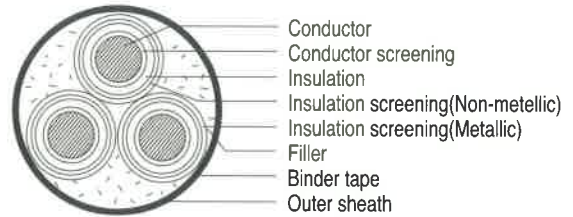


Three Core

Conductor Nominal Area	Insulation Thickness	Separation Sheath Thickness	Armor Wire Size	Outer Sheath Thickness	Approx. Overall Diameter	Approx. Cable Weight		Standard Length Per Drum
						Copper	Aluminum	
mm ²	mm	mm	mm	mm	mm	kg / km		m
25	4.5	1.4	0.5	2.6	52	3,120	2,640	500
35	4.5	1.4	0.5	2.6	55	3,570	2,900	500
50	4.5	1.5	0.5	2.7	58	4,120	3,220	500
70	4.5	1.6	0.5	2.9	62	5,050	3,750	500
95	4.5	1.6	0.5	3.0	66	6,070	4,270	500
120	4.5	1.7	0.5	3.1	69	7,040	4,770	500
150	4.5	1.8	0.5	3.2	73	8,120	5,310	400
185	4.5	1.8	0.5	3.3	77	9,440	5,940	300
240	4.5	1.9	0.5	3.5	83	11,660	7,050	300
300	4.5	2.0	0.8	3.7	89	14,600	8,810	250
400	4.5	2.1	0.8	4.0	96	17,760	10,370	200
500	4.5	2.3	0.8	4.2	105	21,620	12,150	200

12/20(24)kV

XLPE Insulated Unarmored Cable(XLPE / PVC)



Single Core

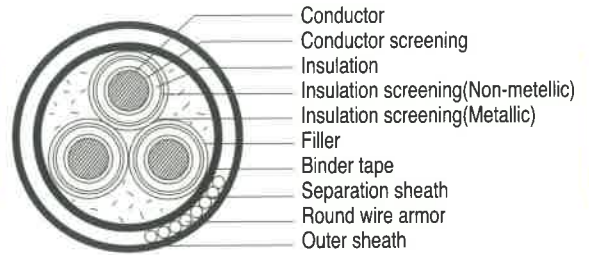
Conductor Nominal Area mm ²	Insulation Thickness mm	Outer Sheath Thickness mm	Approx. Overall Diameter mm	Approx. Cable Weight		Standard Length Per Drum m
				Copper	Aluminum	
				kg/km		
35	5.5	1.8	27	840	620	500
50	5.5	1.8	28	990	690	500
70	5.5	1.9	30	1,230	800	500
95	5.5	1.9	31	1,530	940	500
120	5.5	2.0	33	1,810	1,060	500
150	5.5	2.0	35	2,110	1,190	500
185	5.5	2.1	36	2,510	1,360	500
240	5.5	2.1	39	3,130	1,610	500
300	5.5	2.2	41	3,760	1,860	500
400	5.5	2.3	44	4,650	2,220	500
500	5.5	2.4	48	5,760	2,650	500
630	5.5	2.5	52	7,210	3,180	500
800	5.5	2.6	56	8,980	3,800	400
1,000	5.5	2.8	61	11,060	4,580	300

Three Core

Conductor Nominal Area mm ²	Insulation Thickness mm	Outer Sheath Thickness mm	Approx. Overall Diameter mm	Approx. Cable Weight		Standard Length Per Drum m
				Copper	Aluminum	
				kg/km		
35	5.5	2.6	54	2,850	2,180	500
50	5.5	2.7	57	3,340	2,450	500
70	5.5	2.9	61	4,150	2,850	500
95	5.5	3.0	65	5,110	3,310	500
120	5.5	3.1	68	5,990	3,730	500
150	5.5	3.2	72	6,980	4,180	500
185	5.5	3.3	75	8,240	4,740	400
240	5.5	3.5	81	10,310	5,700	300
300	5.5	3.6	86	12,360	6,570	300
400	5.5	3.8	93	15,220	7,830	200
500	5.5	4.1	101	18,800	9,320	200

12/20(24)kV

XLPE Insulated Wire Armored Cable(XLPE / SWA / PVC)

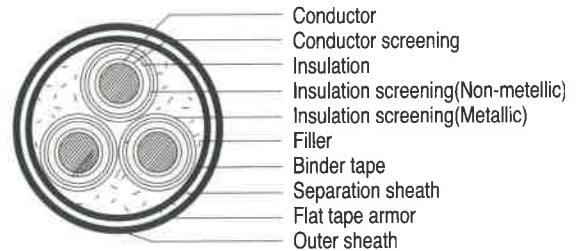


Three Core

Conductor Nominal Area	Insulation Thickness	Separation Sheath Thickness	Armor Wire Size	Outer Sheath Thickness	Approx. Overall Diameter	Approx. Cable Weight		Standard Length Per Drum
						Copper	Aluminum	
mm ²	mm	mm	mm	mm	mm	kg / km		m
35	5.5	1.5	2.5	2.9	63	5,680	5,010	500
50	5.5	1.6	2.5	3.0	66	6,370	5,480	500
70	5.5	1.7	2.5	3.1	70	7,370	6,070	400
95	5.5	1.7	3.15	3.3	75	9,400	7,600	300
120	5.5	1.8	3.15	3.4	79	10,530	8,270	300
150	5.5	1.8	3.15	3.5	82	11,740	8,940	300
185	5.5	1.9	3.15	3.7	86	13,350	9,850	250
240	5.5	2.0	4.0	3.9	94	18,000	11,820	200
300	5.5	2.1	4.0	4.0	99	20,500	13,080	200
400	5.5	2.2	4.0	4.3	106	23,310	15,930	200

12/20(24)KV

XLPE Insulated Tape Armored Cable(XLPE / DTA / PVC)

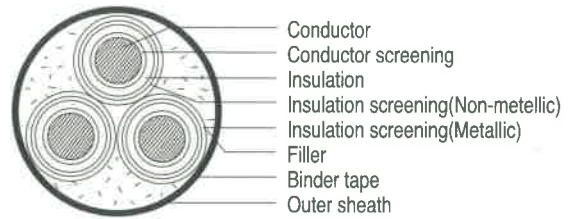


Three Core

Conductor Nominal Area	Insulation Thickness	Separation Sheath Thickness	Armor Wire Size	Outer Sheath Thickness	Approx. Overall Diameter	Approx. Cable Weight		Standard Length Per Drum
						Copper	Aluminum	
mm ²	mm	mm	mm	mm	mm	kg / km		m
35	5.5	1.5	0.5	2.8	60	4,040	3,370	500
50	5.5	1.6	0.5	2.9	63	4,620	3,720	500
70	5.5	1.7	0.5	3.0	67	5,510	4,220	500
95	5.5	1.7	0.5	3.2	71	6,620	4,820	500
120	5.5	1.8	0.5	3.3	74	7,610	5,350	400
150	5.5	1.8	0.5	3.4	78	8,680	5,880	400
185	5.5	1.9	0.5	3.5	81	10,070	6,570	300
240	5.5	2.0	0.8	3.7	89	13,120	8,510	250
300	5.5	2.1	0.8	3.9	94	15,370	9,580	200
400	5.5	2.2	0.8	4.1	101	18,520	11,140	200

18 / 30(36)kV

XLPE Insulated Unarmored Cable(XLPE / PVC)



Single Core

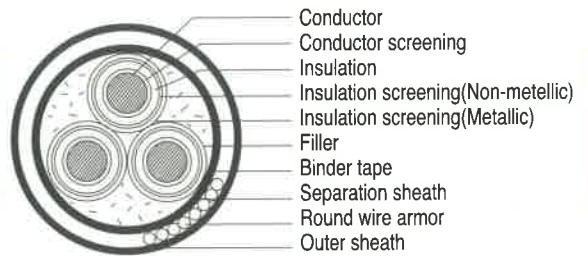
Conductor Nominal Area	Insulation Thickness	Outer Sheath Thickness	Approx. Overall Diameter	Approx. Cable Weight		Standard Length Per Drum
				Copper	Aluminum	
mm ²	mm	mm	mm	kg/km		m
50	8.0	2.0	33	1,260	960	500
70	8.0	2.0	35	1,510	1,090	500
95	8.0	2.1	37	1,830	1,240	500
120	8.0	2.1	38	2,110	1,360	500
150	8.0	2.2	40	2,440	1,510	500
185	8.0	2.2	42	2,830	1,680	500
240	8.0	2.3	44	3,500	1,980	500
300	8.0	2.4	47	4,150	2,250	500
400	8.0	2.5	50	5,070	2,640	500
500	8.0	2.6	54	6,210	3,090	500
630	8.0	2.7	57	7,690	3,650	500
800	8.0	2.8	61	9,490	4,310	400
1,000	8.0	3.0	66	11,600	5,120	300

Three Core

Conductor Nominal Area	Insulation Thickness	Outer Sheath Thickness	Approx. Overall Diameter	Approx. Cable Weight		Standard Length Per Drum
				Copper	Aluminum	
mm ²	mm	mm	mm	kg/km		m
50	8.0	3.1	69	4,360	3,460	500
70	8.0	3.2	72	5,220	3,930	500
95	8.0	3.4	76	6,240	4,440	500
120	8.0	3.5	80	7,180	4,910	500
150	8.0	3.6	83	8,230	5,420	500
185	8.0	3.7	87	9,540	6,040	300
240	8.0	3.8	92	11,720	7,110	300
300	8.0	4.0	97	13,790	8,000	250
400	8.0	4.2	104	16,820	9,430	200
500	8.0	4.4	112	20,500	11,020	200

18 / 30(36)kV

XLPE Insulated Wire Armored Cable(XLPE / SWA / PVC)

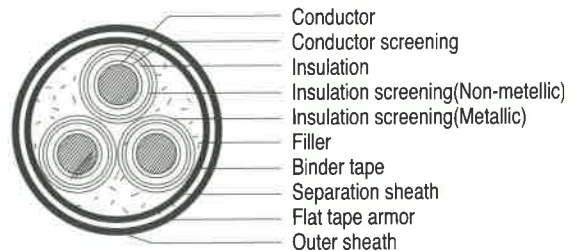


Three Core

Conductor Nominal Area	Insulation Thickness	Separation Sheath Thickness	Armor Wire Size	Outer Sheath Thickness	Approx. Overall Diameter	Approx. Cable Weight		Standard Length Per Drum
						Copper	Aluminum	
mm ²	mm	mm	mm	mm	mm	kg / km		m
50	8.0	1.8	3.15	3.5	79	8,970	8,080	300
70	8.0	1.9	3.15	3.6	83	10,150	8,860	300
95	8.0	1.9	3.15	3.7	87	11,390	9,590	300
120	8.0	2.0	4.0	3.9	93	14,850	10,860	250
150	8.0	2.1	4.0	4.0	96	16,300	11,720	250
185	8.0	2.1	4.0	4.1	100	17,020	13,510	200
240	8.0	2.2	4.0	4.3	106	19,810	15,200	200
300	8.0	2.3	5.0	4.5	113	25,300	17,470	200
400	8.0	2.4	5.0	4.8	121	29,100	19,620	200

18 / 30(36)kV

XLPE Insulated Tape Armored Cable(XLPE / DTA / PVC)



Three Core

Conductor Nominal Area	Insulation Thickness	Separation Sheath Thickness	Armor Wire Size	Outer Sheath Thickness	Approx. Overall Diameter	Approx. Cable Weight		Standard Length Per Drum
						Copper	Aluminum	
mm ²	mm	mm	mm	mm	mm	kg / km		m
50	8.0	1.8	0.5	3.3	75	5,970	5,070	500
70	8.0	1.9	0.5	3.4	79	6,960	5,670	400
95	8.0	1.9	0.8	3.6	84	8,840	7,040	300
120	8.0	2.0	0.8	3.7	87	9,930	7,660	300
150	8.0	2.1	0.8	3.8	91	11,140	8,330	300
185	8.0	2.1	0.8	3.9	95	12,570	9,070	250
240	8.0	2.2	0.8	4.1	101	15,020	10,420	200
300	8.0	2.3	0.8	4.3	106	17,350	11,560	200
400	8.0	2.4	0.8	4.5	113	20,640	13,260	200

POWER CABLE

22.9kV CN / CV - W

22.9kV Concentric Neutral Type XLPE Insulated and PVC Sheathed Waterproof Power Cable(CN / CV - W)

Application For use in direct or multiple earth systems up to 22.9kV

Standard Korea electric power corporation specification

Construction

1. Conductor : Annealed copper compacted circular stranded filled with waterproof type
2. Conductor Screen : Extruded semi - conduction compound
3. Insulation : Cross - linked polyethylene(XLPE)
4. Insulation Screen : Extruded semi - conduction compound
5. Neutral Wire : Copper concentric neutral wire
6. Sheath : Black polyvinyl chloride



22.9kV CN / CV - W

Conductor			Insulation Thickness (mm)	Sheath Thickness (mm)	Approx. Overall Dia. (mm)	Conductor Resistance (Ω / km, 20°C)	Insulation Resistance (M Ω / km)
Nominal Cross Sectional Area (mm ²)	No. and Dia. of Strands (No. / mm)	Outer Dia. (mm)					
38	C.C	7.3	6.6	3.0	34	0.481	3500
60	C.C	9.3	6.6	3.0	36	0.305	3000
100	C.C	12.0	6.6	3.0	40	0.183	2500
150	C.C	14.7	6.6	3.0	43	0.122	2000
200	C.C	17.0	6.6	3.0	45	0.0915	2000
250	C.C	19.0	6.6	3.0	48	0.0739	2000
325	C.C	21.7	6.6	3.0	51	0.0568	2000
400	C.C	24.1	6.6	3.0	54	0.0462	1500
500	C.C	26.9	6.6	3.0	57	0.0369	1500
600	C.C	29.5	6.6	4.0	61	0.0308	1500

C.C : Circular Compacted Conductor



Control & Signal Cable

Classes of Control Cable

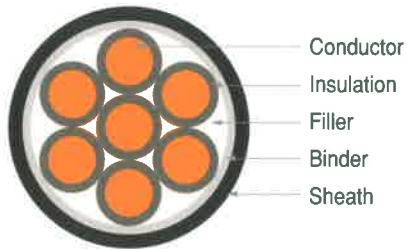
Control Cable	- 0.6/1kV CW
	- 0.6/1kV TFR - CVV
	- 0.6/1kV CCE
	- 0.6/1kV CCV
Control Cable with Shield	- 0.6/1kV CVVS / TFR - CVVS
	- 0.6/1kV CCVS / HFCCOS
	- 0.6/1kV CVVSB / TFR - CVVSB
	- 0.6/1kV CVV - AMS
	- 0.6/1kV CVV - I / CAMS

Conductor Construction For Control Cable

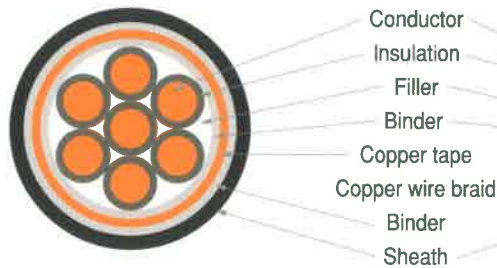
Nominal Cross Area (mm ²)	No. of Wire Wire Diameter (No./mm)	Conductor Resistance (ohm / km at 20°C)
1.5	7/0.53	12.1
2.5	7/0.67	7.41
4	7/0.84	4.61
6	7/1.04	3.08

THE STRUCTURE OF CONTROL CABLE

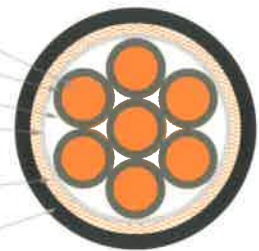
General



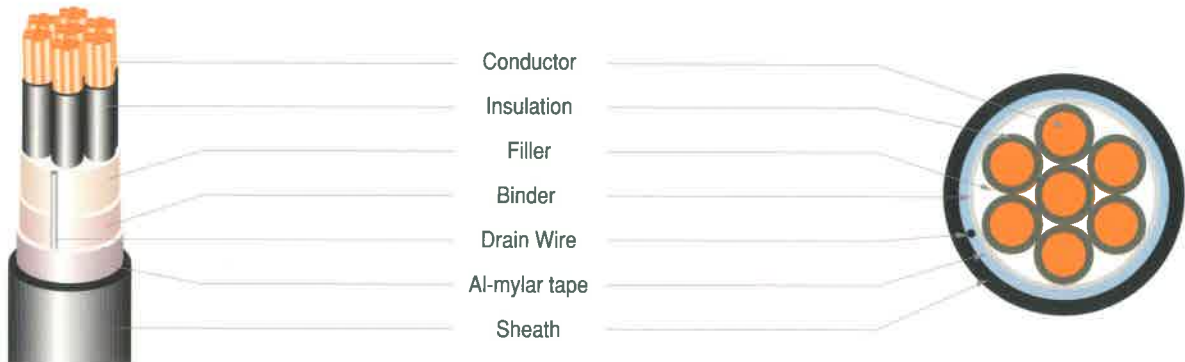
Shield with copper tape



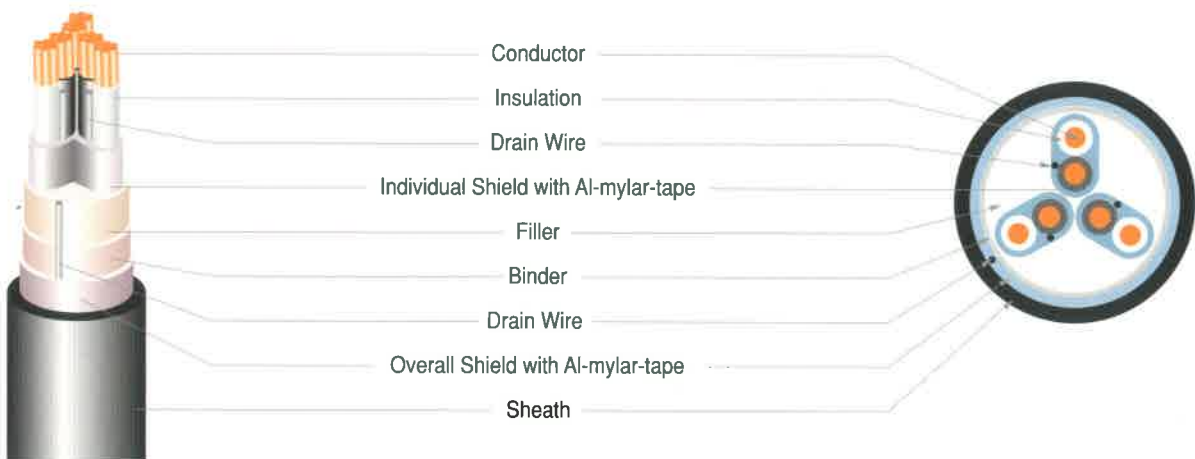
Shield with copper wire braid



Overall shield with Al - mylar - tape(- AMS)



Individual/Overall shield with Al - mylar - tape(-I /C AMS)



CONTROL & SIGNAL CABLE

0.6/1kV CVV, TFR - CVV

No. of Cores	Conductor			Insulation Thickness (mm)	Sheath Thickness (mm)	Approx. Overall Dia. (mm)	Max. Conductor Resistance (Ω /km, 20°C)	Test Voltage (V/5min.)	Approx. Weight (kg/km)	
	Nominal Cross Sectional Area (mm ²)	No. and Dia. of Strands (No./mm)	Outer Dia. (mm)						CVV	TFR-CVV
2C	1.5	7/0.53	1.59	0.8	1.8	10.5	12.1	3500	130	140
	2.5	7/0.67	2.01	0.8	1.8	11.5	7.41	3500	160	170
	4	7/0.85	2.55	1.0	1.8	13.5	4.61	3500	230	230
	6	7/1.04	3.12	1.0	1.8	14.5	3.08	3500	280	290
3C	1.5	7/0.53	1.59	0.8	1.8	11.0	12.1	3500	160	160
	2.5	7/0.67	2.01	0.8	1.8	12.0	7.41	3500	200	200
	4	7/0.85	2.55	1.0	1.8	14.0	4.61	3500	280	290
	6	7/1.04	3.12	1.0	1.8	15.5	3.08	3500	360	370
4C	1.5	7/0.53	1.59	0.8	1.8	12.0	12.1	3500	190	190
	2.5	7/0.67	2.01	0.8	1.8	13.0	7.41	3500	240	250
	4	7/0.85	2.55	1.0	1.8	15.5	4.61	3500	350	360
	6	7/1.04	3.12	1.0	1.8	16.5	3.08	3500	450	460
5C	1.5	7/0.53	1.59	0.8	1.8	13.0	12.1	3500	220	230
	2.5	7/0.67	2.01	0.8	1.8	14.0	7.41	3500	290	290
	4	7/0.85	2.55	1.0	1.8	16.5	4.61	3500	420	430
	6	7/1.04	3.12	1.0	1.8	18.0	3.08	3500	540	550
6C	1.5	7/0.53	1.59	0.8	1.8	14.0	12.1	3500	260	260
	2.5	7/0.67	2.01	0.8	1.8	15.0	7.41	3500	330	340
	4	7/0.85	2.55	1.0	1.8	18.0	4.61	3500	490	500
	6	7/1.04	3.12	1.0	1.8	20.0	3.08	3500	640	650
7C	1.5	7/0.53	1.59	0.8	1.8	14.0	12.1	3500	280	280
	2.5	7/0.67	2.01	0.8	1.8	15.0	7.41	3500	360	370
	4	7/0.85	2.55	1.0	1.8	18.0	4.61	3500	540	540
	6	7/1.04	3.12	1.0	1.8	20.0	3.08	3500	700	710
8C	1.5	7/0.53	1.59	0.8	1.8	15.0	12.1	3500	310	320
	2.5	7/0.67	2.01	0.8	1.8	16.5	7.41	3500	410	420
	4	7/0.85	2.55	1.0	1.8	19.5	4.61	3500	610	620
	6	7/1.04	3.12	1.0	1.8	21.5	3.08	3500	800	810
10C	1.5	7/0.53	1.59	0.8	1.8	17.0	12.1	3500	390	400
	2.5	7/0.67	2.01	0.8	1.8	19.0	7.41	3500	520	530
	4	7/0.85	2.55	1.0	1.8	22.5	4.61	3500	770	790
	6	7/1.04	3.12	1.0	1.8	25.0	3.08	3500	1,020	1030
12C	1.5	7/0.53	1.59	0.8	1.8	17.5	12.1	3500	440	450
	2.5	7/0.67	2.01	0.8	1.8	19.5	7.41	3500	590	600
	4	7/0.85	2.55	1.0	1.8	23.5	4.61	3500	890	900
	6	7/1.04	3.12	1.0	1.8	26.0	3.08	3500	1,170	1190
15C	1.5	7/0.53	1.59	0.8	1.8	19.0	12.1	3500	530	540
	2.5	7/0.67	2.01	0.8	1.8	21.0	7.41	3500	710	720
	4	7/0.85	2.55	1.0	1.8	25.5	4.61	3500	1,070	1080
	6	7/1.04	3.12	1.0	1.8	28.0	3.08	3500	1,420	1440
20C	1.5	7/0.53	1.59	0.8	1.8	21.5	12.1	3500	680	690
	2.5	7/0.67	2.01	0.8	1.8	23.5	7.41	3500	910	930
	4	7/0.85	2.55	1.0	1.8	29.0	4.61	3500	1,410	1420
	6	7/1.04	3.12	1.0	1.8	32.5	3.08	3500	1,900	1920
30C	1.5	7/0.53	1.59	0.8	1.8	25.0	12.1	3500	960	980
	2.5	7/0.67	2.01	0.8	1.8	28.0	7.41	3500	1,310	1320
	4	7/0.85	2.55	1.0	1.9	34.5	4.61	3500	2,060	2080

0.6/1kV CCV, CCE

No. of Cores	Conductor			Insulation Thickness (mm)	Sheath Thickness (mm)	Approx. Overall Dia. (mm)	Max. Conductor Resistance (Ω /km, 20°C)	Test Voltage (V/5min.)	Approx. Weight (kg/km)	
	Nominal Cross Sectional Area (mm ²)	No. and Dia. of Strands (No./mm)	Outer Dia. (mm)						CCV	CCE
2C	1.5	7/0.53	1.59	0.7	1.8	10.5	12.1	3500	120	100
	2.5	7/0.67	2.01	0.7	1.8	11.0	7.41	3500	150	120
	4	7/0.85	2.55	0.7	1.8	12.0	4.61	3500	190	160
	6	7/1.04	3.12	0.7	1.8	13.5	3.08	3500	240	210
3C	1.5	7/0.53	1.59	0.7	1.8	11.0	12.1	3500	140	120
	2.5	7/0.67	2.01	0.7	1.8	11.5	7.41	3500	180	150
	4	7/0.85	2.55	0.7	1.8	13.0	4.61	3500	240	210
	6	7/1.04	3.12	0.7	1.8	14.0	3.08	3500	310	280
4C	1.5	7/0.53	1.59	0.7	1.8	11.5	12.1	3500	170	140
	2.5	7/0.67	2.01	0.7	1.8	12.5	7.41	3500	220	190
	4	7/0.85	2.55	0.7	1.8	14.0	4.61	3500	290	260
	6	7/1.04	3.12	0.7	1.8	15.0	3.08	3500	390	350
5C	1.5	7/0.53	1.59	0.7	1.8	12.5	12.1	3500	200	170
	2.5	7/0.67	2.01	0.7	1.8	13.5	7.41	3500	260	220
	4	7/0.85	2.55	0.7	1.8	15.0	4.61	3500	350	310
	6	7/1.04	3.12	0.7	1.8	16.5	3.08	3500	470	430
6C	1.5	7/0.53	1.59	0.7	1.8	13.5	12.1	3500	230	200
	2.5	7/0.67	2.01	0.7	1.8	14.5	7.41	3500	300	260
	4	7/0.85	2.55	0.7	1.8	16.0	4.61	3500	410	370
	6	7/1.04	3.12	0.7	1.8	18.0	3.08	3500	550	510
7C	1.5	7/0.53	1.59	0.7	1.8	13.5	12.1	3500	240	210
	2.5	7/0.67	2.01	0.7	1.8	14.5	7.41	3500	320	290
	4	7/0.85	2.55	0.7	1.8	16.0	4.61	3500	450	410
	6	7/1.04	3.12	0.7	1.8	18.0	3.08	3500	600	560
8C	1.5	7/0.53	1.59	0.7	1.8	14.5	12.1	3500	270	240
	2.5	7/0.67	2.01	0.7	1.8	15.5	7.41	3500	370	330
	4	7/0.85	2.55	0.7	1.8	17.5	4.61	3500	510	470
	6	7/1.04	3.12	0.7	1.8	19.5	3.08	3500	690	640
10C	1.5	7/0.53	1.59	0.7	1.8	16.5	12.1	3500	340	300
	2.5	7/0.67	2.01	0.7	1.8	18.0	7.41	3500	460	420
	4	7/0.85	2.55	0.7	1.8	20.5	4.61	3500	640	590
	6	7/1.04	3.12	0.7	1.8	22.5	3.08	3500	870	820
12C	1.5	7/0.53	1.59	0.7	1.8	17.0	12.1	3500	380	340
	2.5	7/0.67	2.01	0.7	1.8	18.5	7.41	3500	520	480
	4	7/0.85	2.55	0.7	1.8	21.0	4.61	3500	730	680
	6	7/1.04	3.12	0.7	1.8	23.5	3.08	3500	1010	950
15C	1.5	7/0.53	1.59	0.7	1.8	18.0	12.1	3500	460	410
	2.5	7/0.67	2.01	0.7	1.8	20.0	7.41	3500	620	570
	4	7/0.85	2.55	0.7	1.8	22.5	4.61	3500	890	830
	6	7/1.04	3.12	0.7	1.8	25.0	3.08	3500	1220	1150
20C	1.5	7/0.53	1.59	0.7	1.8	20.5	12.1	3500	580	530
	2.5	7/0.67	2.01	0.7	1.8	22.5	7.41	3500	810	750
	4	7/0.85	2.55	0.7	1.8	25.5	4.61	3500	1150	1090
	6	7/1.04	3.12	0.7	1.8	29.0	3.08	3500	1610	1530
30C	1.5	7/0.53	1.59	0.7	1.8	24.0	12.1	3500	820	760
	2.5	7/0.67	2.01	0.7	1.8	26.5	7.41	3500	1150	1080
	4	7/0.85	2.55	0.7	1.8	30.0	4.61	3500	1680	1590

CONTROL & SIGNAL CABLE

0.6/1kV CWVS, TFR - CVVS

No. of Cores	Conductor			Insulation Thickness (mm)	Sheath Thickness (mm)	Approx. Overall Dia. (mm)	Max. Conductor Resistance (Ω /km, 20°C)	Test Voltage (V/5min.)	Approx. Weight (kg/km)	
	Nominal Cross Sectional Area (mm ²)	No. and Dia. of Strands (No./mm)	Outer Dia. (mm)						CVVS	TER-CVVS
2C	1.5	7/0.53	1.59	0.8	1.8	11.0	12.1	3500	150	160
	2.5	7/0.67	2.01	0.8	1.8	12.0	7.41	3500	190	190
	4	7/0.85	2.55	1.0	1.8	14.0	4.61	3500	250	260
	6	7/1.04	3.12	1.0	1.8	15.0	3.08	3500	310	320
3C	1.5	7/0.53	1.59	0.8	1.8	11.5	12.1	3500	180	190
	2.5	7/0.67	2.01	0.8	1.8	12.5	7.41	3500	220	230
	4	7/0.85	2.55	1.0	1.8	14.5	4.61	3500	310	320
	6	7/1.04	3.12	1.0	1.8	15.5	3.08	3500	400	400
4C	1.5	7/0.53	1.59	0.8	1.8	12.5	12.1	3500	210	220
	2.5	7/0.67	2.01	0.8	1.8	13.5	7.41	3500	270	280
	4	7/0.85	2.55	1.0	1.8	15.5	4.61	3500	380	390
	6	7/1.04	3.12	1.0	1.8	17.0	3.08	3500	490	500
5C	1.5	7/0.53	1.59	0.8	1.8	13.5	12.1	3500	250	260
	2.5	7/0.67	2.01	0.8	1.8	14.5	7.41	3500	320	330
	4	7/0.85	2.55	1.0	1.8	17.0	4.61	3500	460	470
	6	7/1.04	3.12	1.0	1.8	18.5	3.08	3500	590	600
6C	1.5	7/0.53	1.59	0.8	1.8	14.5	12.1	3500	290	300
	2.5	7/0.67	2.01	0.8	1.8	15.5	7.41	3500	370	380
	4	7/0.85	2.55	1.0	1.8	18.5	4.61	3500	530	540
	6	7/1.04	3.12	1.0	1.8	20.0	3.08	3500	690	700
7C	1.5	7/0.53	1.59	0.8	1.8	14.5	12.1	3500	310	310
	2.5	7/0.67	2.01	0.8	1.8	15.5	7.41	3500	400	400
	4	7/0.85	2.55	1.0	1.8	18.5	4.61	3500	580	590
	6	7/1.04	3.12	1.0	1.8	20.0	3.08	3500	750	760
8C	1.5	7/0.53	1.59	0.8	1.8	15.5	12.1	3500	350	350
	2.5	7/0.67	2.01	0.8	1.8	16.5	7.41	3500	450	460
	4	7/0.85	2.55	1.0	1.8	20.0	4.61	3500	660	670
	6	7/1.04	3.12	1.0	1.8	21.5	3.08	3500	850	870
10C	1.5	7/0.53	1.59	0.8	1.8	17.5	12.1	3500	430	440
	2.5	7/0.67	2.01	0.8	1.8	19.0	7.41	3500	560	570
	4	7/0.85	2.55	1.0	1.8	23.0	4.61	3500	830	840
	6	7/1.04	3.12	1.0	1.8	25.5	3.08	3500	1,080	1100
12C	1.5	7/0.53	1.59	0.8	1.8	18.0	12.1	3500	490	490
	2.5	7/0.67	2.01	0.8	1.8	20.0	7.41	3500	640	650
	4	7/0.85	2.55	1.0	1.8	24.0	4.61	3500	940	960
	6	7/1.04	3.12	1.0	1.8	26.0	3.08	3500	1,240	1250
15C	1.5	7/0.53	1.59	0.8	1.8	19.5	12.1	3500	570	580
	2.5	7/0.67	2.01	0.8	1.8	21.5	7.41	3500	760	770
	4	7/0.85	2.55	1.0	1.8	25.5	4.61	3500	1,130	1150
	6	7/1.04	3.12	1.0	1.9	28.5	3.08	3500	1,510	1530
20C	1.5	7/0.53	1.59	0.8	1.8	22.0	12.1	3500	730	740
	2.5	7/0.67	2.01	0.8	1.8	24.0	7.41	3500	970	990
	4	7/0.85	2.55	1.0	1.9	29.5	4.61	3500	1,480	1500
	6	7/1.04	3.12	1.0	2.0	32.5	3.08	3500	1,980	2000
30C	1.5	7/0.53	1.59	0.8	1.8	25.5	12.1	3500	1,020	1040
	2.5	7/0.67	2.01	0.8	1.9	28.5	7.41	3500	1,390	1410
	4	7/0.85	2.55	1.0	2.1	35.0	4.61	3500	2,150	2170

0.6/1kV CCVS, HF-CCOS

No. of Cores	Conductor			Insulation Thickness (mm)	Sheath Thickness (mm)	Approx. Overall Dia. (mm)	Max. Conductor Resistance (Ω /km, 20°C)	Test Voltage (V/5min.)	Approx. Weight (kg/km)	
	Nominal Cross Sectional Area (mm ²)	No. and Dia. of Strands (No./mm)	Outer Dia. (mm)						CCVS	HF-CCOS
2C	1.5	7/0.53	1.59	0.7	1.8	10.5	12.1	3500	140	140
	2.5	7/0.67	2.01	0.7	1.8	11.5	7.41	3500	170	180
	4	7/0.85	2.55	0.7	1.8	12.5	4.61	3500	220	230
	6	7/1.04	3.12	0.7	1.8	13.5	3.08	3500	270	290
3C	1.5	7/0.53	1.59	0.7	1.8	11.0	12.1	3500	160	160
	2.5	7/0.67	2.01	0.7	1.8	12.0	7.41	3500	200	210
	4	7/0.85	2.55	0.7	1.8	13.0	4.61	3500	270	270
	6	7/1.04	3.12	0.7	1.8	14.5	3.08	3500	340	350
4C	1.5	7/0.53	1.59	0.7	1.8	12.0	12.1	3500	190	190
	2.5	7/0.67	2.01	0.7	1.8	13.0	7.41	3500	240	250
	4	7/0.85	2.55	0.7	1.8	14.0	4.61	3500	320	330
	6	7/1.04	3.12	0.7	1.8	15.5	3.08	3500	420	430
5C	1.5	7/0.53	1.59	0.7	1.8	13.0	12.1	3500	220	230
	2.5	7/0.67	2.01	0.7	1.8	14.0	7.41	3500	290	290
	4	7/0.85	2.55	0.7	1.8	15.5	4.61	3500	380	390
	6	7/1.04	3.12	0.7	1.8	17.0	3.08	3500	510	520
6C	1.5	7/0.53	1.59	0.7	1.8	13.5	12.1	3500	260	260
	2.5	7/0.67	2.01	0.7	1.8	15.0	7.41	3500	330	340
	4	7/0.85	2.55	0.7	1.8	16.5	4.61	3500	450	460
	6	7/1.04	3.12	0.7	1.8	18.5	3.08	3500	590	610
7C	1.5	7/0.53	1.59	0.7	1.8	13.5	12.1	3500	270	270
	2.5	7/0.67	2.01	0.7	1.8	15.0	7.41	3500	360	360
	4	7/0.85	2.55	0.7	1.8	16.5	4.61	3500	480	490
	6	7/1.04	3.12	0.7	1.8	18.5	3.08	3500	650	660
8C	1.5	7/0.53	1.59	0.7	1.8	14.5	12.1	3500	310	310
	2.5	7/0.67	2.01	0.7	1.8	16.0	7.41	3500	400	410
	4	7/0.85	2.55	0.7	1.8	18.0	4.61	3500	550	560
	6	7/1.04	3.12	0.7	1.8	19.5	3.08	3500	740	760
10C	1.5	7/0.53	1.59	0.7	1.8	17.0	12.1	3500	380	400
	2.5	7/0.67	2.01	0.7	1.8	18.5	7.41	3500	500	530
	4	7/0.85	2.55	0.7	1.8	20.5	4.61	3500	690	730
	6	7/1.04	3.12	0.7	1.8	23.0	3.08	3500	930	980
12C	1.5	7/0.53	1.59	0.7	1.8	17.0	12.1	3500	420	440
	2.5	7/0.67	2.01	0.7	1.8	19.0	7.41	3500	570	590
	4	7/0.85	2.55	0.7	1.8	21.0	4.61	3500	790	820
	6	7/1.04	3.12	0.7	1.8	23.5	3.08	3500	1060	1100
15C	1.5	7/0.53	1.59	0.7	1.8	18.5	12.1	3500	500	520
	2.5	7/0.67	2.01	0.7	1.8	20.5	7.41	3500	670	700
	4	7/0.85	2.55	0.7	1.8	23.0	4.61	3500	940	970
	6	7/1.04	3.12	0.7	1.8	25.5	3.08	3500	1280	1330
20C	1.5	7/0.53	1.59	0.7	1.8	21.0	12.1	3500	630	660
	2.5	7/0.67	2.01	0.7	1.8	23.0	7.41	3500	860	900
	4	7/0.85	2.55	0.7	1.8	26.0	4.61	3500	1220	1270
	6	7/1.04	3.12	0.7	1.9	29.0	3.08	3500	1680	1750
30C	1.5	7/0.53	1.59	0.7	1.8	24.0	12.1	3500	880	920
	2.5	7/0.67	2.01	0.7	1.8	27.0	7.41	3500	1220	1270
	4	7/0.85	2.55	0.7	1.8	30.5	4.61	3500	1750	1820

CONTROL & SIGNAL CABLE

0.6/1kV CVVSB, TFR - CVVSB

No. of Cores	Conductor			Insulation Thickness (mm)	Sheath Thickness (mm)	Approx. Overall Dia. (mm)	Max. Conductor Resistance (Ω /km, 20°C)	Test Voltage (V/5min.)	Approx. Weight (kg/km)	
	Nominal Cross Sectional Area (mm ²)	No. and Dia. of Strands (No./mm)	Outer Dia. (mm)						CVVSB	TFR-CVVSB
2C	1.5	7/0.53	1.59	0.8	1.8	11.0	12.1	3500	150	160
	2.5	7/0.67	2.01	0.8	1.8	12.0	7.41	3500	190	190
	4	7/0.85	2.55	1.0	1.8	13.5	4.61	3500	260	260
	6	7/1.04	3.12	1.0	1.8	15.0	3.08	3500	320	330
3C	1.5	7/0.53	1.59	0.8	1.8	11.5	12.1	3500	180	190
	2.5	7/0.67	2.01	0.8	1.8	12.5	7.41	3500	220	230
	4	7/0.85	2.55	1.0	1.8	14.5	4.61	3500	310	320
	6	7/1.04	3.12	1.0	1.8	15.5	3.08	3500	400	410
4C	1.5	7/0.53	1.59	0.8	1.8	12.5	12.1	3500	210	220
	2.5	7/0.67	2.01	0.8	1.8	13.5	7.41	3500	270	280
	4	7/0.85	2.55	1.0	1.8	15.5	4.61	3500	380	390
	6	7/1.04	3.12	1.0	1.8	17.0	3.08	3500	490	500
5C	1.5	7/0.53	1.59	0.8	1.8	13.0	12.1	3500	250	260
	2.5	7/0.67	2.01	0.8	1.8	14.5	7.41	3500	320	330
	4	7/0.85	2.55	1.0	1.8	17.0	4.61	3500	460	470
	6	7/1.04	3.12	1.0	1.8	18.5	3.08	3500	590	600
6C	1.5	7/0.53	1.59	0.8	1.8	14.0	12.1	3500	290	300
	2.5	7/0.67	2.01	0.8	1.8	15.5	7.41	3500	370	380
	4	7/0.85	2.55	1.0	1.8	18.5	4.61	3500	540	550
	6	7/1.04	3.12	1.0	1.8	20.0	3.08	3500	690	700
7C	1.5	7/0.53	1.59	0.8	1.8	14.0	12.1	3500	310	320
	2.5	7/0.67	2.01	0.8	1.8	15.5	7.41	3500	400	410
	4	7/0.85	2.55	1.0	1.8	18.5	4.61	3500	580	590
	6	7/1.04	3.12	1.0	1.8	20.0	3.08	3500	750	760
8C	1.5	7/0.53	1.59	0.8	1.8	15.0	12.1	3500	350	360
	2.5	7/0.67	2.01	0.8	1.8	16.5	7.41	3500	450	460
	4	7/0.85	2.55	1.0	1.8	20.0	4.61	3500	660	670
	6	7/1.04	3.12	1.0	1.8	21.5	3.08	3500	870	880
10C	1.5	7/0.53	1.59	0.8	1.8	17.5	12.1	3500	440	450
	2.5	7/0.67	2.01	0.8	1.8	19.0	7.41	3500	570	580
	4	7/0.85	2.55	1.0	1.8	23.0	4.61	3500	840	850
	6	7/1.04	3.12	1.0	1.8	25.5	3.08	3500	1100	1110
12C	1.5	7/0.53	1.59	0.8	1.8	18.0	12.1	3500	490	500
	2.5	7/0.67	2.01	0.8	1.8	19.5	7.41	3500	640	650
	4	7/0.85	2.55	1.0	1.8	24.0	4.61	3500	950	970
	6	7/1.04	3.12	1.0	1.8	26.0	3.08	3500	1260	1270
15C	1.5	7/0.53	1.59	0.8	1.8	19.5	12.1	3500	570	590
	2.5	7/0.67	2.01	0.8	1.8	21.5	7.41	3500	770	780
	4	7/0.85	2.55	1.0	1.8	25.5	4.61	3500	1150	1170
	6	7/1.04	3.12	1.0	1.9	28.5	3.08	3500	1530	1550
20C	1.5	7/0.53	1.59	0.8	1.8	22.0	12.1	3500	740	750
	2.5	7/0.67	2.01	0.8	1.8	24.0	7.41	3500	980	1000
	4	7/0.85	2.55	1.0	1.9	29.5	4.61	3500	1500	1520
	6	7/1.04	3.12	1.0	2.0	32.5	3.08	3500	2000	2020
30C	1.5	7/0.53	1.59	0.8	1.8	25.5	12.1	3500	1040	1050
	2.5	7/0.67	2.01	0.8	1.9	28.5	7.41	3500	1410	1430
	4	7/0.85	2.55	1.0	2.1	35.0	4.61	3500	2170	2200

0.6/1kV CVV - AMS, CVV - I/CAMS(Pair Type)

No. of Pairs	Conductor			Insulation Thickness (mm)	Sheath Thickness (mm)		Approx. Overall Dia. (mm)		Max. Conductor Resistance (Ω /km, 20°C)	Test Voltage (V/5min.)	Approx. Weight (kg/km)	
	Nominal Cross Sectional Area (mm ²)	No. and Dia. of Strands (No./mm)	Outer Dia. (mm)		AMS	I/CAMS	AMS	I/CAMS			AMS	I/CAMS
1P	0.75	7/0.37	1.11	0.8	1.8	1.8	10.5	9.5	24.5	3500	110	100
	1.5	7/0.53	1.59	0.8	1.8	1.8	11.5	10.5	12.1	3500	140	130
	2.5	7/0.67	2.01	0.8	1.8	1.8	12.5	11.5	7.41	3500	170	160
2P	0.75	7/0.37	1.11	0.8	1.8	1.8	14.5	16.5	25.0	3500	200	230
	1.5	7/0.53	1.59	0.8	1.8	1.8	16.5	18.0	12.3	3500	260	290
	2.5	7/0.67	2.01	0.8	1.8	1.8	18.0	20.0	7.56	3500	330	360
3P	0.75	7/0.37	1.11	0.8	1.8	1.8	15.5	17.0	25.0	3500	240	270
	1.5	7/0.53	1.59	0.8	1.8	1.8	17.0	19.5	12.3	3500	320	350
	2.5	7/0.67	2.01	0.8	1.8	1.8	19.0	21.0	7.56	3500	400	440
4P	0.75	7/0.37	1.11	0.8	1.8	1.8	16.5	18.5	25.0	3500	280	320
	1.5	7/0.53	1.59	0.8	1.8	1.8	18.5	21.0	12.3	3500	390	420
	2.5	7/0.67	2.01	0.8	1.8	1.8	20.5	23.0	7.56	3500	500	530
5P	0.75	7/0.37	1.11	0.8	1.8	1.8	18.5	20.5	25.0	3500	340	370
	1.5	7/0.53	1.59	0.8	1.8	1.8	20.5	23.0	12.3	3500	470	500
	2.5	7/0.67	2.01	0.8	1.8	1.8	22.5	25.0	7.56	3500	600	640
6P	0.75	7/0.37	1.11	0.8	1.8	1.8	19.0	22.0	25.0	3500	370	430
	1.5	7/0.53	1.59	0.8	1.8	1.8	21.5	25.0	12.3	3500	520	590
	2.5	7/0.67	2.01	0.8	1.8	1.8	23.5	27.5	7.56	3500	680	750
7P	0.75	7/0.37	1.11	0.8	1.8	1.8	19.0	22.0	25.0	3500	390	460
	1.5	7/0.53	1.59	0.8	1.8	1.8	21.5	25.0	12.3	3500	560	620
	2.5	7/0.67	2.01	0.8	1.8	1.8	23.5	27.5	7.56	3500	730	800
8P	0.75	7/0.37	1.11	0.8	1.8	1.8	20.5	24.0	25.0	3500	450	520
	1.5	7/0.53	1.59	0.8	1.8	1.8	23.0	27.0	12.3	3500	640	710
	2.5	7/0.67	2.01	0.8	1.8	1.9	25.5	30.0	7.56	3500	850	930
9P	0.75	7/0.37	1.11	0.8	1.8	1.8	21.5	25.5	25.0	3500	500	590
	1.5	7/0.53	1.59	0.8	1.8	1.9	24.5	29.0	12.3	3500	710	820
	2.5	7/0.67	2.01	0.8	1.8	2.0	27.0	32.5	7.56	3500	940	1070
10P	0.75	7/0.37	1.11	0.8	1.8	1.8	23.0	27.5	25.0	3500	550	670
	1.5	7/0.53	1.59	0.8	1.8	2.0	26.0	32.0	12.3	3500	800	950
	2.5	7/0.67	2.01	0.8	1.9	2.1	29.0	35.5	7.56	3500	1070	1240
13P	0.75	7/0.37	1.11	0.8	1.8	1.9	24.0	29.5	25.0	3500	650	790
	1.5	7/0.53	1.59	0.8	1.8	2.0	27.5	33.5	12.3	3500	950	1110
	2.5	7/0.67	2.01	0.8	1.9	2.2	30.5	37.5	7.56	3500	1290	1480
14P	0.75	7/0.37	1.11	0.8	1.8	1.9	25.0	30.5	25.0	3500	690	840
	1.5	7/0.53	1.59	0.8	1.9	2.1	28.5	35.0	12.3	3500	1030	1200
	2.5	7/0.67	2.01	0.8	2.0	2.2	32.0	39.0	7.56	3500	1390	1580
15P	0.75	7/0.37	1.11	0.8	1.8	1.9	25.5	31.0	25.0	3500	730	880
	1.5	7/0.53	1.59	0.8	1.9	2.1	29.5	36.0	12.3	3500	1090	1270
	2.5	7/0.67	2.01	0.8	2.0	2.2	32.5	40.0	7.56	3500	1480	1680
20P	0.75	7/0.37	1.11	0.8	1.8	2.1	28.0	35.0	25.0	3500	900	1140
	1.5	7/0.53	1.59	0.8	2.0	2.2	32.0	40.5	12.3	3500	1380	1630
	2.5	7/0.67	2.01	0.8	2.1	2.4	36.0	45.0	7.56	3500	1880	2170
25P	0.75	7/0.37	1.11	0.8	2.0	2.2	32.0	40.0	25.0	3500	1170	1450
	1.5	7/0.53	1.59	0.8	2.1	2.4	37.0	46.0	12.3	3500	1750	2080
	2.5	7/0.67	2.01	0.8	2.3	2.6	41.5	51.5	7.56	3500	2400	2770
30P	0.75	7/0.37	1.11	0.8	2.0	2.3	34.0	42.5	25.0	3500	1330	1670
	1.5	7/0.53	1.59	0.8	2.2	2.5	39.0	49.0	12.3	3500	2040	2410
	2.5	7/0.67	2.01	0.8	2.4	2.7	44.0	55.0	7.56	3500	2800	3220



Technical Reference

- Rating Factors
- Short Circuit Current
- Installation
- Test Requirements
- Conductor Construction & D.C Conductor Resistance

RATING FACTORS

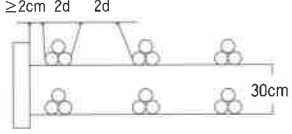
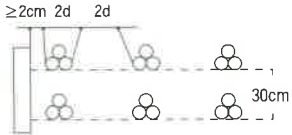
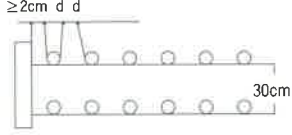
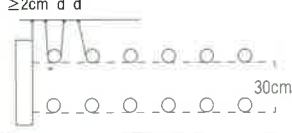
Each current ratings has been determined on the basis of the values for started basic assumption and condition of installation. Where cables are installed in another condition, it is possible to determine the rating more precisely by the use of the various rating factors given hereunder.

Installation in Air

Rating factors relating to open air temperature.

Air temperature(°C)	20	25	30	35	40	45	50
Rating factors	1.18	1.14	1.10	1.05	1.00	0.95	0.90

Rating factors relating to the proximity of other cables systems mounted in the air.

Type of laying	Number of racks	Number of systems		
		1	2	3
Plain rack $\geq 2cm$ 2d 2d 	1	0.95	0.90	0.88
	2	0.90	0.85	0.83
	3	0.88	0.83	0.81
	6	0.86	0.81	0.79
Perforated rack $\geq 2cm$ 2d 2d 	1	1.00	0.98	0.96
	2	1.00	0.95	0.93
	3	1.00	0.94	0.92
	6	1.00	0.93	0.90
Plain rack $\geq 2cm$ d d 	1	0.92	0.89	0.88
	2	0.87	0.84	0.83
	3	0.84	0.82	0.81
	6	0.82	0.80	0.79
Perforated rack $\geq 2cm$ d d 	1	1.00	0.97	0.96
	2	1.00	0.94	0.93
	3	1.00	0.93	0.90
	6	1.00	0.91	0.92

Installation in Ground

Rating factors relating to open air temperature.

Air temperature(°C)	10	15	20	25	30	35	40
Rating factors	1.11	1.07	1.04	1.00	0.96	0.92	0.87

Rating factors relating to the proximity of other cables systems in ground-7 cms clearance.

Number cables	2	3	4	5	6	8	10
Rating factors	0.82	0.76	0.69	0.65	0.61	0.57	0.53

Rating factors relating to thermal ground resistivity.



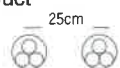
Thermal resistivity (°C cm / w)	70	80	90	100	120	150	200	250	300
Rating factors	1.15	1.11	1.08	1.05	1.00	0.93	0.85	0.78	0.73

Rating factors relating to laying depth.

Depth(cm)	S \leq 50mm ²	S > 50mm ²
50	1.03	1.06
50	1.02	1.04
70	1.01	1.02
80	1.0	1.0
100	0.98	0.98
120	0.96	0.96
150	0.94	0.94

s : conductor size

Rating factors relating to trench and duct effects.

	Number of cable systems	∴	...
Closed trench 	2	0.94	0.94
	3	0.90	0.91
	4	0.88	0.89
Half open trench 	2	0.95	0.95
	3	0.91	0.92
	4	0.89	0.90
Duct 	2	0.87	0.89
	3	0.79	0.81
	4	0.75	0.77

SHORT CIRCUIT CURRENT

Short Circuit(Copper Conductor)



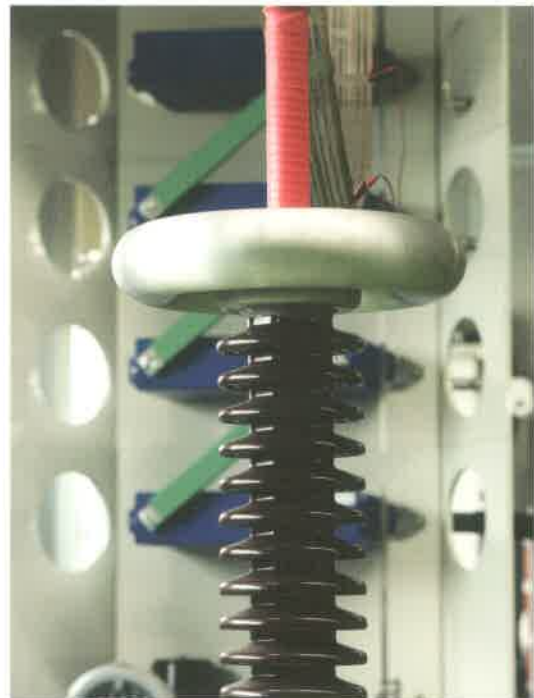
Where I = Short circuit current(KA)
 S = Conductor area(mm²)
 t = Short circuit duration(Sec)

Curves based on formula
 $I = 143 \times \frac{S}{\sqrt{t}} \times 10^{-3} [KA]$



Where I = Short circuit current(KA)
 S = Conductor area(mm²)
 t = Short circuit duration(Sec.)

Curves based on formula
 $I = 94.5 \times \frac{S}{\sqrt{t}} \times 10^{-3} [KA]$



INSTALLATION

Laying

In accordance with the general regulation concerning electrical installations. Cables are to be laid in trenches of a minimum depth of 0.60m.

When it is not possible to carry out a burying depth of 0.60m or when crossing railways, local railway main roads and busy roads, the cables are protected by a continuous sheath, generally in metal, fibercement of sandstone tube, the inner diameter of which is at least equal to 2.5 times that of the cable. Cable trench width must be sufficient to permit satisfactory execution of the work.

According to requirements, various other modes of laying may be considered, among which; laying in ducts or cellular premanufactured pipeworks, on racks in building, etc.

Each of them must be individually studied and the method of laying will be taken into consideration for the making out of the cable operating conditions.

Protection of cables

The laid cables are protected all along their route by a covering of durable and resistant materials intended to protect them against tools during further excavations.

The protective covering must run over the cables.

It is made in such a way that no continuous longitudinal joint angle with the cable is realized. This protection generally consists of bricks, cable covers of appropriate shape or of concrete slabs separated by a thick layer of sand or sifted earth. Taking into account the increasing extension of networks and the constant increase of excavator equipment, it is highly advisable to proceed with the most complete and accurate marking possible of the cable route. Where this method of marking cannot be used, all the dimension figures of the markers necessary for the transfer of the route of the ground are to be indicated on the site drawing.

Cable jointing

If this is not carried out with the maximum of care by a skilled staff and by means of appropriate material, every junction box or end box is weakpoint in the network.

We recommend the use of good quality accessories, the difference in cost between such and those of inferior quality is usually insignificant as compared with the value of the cable and it is therefore short-term policy to provide expensive cables with cheap accessories.

As for the cable route, it is advisable to mark carefully the location of joints both on the ground and in the drawings. With this in mind, we can provide length indicated cable. These indication allows to determine the length of a cable between two successive joints and, from that, the total length of the cable laid.

Allowable maximum pulling tension

The allowable maximum pulling tension of the copper conductor cable is 7kg per mm² and the aluminum conductor cable is 4kg per mm² of conductor total sectional area.

Minimum bending radius

Minimum bending radius to which XLPE cables may be bent for permanent training during installation shall be shown in the table.

These limits do not apply to conduit bends, sheaves or other curved surfaces around which the cable may be pulled under tension while being installed. Larger radius bends are required for such conditions.

In all cases the minimum radius specified refers to the inner surface of the cable and not to axis of the cable.

Kind of the cable	Minimum bending radius as a multiple of cable diameter
- Non - screened cable	
- single core	8
- multi core	6
- Screened cable	
- single core	10
- multi core	8
- Armored cable	
- single core	10
- multi core	10

* Minimum bending radius of segment conductor shall be 12 times of cable diameter.

Electrical tests after installation

At the completion of the cable installation, the following test is recommended to carry out on site for the relevant cable voltage.

Rated voltage(kV)	D.C test voltage(kV) / 15min.
0.6 / 1	6
1.8 / 3(3.6)	11
3.6 / 6(7.2)	18.5
6 / 10(12)	25
8.7 / 15(17.5)	37
12 / 20(24)	50
18 / 30(36)	75.5

TEST REQUIREMENT

	Items	Test Requirements												
Routine tests	1. Resistance of conductors	Reference page 12												
	2. Partial discharge test	3.6/6(7.2)kV - 18/30(36)kV : Not more than 20pC at 1.5U ₀												
	3. Power frequency voltage test	0.6/1kV - 3.6/6(7.2)kV : (2.5U ₀ + 2)kV/5min. 6/10(12)kV - 18/30(36)kV : (2.5U ₀)kV/5min.												
Special tests	1. Conductor examination													
	2. Check of dimension													
	3. Voltage test for 4h	6/10(12)kV - 18/30(36)kV : 3U ₀ kV/4h												
	4. Hot set test	<table border="1"> <thead> <tr> <th>Item</th> <th>Requirements</th> </tr> </thead> <tbody> <tr> <td>Temperature (±3°C)</td> <td>200</td> </tr> <tr> <td>Time under load (Min.)</td> <td>15</td> </tr> <tr> <td>Stress (N/cm²)</td> <td>20</td> </tr> <tr> <td>Max. elongation under load (%)</td> <td>175</td> </tr> <tr> <td>Max. permanent elongation (%) after cooling</td> <td>15</td> </tr> </tbody> </table>	Item	Requirements	Temperature (±3°C)	200	Time under load (Min.)	15	Stress (N/cm ²)	20	Max. elongation under load (%)	175	Max. permanent elongation (%) after cooling	15
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Type tests	1. Partial discharge test	3.6/6(7.2)kV - 18/30(36)kV : Not more than 20pC at 1.5U ₀												
	2. Tanδ measurement	6/10(12)kV - 18/30(36)kV <table border="1"> <thead> <tr> <th>Voltages</th> <th>U₀</th> <th>0.5U₀ - 2U₀</th> </tr> </thead> <tbody> <tr> <td>Max. Tanδ(%)</td> <td>0.4</td> <td>0.2</td> </tr> </tbody> </table> 6/10(12)kV - 18/30(36)kV <table border="1"> <thead> <tr> <th>Temperature and voltages</th> <th>Ambient temperature, 2kV</th> <th>90°C, 2kV</th> </tr> </thead> <tbody> <tr> <td>Max. Tanδ(%)</td> <td>0.4</td> <td>0.8</td> </tr> </tbody> </table>	Voltages	U ₀	0.5U ₀ - 2U ₀	Max. Tanδ(%)	0.4	0.2	Temperature and voltages	Ambient temperature, 2kV	90°C, 2kV	Max. Tanδ(%)	0.4	0.8
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	Max. Tanδ(%)	0.4	0.2											
	Temperature and voltages	Ambient temperature, 2kV	90°C, 2kV											
Max. Tanδ(%)	0.4	0.8												
3. Heating cycle test	<ul style="list-style-type: none"> • 3.6/6(7.2)kV - 18/30(36)kV • Conductor temperature : 100°C • 3 times (On 2h + Off 4h) 													
4. Impulse withstand test	<table border="1"> <thead> <tr> <th>Rated voltage U₀/U (kV)</th> <th>3.6/6(7.2)</th> <th>6/10(12)</th> <th>8.7/15(17.5)</th> <th>12/20(24)</th> <th>18/30(36)</th> </tr> </thead> <tbody> <tr> <td>Test voltage(kV)</td> <td>60</td> <td>75</td> <td>95</td> <td>125</td> <td>170</td> </tr> </tbody> </table> Each 10 shots at 95°C A. C voltage test after impulse withstand test 3.6/6(7.2)kV : (2.5U ₀ + 2)kV/15min. 6/10(12)kV - 18/30kV : (2.5U ₀)kV/15min.	Rated voltage U ₀ /U (kV)	3.6/6(7.2)	6/10(12)	8.7/15(17.5)	12/20(24)	18/30(36)	Test voltage(kV)	60	75	95	125	170	
Rated voltage U ₀ /U (kV)	3.6/6(7.2)	6/10(12)	8.7/15(17.5)	12/20(24)	18/30(36)									
Test voltage(kV)	60	75	95	125	170									
5. High-voltage test for 4h	3.6/6(7.2)kV - 18/30(36)kV : 3U ₀ kV/4h													

CONDUCTOR CONSTRUCTION & D.C CONDUCTOR RESISTANCE

Nominal Cross Sectional Area(mm ²)	Conductor		Approx. Outer diameter (mm)	Maximum D. C resistance of conductor at 20°C	
	Minimum number of wires in the conductor			Copper conductor (class 2) (Ω · km)	Aluminum conductor (class 2) (Ω · km)
	Cu	Al			
1.5	7	-	1.59	12.1	-
2.5	7	-	2.01	7.41	-
4	7	7	2.55	4.61	7.41
6	7	7	3.12	3.08	4.61
10	7	7	4.05	1.83	3.08
16	6	6	4.7	1.15	1.91
25	6	6	5.9	0.727	1.20
35	6	6	7.0	0.524	0.868
50	6	6	8.2	0.387	0.641
70	12	12	9.9	0.268	0.443
95	15	15	11.5	0.193	0.320
120	18	15	13.0	0.153	0.253
150	18	15	14.5	0.124	0.206
185	30	30	16.1	0.0991	0.164
240	34	30	18.6	0.0754	0.125
300	34	30	20.6	0.0601	0.100
400	53	53	23.8	0.0470	0.0778
500	53	53	26.9	0.0366	0.0605
630	53	53	30.4	0.0283	0.0469
800	-	-	34.0	0.0221	0.0367
1,000	-	-	38.0	0.0176	0.0291

10sqmm and less : Circular non-compacted

16sqmm to 630sqmm : Circular compacted

800sqmm and above : Circular segment compacted



Test for Fire Resistance

To satisfy its customers with
the best quality products

ITECO

