



DAIWA ELECTRIC CO., LTD.



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120/1 Moo 7 Soi Suksawad 78, Tambon Bangchak, Phra Pradaeng, Samut Prakan 10130

Tel : +662-817-5580-2 Fax +662-463-4659

E-mail : enternal.456@gmail.com Line ID : Enternal_cable

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DAIWA ELECTRIC CO., LTD.

TECHNICAL DATA FOR ELECTRIC WIRES AND CABLES

Technical Data and General information

A

Copper Conductor Cables

B

Aluminium Conductor Cables

C

Electrical Insulation Tape

D

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A

TECHNICAL DATA AND GENERAL INFORMATION

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B

COPPER CONDUCTOR CABLES

Building Wires and Cable

TIS 11 Part 3 - 2553 : Non-Sheathed Cables for Fixed Wiring

- 60227 IEC 01 THW	B2
- 60227 IEC 02 THW (f)	B3
- 60227 IEC 05 IV	B4
- 60227 IEC 06 IV (f)	B5

TIS 11 Part 4 - 2553 : Sheathed Cables for Fixed Wiring

- 60227 IEC 10 NYY	B5
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TIS 11 Part 3 - 2553 : Flexible Cables (Cords)

- 60227 IEC 52 VKF	B12
- 60227 IEC 52 VCT	B13
- 60227 IEC 53 VKF	B14
- 60227 IEC 53 VCT	B15



TIS 11 Part 101 - 2559 : Sheathed Cables for General Purposes

- VAF	B17
- VAF-G	B18
- NYY	B19
- NYY-G	B23
- VCT	B26
- VCT-G	B28

Low Voltage Power Cables

- 0.6/1KV-CV	B32
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- FHC	B47
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C

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Building Wires and Cables

- THWA	C2
- THWA-C	C3

High Voltage Power Cables

- 24KV-OC	C5
- 33KV-OC	C6

Bare Conductor

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ELECTRICAL INSULATION TAPE

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WIRE GAUGES

Gauge				Diameter		Sectional Area			Weight	
B.W.G.	A.W.G.	S.W.G.	mm.G	Mil	mm.	Cir.Mil	in ²	mm ²	ib/1,000 ft	kg/km
5/0	-	7/0	-	500	12.700	250,000	0.1964	126.7	756.9	1,126
-	-	-	12	472.4	12.000	223,162	0.1753	113.1	675.6	1,005
-	-	6/0	-	464	11.786	215,296	0.1691	109.1	651.7	969.9
-	4/0	-	-	460	11.684	211,600	0.1662	107.2	640.5	953.0
4/0	-	-	-	454	11.532	206,100	0.1619	104.4	624.0	928.1
-	-	5/0	-	432	10.973	186,624	0.1466	94.56	565.0	840.6
3/0	-	-	-	425	10.795	180,600	0.1419	91.52	546.9	813.6
-	3/0	-	-	409.6	10.404	167,772	0.1318	85.03	508.0	755.9
-	-	4/0	-	400	10.160	160,000	0.1257	81.07	484.5	720.7
-	-	-	10	393.7	10.000	155,000	0.1217	78.54	468.0	698.2
2/0	-	-	-	380	9.652	144,400	0.1134	73.17	437.1	650.5
-	-	3/0	-	372	9.440	138,384	0.1087	70.12	418.9	623.4
-	2/0	-	-	364.8	9.266	133,079	0.1045	67.42	402.7	599.4
-	-	-	9	354.3	9.000	125,528	0.09859	63.62	380.0	565.6
-	-	2.0	-	348	8.839	121,104	0.09512	61.36	366.6	545.5
0	-	-	-	340	8.636	115,600	0.09079	58.58	349.9	520.8
-	0	-	-	324.9	8.250	105,560	0.08291	53.49	319.5	475.5
-	-	0	-	324	8.230	104,976	0.08245	53.19	317.8	472.8
-	-	-	8	315	8.000	99,225	0.07793	50.27	300.3	446.9
1	-	1	-	300	7.629	90,000	0.07069	45.6	272.4	405.4
-	1	-	-	289.3	7.348	83,694	0.06573	42.41	253.3	377
2	-	-	-	284	7.214	80,660	0.06335	40.87	244.2	363.3
-	-	2	-	276	7.010	76,176	0.05983	39.60	230.6	343.2
-	-	-	7.0	275.6	7.000	75,955	0.05966	38.48	229.9	342.1
3	-	-	-	259	6.479	67,080	0.05269	33.99	203.1	302.2
-	2	-	-	257.6	6.544	66,358	0.05212	33.63	200.9	299
-	-	-	6.5	255.9	6.500	65,485	0.05143	22.18	189.2	295.0
-	-	3	-	252	6.401	63,504	0.04988	32.18	192.2	286.1
4	-	-	-	238	6.045	56,640	0.04449	28.70	171.5	255.1
-	-	-	6.0	236.2	6.000	55,790	0.04382	28.27	168.9	251.1
-	-	4	-	232	5.893	53,824	0.04227	27.27	162.9	242.4
-	3	-	-	229.4	5.827	52,624	0.04133	26.66	159.3	237.0
5	-	-	-	220	5.588	48,400	0.03801	24.52	146.5	218.0
-	-	-	5.5	216.5	5.500	46,872	0.03681	23.72	141.9	210.9
-	-	5	-	212	5.385	44,944	0.0353	22.77	136	202.4
-	4	-	-	204.3	5.189	41,738	0.03278	21.15	126.3	188.0
6	-	-	-	203	5.156	41,210	0.03237	20.88	124.8	185.6
-	-	-	5.0	196.9	5.000	38,770	0.03045	19.63	117.4	174.5
-	-	6	-	192	4.877	36,864	0.02895	18.68	111.6	166.3
-	5	-	-	181.9	4.621	33,088	0.02599	16.77	100.2	149.1
7	-	-	-	180	4.572	32,400	0.02545	16.42	98.08	146
-	-	-	4.5	177.2	4.500	31,400	0.02466	15.9	95.04	141.4
-	-	7	-	176	4.470	30,976	0.02433	15.7	93.77	139.6
8	-	-	-	165	4.191	27,220	0.02138	13.8	82.40	122.7
-	6	-	-	162	4.115	26,244	0.02061	13.3	79.43	118.2



WIRE GAUGES

Gauge				Diameter		Sectional Area			Weight	
B.W.G.	A.W.G.	S.W.G.	mm.G	Mil	mm.	Cir.Mil	in ²	mm ²	ib/1,000 ft	kg/km
-	-	8	-	160	4.064	25,600	0.02011	12.97	77.50	115.30
-	-	-	4.0	157.5	4.000	24,806	0.01948	12.57	75.08	111.80
9	-	-	-	148	3.759	21,900	0.01720	11.10	66.29	98.68
-	7	-	-	144.3	3.665	20,822	0.01635	10.55	63.01	93.79
-	-	9	-	144	3.658	20,736	0.01629	10.52	62.78	93.52
-	-	-	3.5	137.8	3.500	18,989	0.01491	9.621	57.46	85.53
10	-	-	-	134	3.404	17,960	0.01410	9.098	54.34	80.88
-	8	-	-	128.5	3.264	16,512	0.01297	8.368	49.99	74.39
-	-	10	-	128	3.251	16,384	0.01287	8.302	49.60	73.81
-	-	-	3.2	126	3.200	15,876	0.01247	8.042	48.06	71.49
11	-	-	-	120	3.048	14,400	0.01131	7.297	43.59	64.87
-	-	11	-	116	2.946	13,456	0.01057	6.818	40.74	60.61
-	9	-	-	114.4	2.906	13,087	0.01028	6.632	39.62	58.96
-	-	-	2.9	114.2	2.900	13,042	0.01024	6.605	39.47	58.72
12	-	-	-	109	2.796	11,880	0.009331	6.020	35.96	53.52
-	-	12	-	104	2.642	10,816	0.008495	5.481	32.74	48.73
-	-	-	2.6	102.4	2.600	10,486	0.008246	5.309	31.78	47.29
-	10	-	-	101.9	2.588	10,384	0.008156	5.262	31.43	46.78
13	-	-	-	95	2.413	9,025	0.007088	4.573	27.32	40.65
-	-	13	-	92	2.337	8,464	0.006648	4.289	25.62	38.13
-	11	-	-	90.74	2.305	8,234	0.006467	4.172	24.92	37.09
-	-	-	2.3	90.55	2.300	8,199	0.006439	4.155	24.82	36.94
14	-	-	-	83	2.108	6,889	0.005411	3.491	20.85	31.04
-	12	-	-	80.81	2.053	6,530	0.005129	3.309	19.77	29.42
-	-	14	-	80	2.032	6,400	0.005027	3.243	19.37	28.83
-	-	-	2.0	78.74	2.000	6,200	0.004869	3.142	18.77	27.93
15	-	15	-	72	1.829	5,184	0.004072	2.627	18.46	27.36
-	13	-	-	71.96	1.828	5,178	0.004067	2.624	15.67	23.33
-	-	-	1.8	70.87	1.800	5,023	0.003945	2.545	15.2	22.63
16	-	-	-	65	1.651	4,225	0.003318	2.141	12.79	19.03
-	14	-	-	64.08	1.628	4,106	0.003225	2.081	12.43	18.50
-	-	16	-	64	1.626	4,096	0.003217	2.075	12.40	18.45
-	-	-	1.6	62.99	1.600	3,968	0.003116	2.011	12.01	17.88
17	-	-	-	58	1.473	3,364	0.002642	1.705	10.18	15.16
-	15	-	-	57.07	1.450	3,257	0.002558	1.65	9.859	14.67
-	-	17	-	56	1.422	3,136	0.002463	1.589	9.493	14.13
-	-	-	1.4	55.12	1.400	3,038	0.002386	1.539	9.196	13.68
-	16	-	-	50.82	1.291	2,583	0.002029	1.309	7.82	11.64
18	-	-	-	49	1.245	2,401	0.001886	1.217	7.269	10.82
-	-	18	-	48	1.219	2,304	0.001810	1.167	6.976	10.38
-	-	-	1.2	47.24	1.200	2,232	0.001753	1.131	6.756	10.06
-	17	-	-	45.26	1.150	2,048	0.001608	1.037	6.197	9.219
19	-	-	-	42	1.067	1,764	0.001385	0.8938	5.388	7.946
-	18	-	-	40.3	1.024	1,624	0.001275	0.8226	4.914	7.313
-	-	19	-	40	1.016	1,600	0.001257	0.8107	4.845	7.207
-	-	-	1	39.37	1.000	1,550	0.001217	0.7854	4.690	6.982
-	-	20	-	36	0.914	1,296	0.001018	0.6576	3.923	5.838



WIRE GAUGES

Gauge				Diameter		Sectional Area			Weight	
B.W.G.	A.W.G.	S.W.G.	mm.G	Mil	mm.	Cir.Mil	in ²	mm ²	ib/1,000 ft	kg/km
-	19	-	-	35.89	0.9116	1,288	0.001012	0.6529	3.900	5.804
-	-	-	0.90	35.43	0.9000	1,255	0.0009857	0.6362	3.799	5.656
20	-	-	-	35	0.8890	1,225	0.0009621	0.6207	3.708	5.518
21	-	21	-	32	0.8128	1,024	0.0008042	0.5189	3.099	4.613
-	20	-	-	31.96	0.8118	1,021	0.0008019	0.5174	3.091	4.600
-	-	-	0.08	31.50	0.8000	992.3	0.0007794	0.05027	3.004	4.469
-	21	-	-	28.46	0.7229	810	0.0006362	0.4105	2.452	3.649
22	-	22	-	28	0.7112	784	0.0006158	0.3973	2.373	3.532
-	-	-	0.70	27.56	0.7000	759.6	0.0005966	0.3848	2.299	3.421
-	-	-	0.65	25.59	0.6500	654.8	0.0005143	0.3318	1.982	2.950
-	22	-	-	25.35	0.6438	642.6	0.0005047	0.3256	1.945	2.895
23	-	-	-	25	0.6350	625	0.0004909	0.3167	1.892	2.816
-	-	23	-	24	0.6067	576	0.0004524	0.2919	1.744	2.595
-	-	-	0.60	23.62	0.6000	557.9	0.0004382	0.2827	1.689	2.513
-	23	-	-	22.57	0.5733	509.4	0.0004001	0.2581	1.542	2.295
24	-	24	-	22	0.5583	484	0.0003801	0.2452	1.465	2.180
-	-	-	0.55	21.65	0.5500	468.7	0.0003681	0.2376	1.419	2.112
-	24	-	-	20.10	0.5106	404	0.0003173	0.2047	1.223	1.820
25	-	25	-	20	0.5080	400	0.0003142	0.2027	1.211	1.802
-	-	-	0.50	19.69	0.5000	387.7	0.0003045	0.1963	1.174	1.745
26	-	26	-	18	0.4572	324	0.0002545	0.1642	0.9809	1.460
-	25	-	-	17.90	0.4547	320.4	0.0002516	0.1623	0.9697	1.443
-	-	-	0.45	17.72	0.4500	314	0.0002466	0.159	0.9504	1.414
-	-	27	-	16.4	0.4166	269	0.0002113	0.1363	0.7844	1.212
27	-	-	-	16	0.4064	256	0.0002011	0.1297	0.775	1.153
-	26	-	-	15.94	0.4049	254.1	0.0001996	0.1288	0.7693	1.145
-	-	-	0.40	15.75	0.400	248.1	0.0001949	0.1257	0.7512	1.118
-	-	28	-	14.8	0.3759	219	0.000172	0.1110	0.6629	0.9868
-	27	-	-	14.20	0.3610	201.6	0.0001583	0.1021	0.6101	0.9077
28	-	-	-	14	0.3556	196	0.0001539	0.09932	0.5931	0.8330
-	-	-	0.35	13.78	0.3500	189.9	0.0001491	0.09621	0.5746	0.8553
-	-	29	-	13.6	0.3454	185	0.001453	0.09372	0.5600	0.8332
29	-	-	-	13	0.3302	169	0.0001327	0.08563	0.5114	0.7613
-	28	-	-	12.64	0.3211	159.8	0.0001255	0.08097	0.4837	0.7198
-	-	-	0.30	12.60	0.3200	158.8	0.0001246	0.08042	0.7806	0.7149
-	-	30	-	12.4	0.3150	153.8	0.0001208	0.07791	0.4656	0.6926
30	-	-	-	12	0.3048	144	0.0001131	0.07297	0.4359	0.6487
-	-	31	-	11.6	0.2946	134.6	0.0001057	0.06818	0.4074	0.6061
-	-	-	0.29	11.42	0.2900	130.4	0.0001024	0.06605	0.3947	0.5872
-	29	-	-	11.26	0.2859	126.8	0.0009959	0.06425	0.3838	0.5712
-	-	32	-	10.8	0.2743	116.6	0.00009158	0.05913	0.3530	0.5257
-	-	-	0.26	10.24	0.2600	104.9	0.00008239	0.05309	0.3175	0.4720
-	30	-	-	10.03	0.2546	100.6	0.00007901	0.05097	0.305	0.4531
31	-	33	-	10	0.2540	100	0.00007954	0.05067	0.3027	0.4505
-	-	34	-	9.2	0.2377	84.6	0.00006648	0.04289	0.2562	0.3813
-	-	-	0.23	9.055	0.2300	81.99	0.00006440	0.04155	0.2482	0.3694



WIRE GAUGES

Gauge				Diameter		Sectional Area			Weight	
B.W.G.	A.W.G.	S.W.G.	mm.G	Mil	mm.	Cir.Mil	in ²	mm ²	ib/1,000 ft	kg/km
32	-	-	-	9	0.2286	81.102	0.00006362	0.04104	0.2452	0.3649
-	31	-	-	8.928	0.2238	79.71	0.00006260	0.04039	0.2413	0.3591
-	-	35	-	8.4	0.2134	70.56	0.00005542	0.03575	0.2136	0.3178
33	-	-	-	8	0.2032	64	0.00005027	0.03243	0.1937	0.2883
-	32	-	-	7.950	0.2019	65.20	0.00004964	0.03203	0.1913	0.2847
-	-	-	0.20	7.874	0.2000	62	0.00004869	0.03142	0.1877	0.2793
-	-	36	-	7.6	0.1930	57.76	0.00004536	0.02927	0.1748	0.2602
-	-	-	0.18	7.087	0.1800	50.23	0.00003945	0.02545	0.1520	0.2263
-	33	-	-	7.080	0.1798	50.13	0.00003937	0.02540	0.1517	0.2258
34	-	-	-	7	0.1778	49	0.00003848	0.02483	0.1483	0.2207
-	-	37	-	6.8	0.1727	46.24	0.00003632	0.02343	0.1400	0.2083
-	34	-	-	6.305	0.1601	39.75	0.00003122	0.02014	0.1203	0.1790
-	-	-	0.16	6.299	0.1600	39.68	0.00003116	0.02011	0.1201	0.1788
-	-	38	-	6	0.1524	36	0.00002827	0.01824	0.1090	0.1622
-	35	-	-	5.615	0.1426	31.53	0.00002476	0.01597	0.09543	0.1420
-	-	-	0.14	5.512	0.1400	30.38	0.00002386	0.01539	0.09196	0.1368
-	-	39	-	5.2	0.1321	27.04	0.00002124	0.01370	0.08186	0.1218
35	36	-	-	5.000	0.1270	25	0.00001963	0.01267	0.07565	0.1126
-	-	40	-	4.8	0.1219	23.04	0.00001810	0.01167	0.06976	0.1037
-	-	-	0.12	4.724	0.1200	22.32	0.00001753	0.01131	0.06756	0.1006
-	37	-	-	4.453	0.1131	19.83	0.00001557	0.01005	0.06001	0.08934
-	-	41	-	4.4	0.1118	19.36	0.00001521	0.009810	0.05812	0.08721
36	-	42	-	4	0.1016	16	0.00001257	0.008107	0.04845	0.07207
-	38	-	-	3.965	0.1007	15.72	0.00001235	0.007968	0.04760	0.07084
-	-	-	0.10	3.937	0.1000	15.50	0.00001217	0.007854	0.04690	0.06982
-	-	43	-	3.6	0.09114	12.96	0.00001018	0.006567	0.03923	0.05838
-	39	-	-	3.531	0.08969	12.47	0.000009794	0.006319	0.03775	0.05618
-	-	44	-	3.2	0.08138	10.24	0.000008042	0.005819	0.03099	0.04613
-	40	-	-	3.145	0.07987	9.891	0.000007768	0.005012	0.02994	0.04456
-	41	45	-	3.800	0.07113	7.842	0.000006159	0.003973	0.02374	0.03532
-	42	-	-	2.494	0.06334	6.219	0.000004884	0.003151	0.01882	0.02801
-	-	46	-	2.4	0.06096	5.76	0.000004528	0.002929	0.01744	0.02595
-	43	-	-	2.221	0.05641	4.932	0.000003873	0.002495	0.01498	0.02222
-	-	47	-	2	0.05080	4.000	0.000003142	0.002027	0.01211	0.01802
-	44	-	-	1.987	0.05023	3.911	0.000003072	0.001982	0.01184	0.01762
-	-	-	0.05	1.969	0.05000	3.877	0.000003045	0.001963	0.01174	0.01745
-	45	-	-	1.761	0.04473	3.102	0.000002436	0.001572	0.009383	0.01398
-	-	48	-	1.6	0.04064	2.560	0.000002011	0.001297	0.007750	0.01153
-	46	-	-	1.568	0.03984	2.46	0.000001931	0.001246	0.007446	0.01108
-	47	-	-	1.397	0.03547	1.951	0.000001532	0.0009884	0.005904	0.008787
-	48	-	-	1.224	0.03159	1.547	0.000001215	0.0007838	0.004683	0.006968
-	-	49	-	1.2	0.03048	1.44	0.000001131	0.0007297	0.004359	0.006487
-	49	-	-	1.108	0.02813	1.227	0.000009635	0.006216	0.003713	0.005526
-	-	50	-	1	0.02540	1	0.000007854	0.005067	0.003027	0.004505
-	50	-	-	0.986	0.02505	0.9728	0.000007641	0.004929	0.002945	0.004382

NOTE :

B.W.G. - Birmingham Iron Wire Gauge

S.W.G. - British Standard Wire Gauge

A.W.G. - American Wire Gauge

mm.G. - Millimeter Gauge



Continuous Current Rating for Each condition of Wires & Cables

1. Maximum allowable current carrying capacities for the insulated cables installed in location where the ambient temperature is not exceedd 40°C shall not be less than those stated in the tables.
2. In location where the ambient temperature differ from 40°C (Install in free air) and 30°C (Install in ground).
The multiplier in the table below shall be used to obtain the maximum allowable current carrying capacities

Temperature (°C)	Multiplier			
	In air (Ambient temperature 40 °C) Insulation grade		In ground (Ambient temperature 30 °C) Insulation grade	
	70 °C	90 °C	70 °C	90 °C
21-25	1.23	1.14	1.06	1.04
26-30	1.16	1.09	1	1
31-35	1.08	1.05	0.94	0.96
36-40	1	1	0.87	0.91
41-45	0.91	0.95	0.79	0.87
46-50	0.82	0.89	0.71	0.82
51-55	0.71	0.84	0.61	0.77
56-60	0.58	0.78	0.5	0.71
61-65	0.41	0.71	0.35	0.65
66-70	-	0.63	-	0.58
71-75	-	0.54	-	0.5
76-80	-	0.45	-	0.41
81-85	-	0.32	-	0.29
86-90	-	-	-	-

3. In a single conduit where the conductors are installed, the allowable ampacity of each conductor shall be reduced as shown in the following table.

NUMBER OF CORE	MULTIPLIER
4-6	0.82
7-9	0.72
10-20	0.56
21-30	0.48
31-40	0.44
Over - 40	0.38

Remark : For multicore cables, the number of core is counted as number of wire by excepting the ground.

**Ref to MEA (Metropolitan Electricity Authority)*



Temperature Correction Factors for Conductor Resistance

Factors for correcting resistances at various temperatures of conductor to the standard reference temperature of 20 °C and reciprocals of the factors calculating resistances at other temperatures from the value at 20 °C

Temperature (°C)	Correction Factor		Reciprocal of Factor	
	Copper	Aluminum	Copper	Aluminum
0	1.085	1.088	0.921	0.919
5	1.063	1.064	0.941	0.940
10	1.041	1.042	0.961	0.960
15	1.020	1.021	0.980	0.980
20	1.000	1.000	1.000	1.000
25	0.981	0.980	1.020	1.020
30	0.962	0.961	1.039	1.040
35	0.944	0.943	1.059	1.060
40	0.927	0.925	1.079	1.081
45	0.911	0.908	1.098	1.101
50	0.895	0.892	1.118	1.121
55	0.879	0.876	1.138	1.141
60	0.864	0.861	1.157	1.161
65	0.850	0.846	1.177	1.181
70	0.836	0.832	1.197	1.202
75	0.822	0.819	1.216	1.222
80	0.809	0.805	1.236	1.242
85	0.797	0.792	1.255	1.262
90	0.784	0.78	1.275	1.282

The correction factor is given by:

$$k = \frac{1}{k_1} = \frac{1}{1 + \alpha(\theta - 20)}$$

Where:

k = temperature correction factor of conductor

k₁ = reciprocal of k

α = constant mass temperature coefficient at 20 °C per °C

= 0.00393 for copper (based on 100% conductivity)

= 0.00403 for aluminum (based on 61% conductivity)

θ = referred temperature, °C



Condition of Installation

Minimum Bending Radius

D : Overall diameter of cable

Number of core Type of cable		Single core		Multi-cores
		Round conductor	Sector shape conductor	
PVC & PE Sheath	Unshield cable	8D	12D	6D
	Shield cable	10D	12D	8D
Wire armoured cable		10D	12D	10D
Lead sheathed		10D	12D	10D
Corrugated armoured cable		-	-	8D
Flat tape armoured cable		-	-	8D
Al. flat sheathed cable		20D	20D	20D
Al. corrugated sheathed cable		15D	15D	15D
Al. solid conductor		-	-	10D
Cable tie cable		6D	-	4D

Permissible maximum pulling tension

Unit : kgf.

Pulling tool	Material of conductor	Permissible maximum pulling tension
Pulling eye	Copper	$7 \times (\text{Number of core}) \times (\text{Cross-sectional area of conductor})$
	Aluminium	$4 \times (\text{Number of core}) \times (\text{Cross-sectional area of conductor})$
Cable grip	Copper & Aluminium	The same as using the pulling eye, but the maximum tension should be less than 1.5 tons.

Note : When cable grip is used it should cover more than 500 mm. in length of the cable end and be bound to the cable sheath



AC/DC Resistance Ratios

The AC/DC resistance ratio of the conductor is given by the following formula.

$$k_2 = 1 + \lambda_s + \lambda_p$$

Where:

k_2 = AC/DC resistance ratio of conductor

λ_s = skin effect factor

λ_p = proximity effect factor

The skin effect factor is given by ;

$$\lambda_s = \frac{X^4}{192 + 0.8X^4}$$

Where:

$$X = \sqrt{\frac{8\pi f}{R_0 k_1 \times 10^4}}$$

f = supply frequency, HZ

R_0 = DC resistance of conductor at 20 °C, Ω/km

k_1 = reciprocal factor of temperature correction factor

The proximity effect factor is given by ;

$$\lambda_p = \frac{X'^4}{192 + 0.8X'^4} \left(\frac{d_1}{s} \right)^2 \left\{ 0.312 \left(\frac{d_1}{s} \right)^2 + \frac{1.18}{\frac{X'^4}{192 + 0.8X'^4} + 0.27} \right\}$$

Where:

$$X' = \sqrt{0.8} X$$

d_1 = diameter of conductor , mm

s = distance between conductor axis, mm

Properties of Insulation And Jacket Materials

General Comparison Data



Material	Polyvinyl Chloride	Low Density Polyethylene	Cross-linked Polyethylene	Polysoprene	Styrene Butadiene Copolymer	Polysiprene	Chlorosulphonated Polyethylene
Designation	PVC	PE	XLPE	NR	SBR	CR	CSM
Chemical structure	$\text{-(CH}_2\text{-CH)}_n\text{Cl}$	$\text{-(CH}_2\text{-CH}_2\text{)}_n$	$\text{-(CH}_2\text{-CH-CH}_2\text{)}_n$ $\text{-(CH}_2\text{-CH-CH}_2\text{)}_n$	$\text{-(CH}_2\text{-C(CH}_3\text{)=CH-CH}_2\text{)}_n$ $\text{-(CH}_2\text{-C(CH}_3\text{)=CH-CH}_2\text{)}_n$	$\text{-(CH}_2\text{-CH=CH-CH}_2\text{)}_n$ $\text{-(CH}_2\text{-CH=CH-CH}_2\text{)}_n$	$\text{-(CH}_2\text{-C(CH}_3\text{)=CH-CH}_2\text{)}_n$ $\text{-(CH}_2\text{-C(CH}_3\text{)=CH-CH}_2\text{)}_n$	$\text{-(CH}_2\text{)}_n\text{-CH-SO}_2\text{Cl}$ $\text{-(CH}_2\text{)}_n\text{-CH-SO}_2\text{Cl}$
Density	1.3-1.5	0.91-0.93	0.91-0.93	0.93-0.94	0.93-0.94	1.15-1.23	1.10
Hardness(Shore)	D30-90	D45-60		30-90	10-95	20-90	50-90
Max. Operating Temp.	70	75	90	60	75	80	90
Emergency Temp. Rating	85	90	130	85			
Short Circuit Temp. Rating	120	150	250	150			
Brittleness Temp.	~40	<-70	<-70	-55~-58	-30~-65	-30~-50	-20~-50
Softening Temp.	120-140	100-115					
Thermal Expansion	$0.7\text{-}2.5 \times 10^{-4}$	$1.6\text{-}1.8 \times 10^{-4}$	$1.6\text{-}1.8 \times 10^{-4}$	1.8×10^{-4}	1.8×10^{-4}	1.9×10^{-4}	1.8×10^{-4}
Thermal Conductivity Cal/cm•sec•°C	$3.0\text{-}4.0 \times 10^{-4}$	8.0×10^{-4}	8.0×10^{-4}	5.1×10^{-4}	5.8×10^{-4}	5.6×10^{-4}	6.3×10^{-4}
Specific Heat	0.3-0.5	0.55	0.55	0.52	-	0.52	
Tensile Strength	1.5-2.5	1.5-2.0	1.8-3.0	0.8-3.0	0.4-3.0	0.7-3.0	0.5-2.0
Elongation	200-400	300-700	300-700	300-700	100-700	400-900	100-500
Abrasion Resistance	Excellent	Good	Excellent	Good	Good	Good	Good
Voltage Breakdown	20-30	30-50	30-50	16-32	16-30	15-25	16-32
Volume Resistivity	$10^{12}\text{-}10^{15}$	$>10^{16}$	$>10^{16}$	10^{15}	$10^{14}\text{-}10^{15}$	$10^{10}\text{-}10^{12}$	$10^{13}\text{-}10^{14}$
Dielectric Constant	5.7	2.2-2.4	2.2-2.4	3-5	3-5	7-10	-
Dissipation Factor (tan δ)	0.1-0.03	<0.0005	<0.0005	0.3-0.5	2-5	1.7-4	-
Weathering	Good	Inferior*	Inferior*	Poor	Poor	Excellent	Good
Ozone Resistance	Excellent	Excellent	Excellent	Poor	Inferior	Good	Good
Flame Resistance	Self-Extinguish	Burn	Burn	Burn	Burn	Self-Extinguish	Self-Extinguish
Track Resistance	Inferior	Excellent	Excellent	Fair	Fair	inferior	Good
Water Resistance	Fair	Excellent	Excellent	Fair	Fair	Fair	Fair
Acid Resistance	Excellent	Good	Good	Good	Fair	Excellent	Good
Alcali Resistance	Excellent	Excellent	Excellent	Good	Good	Excellent	Excellent
Oil Resistance	Good	Excellent	Excellent	Poor	inferior	Good	Fair
Solvent Resistance	Fair	Excellent	Excellent	Inferior	Inferior	Fair	Fair

* Improve to "good" with mixture of carbon black.

Properties of Insulation And Jacket Materials

General Comparison Data



Material	Ethylene Propylene Copolymer EPM, EPDM	Hexafluoropropylene Vinylidene fluoride Copolymer FPM	Polyorganosiloxane Q	Polypropylene PP	Polytetra Fluoroethylene PTFE	Polychloro Trifluoroethylene PCTFE	Polyamide Nylon(12)
Designation							
Chemical structure	$\begin{array}{c} \text{-(CH}_2\text{-CH}_2\text{)}_n\text{-} \\ \text{CH}_3 \end{array}$	$\begin{array}{c} \text{CF}_3 \quad \text{F} \\ \quad \\ \text{-(C-C(CH}_2\text{-C)}_n\text{-)} \\ \quad \\ \text{F} \quad \text{F} \end{array}$	$\begin{array}{c} \text{R} \quad \text{R} \\ \quad \\ \text{-(Si-O)}_n\text{-} \end{array}$	$\text{-(CH}_2\text{-CH(CH}_3\text{))}_n\text{-}$	$\begin{array}{c} \text{F} \quad \text{F} \\ \quad \\ \text{-(C-C)}_n\text{-} \\ \quad \\ \text{F} \quad \text{F} \end{array}$	$\begin{array}{c} \text{F} \quad \text{F} \\ \quad \\ \text{-(C-C)}_n\text{-} \\ \quad \\ \text{Cl} \quad \text{F} \end{array}$	$\text{-(HN(CH}_2\text{)}_{11}\text{C(=O))}_n\text{-}$
Density	0.86-0.87	1.82-1.85	0.97-1.40	0.9-0.915	2.13-2.2	2.1	1.01-1.02
Hardness(Shore)	40-85	60-90	50-85	R85-110	D50-65	R110-115	R100-110
Max. Operating Temp. °C	90	200	180	80	260	180	90
Emergency Temp. Rating °C							
Short Circuit Temp. Rating °C				150	310		120
Brittleness Temp. °C	-40~-60	-44~-60	-70~-100		<-70	<-70	-70
Softening Temp. °C						210	170-180
Thermal Expansion /°C		1.6x10 ⁻⁴	2.6x10 ⁻⁴	0.6-8.5x10 ⁻⁴	1.0x10 ⁻⁵	4.5-7.0x10 ⁻⁵	12x10 ⁻⁵
Thermal Conductivity Cal/cm•sec•°C		5.5x10 ⁻⁴	5.7x10 ⁻⁴	2.8x10 ⁻⁴	6x10 ⁻⁴	6x10 ⁻⁴	5.9-8.3x10 ⁻⁴
Specific Heat Cal/°C•g				0.46	0.25	0.22	0.62
Tensile Strength kg /mm ²	0.5-1.5	1.5-2.5	0.3-1.0	2.0-4.0	1.4-2.1	2.8-3.5	5.0-6.0
Elongation %	300-700	200-600	50-300	200-700	200	10-100	180-285
Abrasion Resistance	Good	Good	Fair	Excellent	Excellent	Excellent	Excellent
Voltage Breakdown kv / mm	20-35	24	20-40	20-32	15-30	10-20	20-30
Volume Resistivity Ω • cm	10 ¹⁴ -10 ¹⁵	10 ¹² -10 ¹⁴	10 ¹⁴ -10 ¹⁵	>10 ¹⁶	>10 ¹⁸	1.2-10 ¹⁸	10 ¹⁴ -10 ¹⁵
Dielectric Constant	3-5	6-7	3-4	2.0-2.2	2.0	2.24-2.8	3.5-4.5
Dissipation Factor (tan δ)	0.2-0.8		0.1-1.0	0.0002-0.0006	<0.0002	0.0012-0.0036	0.03-0.06
Weathering	Excellent	Good	Good	Inferior*	Excellent	Excellent	Inferior*
Ozone Resistance	Excellent	Good	Excellent	Excellent	Excellent	Excellent	Good
Flame Resistance	Burn	Self-Extinguish	Burn	Burn	No Burn	No Burn	Burn
Track Resistance	Excellent	Fair	Excellent	Excellent	Excellent	Excellent	Good
Water Resistance	Good	Excellent	Fair	Excellent	Excellent	Excellent	Excellent
Acid Resistance	Excellent	Excellent	Poor	Excellent	Excellent	Excellent	Good
Alkali Resistance	Excellent	Excellent	Good	Excellent	Excellent	Excellent	Excellent
Oil Resistance	Inferior*	Excellent	Fair	Excellent	Excellent	Excellent	Excellent
Solvent Resistance	Poor	Excellent	Fair	Excellent	Excellent	Excellent	Good

* Improve to "good" with mixture of carbon black.



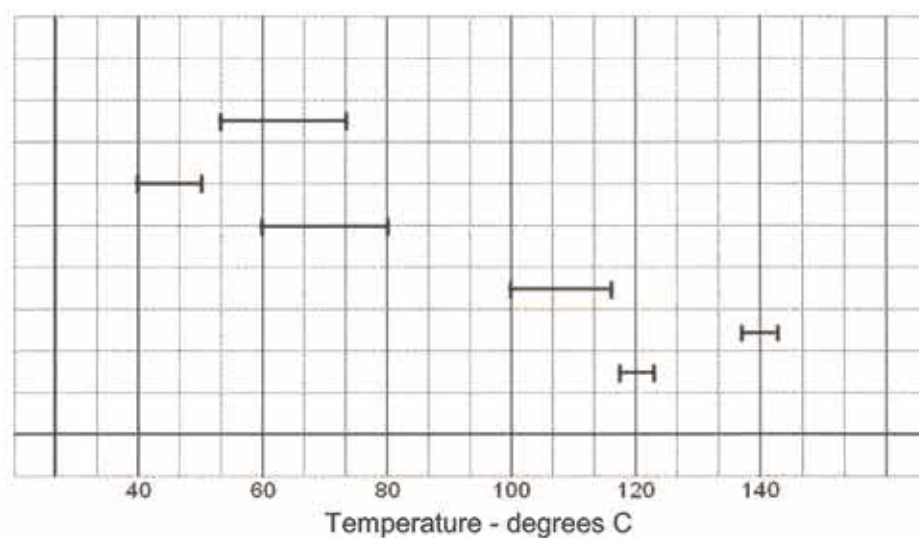
Properties of Insulation and Jacket Materials

Thermal Properties

Deflection temperature of plastics under load [ASTM D648]

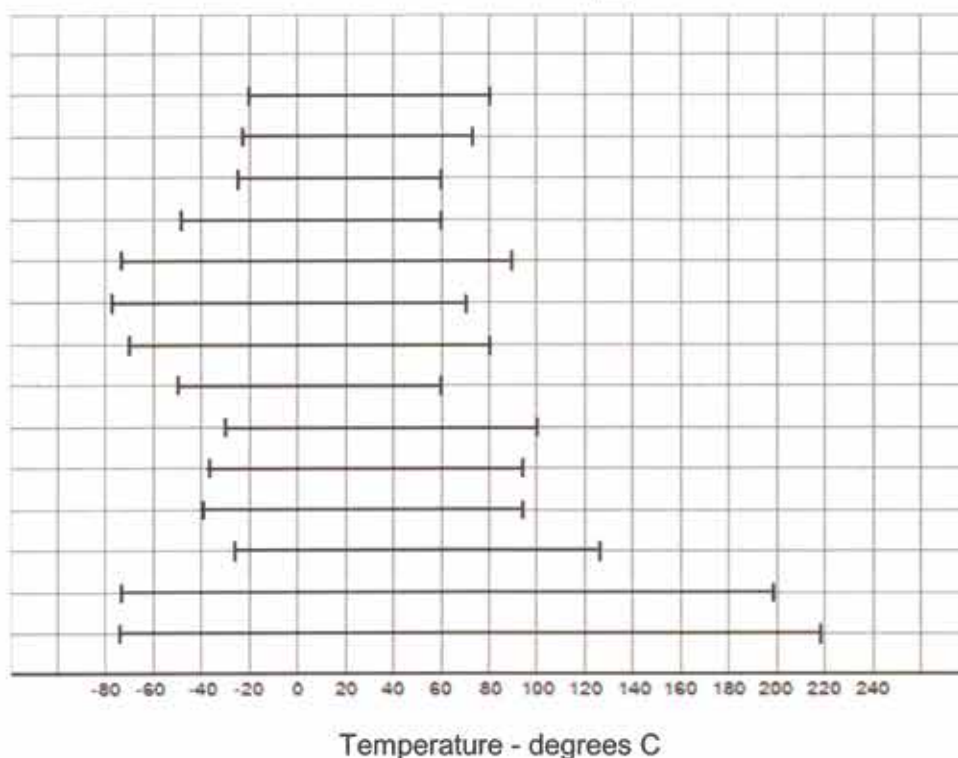
Polyvinyl Chloride (Hard Type)
Low Density Polyethylene
High Density Polyethylene

Polypropylene
Polyamide
Polyamide
Polytetrafluoroethylene



Operating Temperature

Max. Point : Max Continuous Operating Temperature
Min.point : Brittleness Temperature

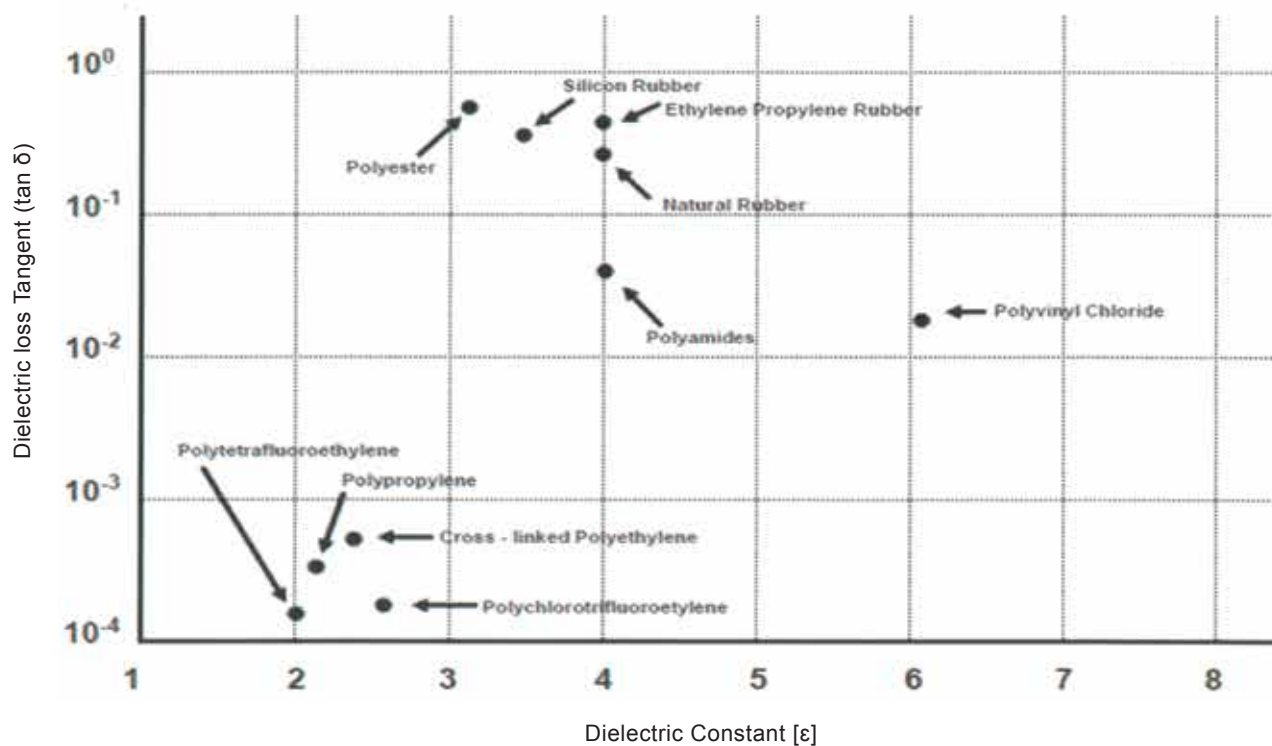
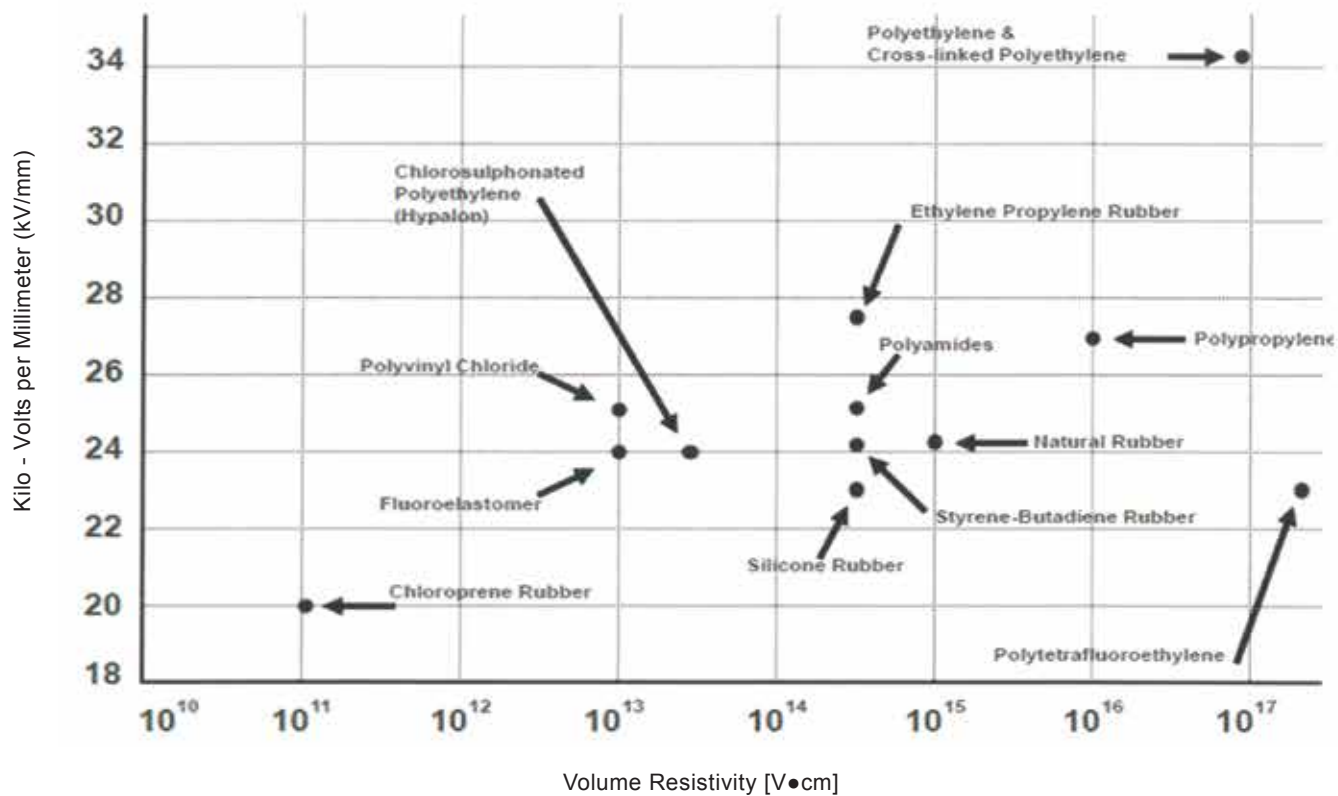


Polyvinyl Chloride, 80 °C Grade
Polyvinyl Chloride, 75 °C Grade
Polyvinyl Chloride, 60 °C Grade
Cold Resisting Polyvinyl Chloride
Cross-Linked Polyethylene
Polyethylene
Nylon
Synthetic Natural Rubber
Chloroprene
Styrene-Butadiene Rubber
Ethylene-Propylene Rubber
Chlorosulphonated Polyethylene (Hypalon)
Silicone
Teflon



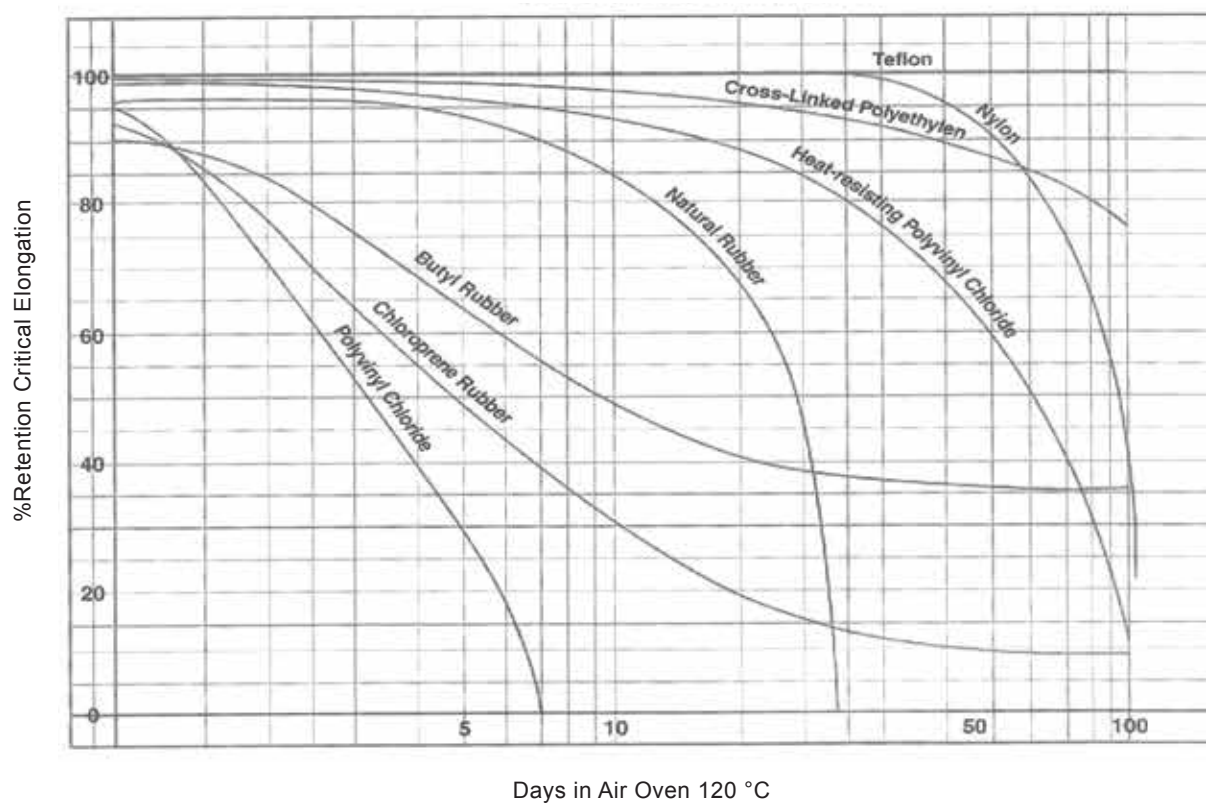
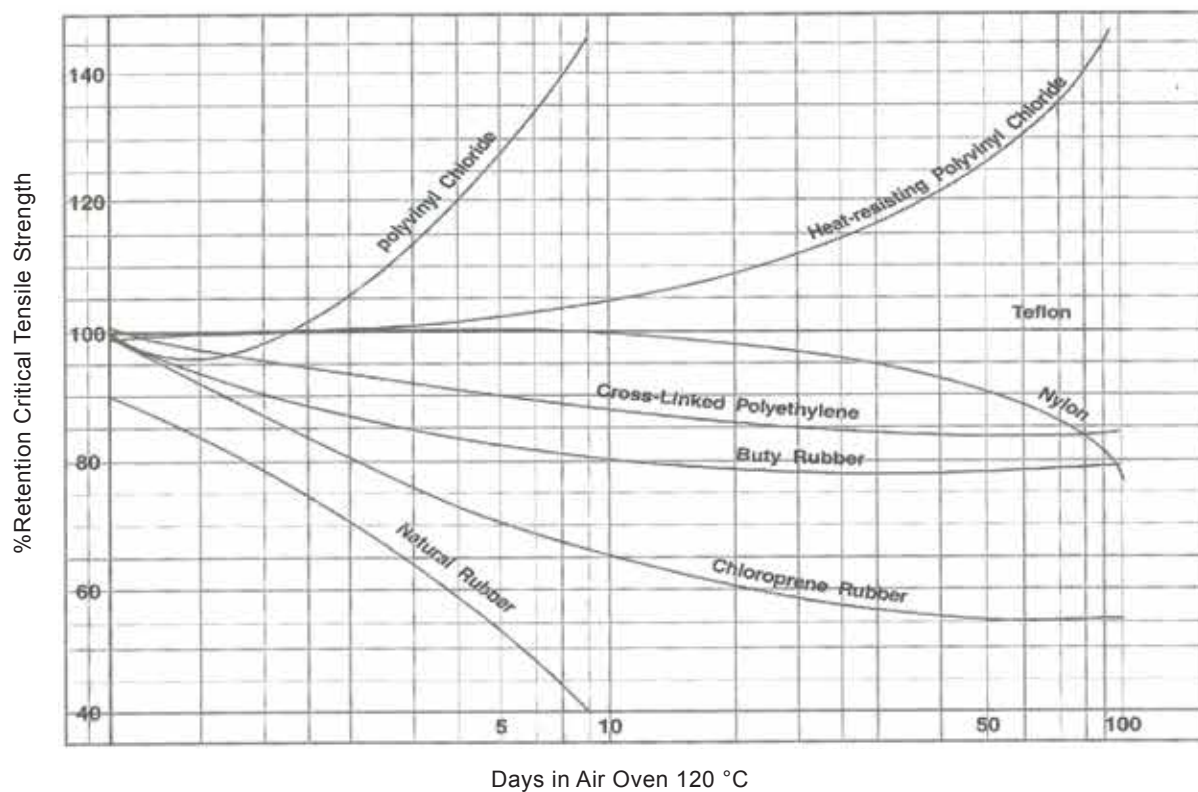
Properties of Insulation and Jacket Materials

Electrical Properties





Properties of Insulation and Jacket Materials Long - Time Heat Aging Curves





Symbols of Electrical units

Electrical Unit	Symbol
CURRENT (AMPERE)	A
VOLTAGE (VOLT)	V (kV)
RESISTANCE (OHM)	Ω (k Ω - M Ω)
ELECTRIC POWER (WATT)	W (kW, MW.)
ELECTRIC ENERGY (WATT HOUR)	Wh (kWh.)
HORSE POWER	HP
POWER FACTOR (COS ϕ)	P.F.
FREQUENCY (HERTZ)	Hz
CAPACITANCE (FARAD)	F (μ F, pF.)
APPARENT POWER (VOLTAMPERE)	VA (kVA)
DIRECT CURRENT	DC
ALTERINATING CURRENT	AC
EFFICENCY	Eff.
MAXIMUM VALUES (VOLTAMPERE)	Em, Im
AVERAGE VALULES (VOLTAMPERE)	Eav, lav
EFFECTIVE VALUES (VOLTAMPERE)	E.I
INSTANTANEOUS VALUES (VOLTAMPERE)	e, i

Electrical Formulas

Electrical formulas for determining Ampere Kilowatt, Kilovolt - Ampere and Horse Power

Direct Current	Alternating Current	
	Single Phase	Three Phase
$A = \frac{kW \times 1000}{V}$	$A = \frac{kW \times 1000}{V \times P.F.}$	$A = \frac{kW \times 1000}{1.73 \times V \times P.F.}$
$A = \frac{kVA \times 1000}{V}$	$A = \frac{kVA \times 1000}{V}$	$A = \frac{kVA \times 1000}{1.73 \times V}$
$A = \frac{HP \times 746}{V \times (\%Eff.)}$	$A = \frac{HP \times 746}{V \times (\%Eff.) \times P.F.}$	$A = \frac{HP \times 746}{1.73 \times V \times (\%Eff.) \times P.F.}$
$kW = \frac{A \times V}{1000}$	$kW = \frac{A \times V \times P.F.}{1000}$	$kW = \frac{A \times V \times 1.73 \times P.F.}{1000}$
$kVA = \frac{A \times V}{1000}$	$kVA = \frac{A \times V}{1000}$	$kVA = \frac{A \times V \times 1.73}{1000}$
$HP = \frac{A \times V \times (\%Eff.)}{746}$	$HP = \frac{A \times V \times (\%Eff.) \times P.F.}{746}$	$HP = \frac{A \times V \times 1.73 (\%Eff.) \times P.F.}{746}$

APPROXIMATE MOTER AMPERES PER TERMINAL.

	220 V acc = 4	
3 phase	220 V acc = 2.5	amperes per H.P.
3 phase	380 V acc = 1.41	amperes per H.P.
3 phase	440 V acc = 1	amperes per H.P.
3 phase	550 V acc = 1	amperes per H.P.



Standard Coefficient of Conversion

Items		Descriptions			
1. LENGTH	1 micron	= 0.001 mm	= 3.94 x 10 ⁻⁵ in.		
	1 mil	= 0.0254 mm	= 0.001 in		
	1 mm	= 39.37 mils	= 0.03937 in.		
	1 cm	= 0.3937 in	= 0.0328 ft.		
	1 inch	= 24.5 mm	= 0.083 ft.	= 0.0278 yd.	= 2.54 cm.
	1 foot	= 0.305 m	= 0.33 yd.		
	1 yard	= 0.914 m	= 91.44 cm.		
	1 meter	= 39.37 in	= 3.28 ft.	= 1.094 yd.	
	1 kilometer	= 3,281 ft.	= 1,094 yd.	= 0.6213 mile.	
	1 mile	= 5,280 ft.	= 1,760 yd.	= 1,609 m	= 1.609 km
2. AREA	1 MCM	= 1000 CM (Circular Mil)	= 0.5067 mm ²	= 1/1000 in ²	
	1 CM	= 0.0005067 mm ²	= 0.0000007854 in ²		0.7854 aq. mil.
	1 mm ²	= 1973 CM	= 0.00155 in ²	= 1,550 sq. mil.	
	1 in ²	= 1273240 CM	= 645.1 mm ²	= 0.0069 ft. ²	
	1 yd ²	= 1,296 in ²	= 0.83613 m ²		
	1 m ²	= 1,550 in ²	= 10.7 ft ²	= 1.195 yd. ²	
	1 km ²	= 0.001562 mile ²			
	1 mile ²	= 27,880,000 ft. ²	= 3,098,000 yd. ²	= 2,590,000 m ²	= 2.59 km ²
3. VOLUME	1 cm ³	= 0.061 in ³			
	1 in ³	= 16.39 cm ³	= 0.0036 gal.	= 0.0005787 ft. ³	
	1 l	= 1,000 cm ³	= 61.023 in ³	= 0.2642 gal.	= 0.03531 ft. ³
	1 gal.	= 3,785 cm ³	= 231 in ³	= 0.1337 ft. ³	= 0.004951 yd. ³
	1 ft. ³	= 28,317 cm ³	= 1,728 in ³	= 28.32 l.	= 7.48 gal.
	1 yd ³	= 46,656 in ³	= 0.7646 m ³		
	1 m ³	= 61,023 in ³	= 35.31 ft. ³	= 1.308 yd ³	
4. WEIGHT	1 g.	= 15.43 gr.	= 0.03527 oz.	= 0.00205 lb.	
	1 oz.	= 437.5 gr.	= 28.35 g.	= 0.0624 lb.	
	1 kg.	= 7,000 gr.	= 453.6 g.	= 15 oz.	= 0.4536 kg.
	1 ton (short)	= 15,432 gr.	= 35.27 oz.	= 2.205 lb.	
	1 ton (long)	= 2,000 lb.	= 907.2 kg.	= 0.8928 ton (long)	
	1 ton (metric)	= 2,240 lb.	= 1.12 ton (short)	= 1.016 ton (metric)	
5. ENERGY	1 Btu.	= 1,055 joules	= 778.1 ft.-lb.	= 252 g-cal.	= 107.6 kg.-m.
		= 0.2930 watt-hr.			
	1 watt-hr.	= 3,600 joules	= 2,655.4 ft.-lb.	= 860 g-cal.	= 367.1 kg.-m.
		= 3.413 B.t.u.	= 0.001341 hp.-hr.		
	1 hp.-hr.	= 2,684,000 jouless	= 1,980,000 ft.-lb.	= 273,700 kg.-cm.	
		= 745.6 watt-hr.			
	1 kw-hr.	= 2,655,000 ft.-lb.	= 367,100 kg.-m.	= 1.34 hp.=hr.	
6. POWER	1 watt	= 44.26 ft.lb./min	= 6.199 kg-m/min	= 0.001341 hp.	
	1 hp	= 33,000 ft.-lb./mon		= 745.6 watts	= 550 ft.-lb./sec.
		= 76.04 kg-m/sce			
	1 kw.	= 44,256.7 ft.-lb./min		= 101.979 kg-m/sec.	= 1.341 hp.
7. TEMPERATURE		= 1,000 watts.			
	Temp °C	= 5/9 (temp °F-32)			
	Temp °F	= (9/5 x temp °C) + 32			



Conductivity And Density of Metals

Items	Symbol	Conductivity at 20 °C (% IACS)	Density (g/cm ³)
SILVER	Ag	108.6	10.50
STANDARD COPPER	Cu	100.0	8.89
(ANNEALED)			
GOLD	Au	72.5	19.30
ALUMINIUM	Al	61.0	2.70
IRON	Fe	13.0	7.78
TIN	Sn	12.2	7.29
STEEL	-	11.6	7.78

Conductor Materials

Material	Specific resistance 20 °C			Temperature coefficient, 20 °C	Density (g/cm ³)
	μV-cm	μV-in.	V-cmil/ft		
Annealed copper	1.724	0.6788	10.37	0.00393	8.89
Hard-drawn copper	1.79	0.695	10.77	0.00378	8.89
Annealed aluminium	2.82	1.113	17.0	0.0039	2.7
Hard-draw aluminium	2.92	1.15	17.5	0.0038	2.7
Pure iron	10.0	3.93	60.0	0.006	7.86
Steel wire	10.7-17.5	4.2-6.9	64-106	0.006-0.0036	7.78
Cast iron	75-100	29.5-39.4	450-600	0.001-0.00074	7.32



Table of The Dimensions for The Motor Starters

The figures are based on normal 3 - phase motors for a.c. at 50 c.p.s. 1400-1450 r.p.m.

Motor ratings in HP at service voltage						Rating of motor starter	Relay setting	Max. quick-blow back-up fuse	Min. cross section of cables
220 V		380 V		440 V					
HP	Full load current (A)	HP	Full load current (A)	HP	Full load current (A)				
		0.05		0.05		15	0.15 - 0.25	1	1.5
0.05		0.1		0.1		15	0.25 - 0.4	2	1.5
		0.15		0.20		15	0.4 - 0.65	4	1.5
0.1		0.2		0.25	0.5	15	0.4 - 0.65	4	1.5
0.15		0.25	0.6	0.50	0.9	15	0.6 - 1	6	1.5
0.25	1.1	0.5	1			15	1.0 - 1.6	6	1.5
		0.75	1.5	0.75	1.5	15	1.0 - 1.6	6	1.5
0.5	1.8	1.0	1.9	1.0	1.6	15	1.5 - 2.5	15 (10)	1.5
0.75	2.5	1.5	2.6	2	3.2	15	2.5 - 4	25 (15)	1.5
1.0	3.2	2	3.4	2.5	3.9	15	2.5 - 4	25 (15)	1.5
1.5	4.4	2.5	4.2	3	4.5	15	4 - 6.5	25 (20)	1.5
2.0	5.8	3	4.9	4	6.0	15	4 - 6.5	25 (20)	1.5
2.5	7.3	4	6.3	5	7.5	15	6 - 10	35 (25)	1.5
3	8.4	5	7.8	6	8.5	15	6 - 10	35 (25)	1.5
4	11	6	9.3	7.5	11.0	15	9 - 14	35	1.5
5	13.5	7.5	11.5			15	9 - 14	35	1.5
		10	15	10	14	25	13 - 20	60	2.5
7.5	19.5	15	22	15	21	25	16- 25	60	2
10	26	20	29	20	27	60	20 - 31	100	6
15	39	25	36	30	39	60	28 - 43	125	10
20	51	30	42			60	40 - 60	160	16
		35	50	35	46	60	40 - 60	160	16
		40	56	40	52	60	40 - 60	160	16
25	63	50	69	50	65	100	50 - 75	200	16
35	91	60	83	60	76	100	70 - 100	200	25
40	100	75	104	75	96	200	84 - 120	400	35
50	125	100	136	100	125	200	105 - 150	500	50
75	184	125	167	125	155	200	140 - 200	500	95
		150	200	120	180	350	175 - 250	600	120
100	245	175	235	175	215	350	175 - 250	600	120
120	295	200	268	200	240	350	210 - 300	850	150
150	370	250	335	250	300	600	280 - 400	850	240
175	425	300	400	300	360	600	350 - 500	1000	400
200	475	350	350	350	410	600	350 - 500	1000	400
225	540	400	400	400	450	600	420 - 600	1000	

Figures in brackets apply to hand operated motor starters.



Copper Conductor Cables

Building Wires and Cables

TIS 11 Part 3-2553 : Non-Sheathed Cables for Fixed Wiring

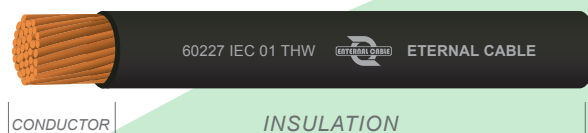
60227 IEC 01 THW	450/750 V 70 °C SOLID AND STRANEDED CONDUCTOR PVC INSULATED, SINGLE CORE (TIS 11 PART 3-2553, TABLE 1)	B2
60227 IEC 02 THW (f)	450/750 V 70 °C FLEXIBLE CONDUCTOR PVC INSULATED, SINGLE CORE (TIS 11 PART 3-2553, TABLE 3)	B3
60227 IEC 05 IV	300/500 V 70 °C SOLID CONDUCTOR PVC INSULATED, SINGLE CORE (TIS 11 PART 3-2553, TABLE 5)	B4
60227 IEC 06 IV (f)	300/500 V 70 °C FLEXIBLE CONDUCTOR PVC INSULATED, SINGLE CORE (TIS 11 PART 3-2553, TABLE 7)	B5



60227 IEC 01 THW

TIS 11 Part 3-2553

450/750 70 °C SOLID AND STRANDAND CONDUCTOR PVC INSULATED, SINGLE CORE



CABLE STRUCTURE

Conductor : Solid and stranded annealed copper,
Size 1.5 mm² up to 400 mm²

Insulation : Polyvinyl chloride (PVC/C)

Core Identification
Single-core : Any color

TECHNICAL DATA

Classification : Maximum conductor temperature 70°C
: Circuit voltage not exceeding 450/750 Volts
450 Volts between Line-to-Earth
750 Volts between Line-to-Line

Testing voltage : 2,500 Volts

Reference standard : TIS 11 Part 3-2553, Table 1

APPLICATION

Building wiring for installation on insulator or in raceway,
dry location.

Nominal cross sectional area (mm ²)	Class of conductor	Insulation thickness nominal (mm)	Overall diameter		Conductor resistance at 20°C maximum (Ω/km)	Insulation resistance at 70°C minimum (MΩ·km)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
			Minimum (mm)	Maximum (mm)					
1.5	1	0.7	2.6	3.2	12.1	0.011	21	21	100/C
1.5	2	0.7	2.7	3.3	12.1	0.010	21	22	100/C
2.5	1	0.8	3.2	3.9	7.41	0.010	29	32	100/C
2.5	2	0.8	3.3	4.0	7.41	0.009	29	35	100/C
4	1	0.8	3.6	4.4	4.61	0.0085	39	47	100/C
4	2	0.8	3.8	4.6	4.61	0.0077	39	50	100/C
6	1	0.8	4.1	5.0	3.08	0.0070	49	65	100/C
6	2	0.8	4.3	5.2	3.08	0.0065	49	70	100/C
10	1	1.0	5.3	6.4	1.83	0.0070	69	110	100/C
10	2	1.0	5.6	6.7	1.83	0.0065	69	120	100/C
16	2	1.0	6.4	7.8	1.15	0.0050	92	180	100/C
25	2	1.2	8.1	9.7	0.727	0.0050	125	280	100/C
35	2	1.2	9.0	10.9	0.524	0.0043	154	370	100/C
50	2	1.4	10.6	12.8	0.387	0.0043	188	500	500/D
70	2	1.4	12.1	14.6	0.268	0.0035	239	700	500/D
95	2	1.6	14.1	17.1	0.193	0.0035	297	1,000	500/D
120	2	1.6	15.6	18.8	0.153	0.0032	347	1,200	500/D
150	2	1.8	17.3	20.9	0.124	0.0032	398	1,500	500/D
185	2	2.0	19.3	23.3	0.0991	0.0032	461	1,900	500/D
240	2	2.2	22.0	26.6	0.0754	0.0032	552	2,500	500/D
300	2	2.4	24.5	29.6	0.0601	0.0030	640	3,100	500/D
400	2	2.6	27.5	33.2	0.0470	0.0028	749	3,900	500/D

Class of conductor 1 : Solid
2 : Strand

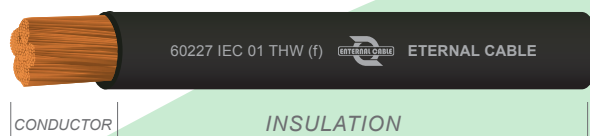
C : Packing in coil
D : Packing in drum



60227 IEC 02 THW (f)

TIS 11 Part 3-2553

450/750 70 °C FLEXIBLE CONDUCTOR PVC INSULATED, SINGLE CORE



CABLE STRUCTURE

Conductor : Flexible annealed copper wire
Size 1.5 mm² up to 240 mm²

Insulation : Polyvinyl chloride (PVC/C)

Core Identification
Single-core : Any color

TECHNICAL DATA

Classification : Maximum conductor temperature 70°C
: Circuit voltage not exceeding 450/750 Volts
450 Volts between Line-to-Earth
750 Volts between Line-to-Line

Testing voltage : 2,500 Volts

Reference standard : TIS 11 part 3-2553, Table 3

APPLICATION

For indoor fixed installations in dry locations, for electrical panels connection or for electrical apparatus

Nominal cross sectional area (mm ²)	Class of conductor	Insulation thickness nominal (mm)	Overall diameter		Conductor resistance at 20°C maximum (Ω/km)	Insulation resistance at 70°C minimum (MΩ-km)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
			Minimum (mm)	Maximum (mm)					
1.5	5	0.7	2.8	3.4	13.3	0.010	21	24	100/C
2.5	5	0.8	3.4	4.1	7.98	0.009	28	37	100/C
4	5	0.8	3.9	4.8	4.95	0.007	38	54	100/C
6	5	0.8	4.4	5.3	3.30	0.0060	48	75	100/C
10	5	1.0	5.7	6.8	1.91	0.0056	69	130	100/C
16	5	1.0	6.7	8.1	1.21	0.0046	92	185	100/C
25	5	1.2	8.4	10.2	0.780	0.0044	123	285	100/C
35	5	1.2	9.7	11.7	0.554	0.0038	154	400	100/C
50	5	1.4	11.5	13.9	0.386	0.0037	196	555	500/D
70	5	1.4	13.2	16.0	0.272	0.0032	247	765	500/D
95	5	1.6	15.1	18.2	0.206	0.0032	296	1,000	500/D
120	5	1.6	16.7	20.2	0.161	0.0029	350	1,300	500/D
150	5	1.8	18.6	22.5	0.129	0.0029	405	1,600	500/D
185	5	2.0	20.6	24.9	0.106	0.0029	461	1,900	500/D
240	5	2.2	23.5	28.4	0.0801	0.0028	554	2,500	500/D

Class of conductor 5 : Flexible

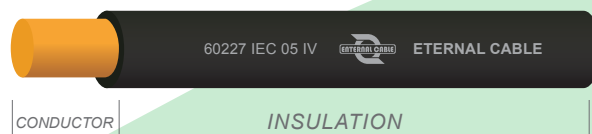
C : Packing in coil
D : Packing in drum



60227 IEC 05 IV

TIS 11 Part 3-2553

300/500 70 °C SOLID CONDUCTOR PVC INSULATED, SINGLE CORE



CABLE STRUCTURE

Conductor	: Solid annealed copper, Size 0.5 mm ² up to 1 mm ²
Insulation	: Polyvinyl chloride (PVC/C)
Core Identification	Single-core : Any color

TECHNICAL DATA

Classification	: Maximum conductor temperature 70°C : Circuit voltage not exceeding 300/500 Volts 300 Volts between Line-to-Earth 500 Volts between Line-to-Line
Testing voltage	: 2,000 Volts
Reference standard	: TIS 11 part 3-2553, Table 5

APPLICATION

Building wiring for installation on unsulator or in raceway, dry location.

Nominal cross sectional area (mm ²)	Class of conductor	Insulation thickness nominal (mm)	Overall diameter		Conductor resistance at 20°C maximum (Ω/km)	Insulation resistance at 70°C minimum (MΩ-km)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
			Minimum (mm)	Maximum (mm)					
0.5	1	0.6	1.9	2.3	36.0	0.015	11	8.8	100/C
0.75	1	0.6	2.1	2.5	24.5	0.012	14	12.0	100/C
1	1	0.6	2.2	2.7	18.1	0.011	16	14.0	100/C

Class of conductor 1 : Solid

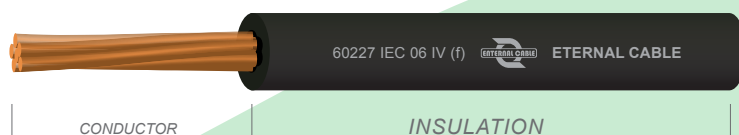
C : Packing in coil
D : Packing in drum



60227 IEC 06 IV (f)

TIS 11 Part 3-2553

300/500 70 °C FLEXIBLE CONDUCTOR PVC INSULATED, SINGLE CORE



CABLE STRUCTURE

Conductor	: Flexible annealed copper wire, Size 0.5 mm ² up to 1 mm ²
Insulation	: Polyvinyl chloride (PVC/C)
Core Identification	Single-core : Any color

TECHNICAL DATA

Classification	: Maximum conductor temperature 70 °C : Circuit voltage not exceeding 300/500 Volts 300 Volts between Line-to-Earth 500 Volts between Line-to-Line
Testing voltage	: 2,000 Volts
Reference standard	: TIS 11 part 3-2553, Table 7

APPLICATION

For indoor fixed installations in dry locations, for electrical panels connection or for electrical apparatus

Nominal cross sectional area (mm ²)	Class of conductor	Insulation thickness nominal (mm)	Overall diameter		Conductor resistance at 20°C maximum (Ω/km)	Insulation resistance at 70°C minimum (MΩ-km)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
			Minimum (mm)	Maximum (mm)					
0.5	5	0.6	2.1	2.5	39	0.013	11	9	100/C
0.75	5	0.6	2.2	2.7	26	0.011	14	12	100/C
1	5	0.6	2.4	2.8	19.5	0.010	16	15	100/C

Class of conductor 5 : Flexible

C : Packing in coil



Copper conductor Cables

Building Wires and Cables

TIS 11 Part 4-2553 : Sheathed Cables for Fixed Wiring

60227 IEC 10 NYY

300/500 70 °C SOLID AND STRANEDED CONDUCTOR
PVC INSULATED AND DOUBLE SHEATHED (TIS PART 4-2553, TABLE 1)

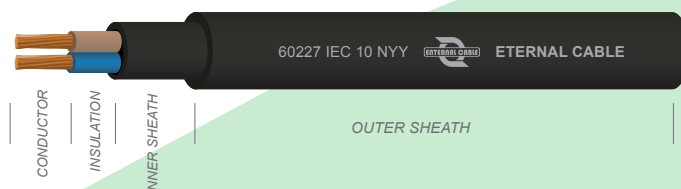
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60227 IEC 10 NYY

TIS 11 Part 4-2553

300/500 V 70 °C SOLID AND STRANDED CONDUCTOR PVC INSULATED AND DOUBLE SHEATHED



CABLE STRUCTURE

- Conductor** : Solid and Stranded annealed copper, Multi-core
- Insulation** : Polyvinyl chloride (PVC/C)
- Core Identification**
- 2 Cores : Blue and Brown
 - 3 Cores : Brown, Black and Grey or Blue, Brown and Green/Yellow
 - 4 Cores : Blue, Brown, Black and Grey or Brown, Black, Grey and Green/Yellow
 - 5 Cores : Blue, Brown, Black, Grey and Black or Blue, Brown, Black, Grey and Green/Yellow
- Inner sheath** : Black polyvinyl chloride (PVC)
- Outer sheath** : Black polyvinyl chloride (PVC/ST4)

TECHNICAL DATA

- Classification** : Maximum conductor temperature 70 °C
: Circuit voltage not exceeding 300/500 Volts
300 Volts between Line-to-Earth
500 Volts between Line-to-Line
- Testing voltage** : 2,000 Volts
- Reference standard** : TIS 11 part 4-2553, Table 1

APPLICATION

For installation exposed, or in raceway, wet or dry location.

Number of core	Nominal cross sectional area (mm ²)	Class of conductor	Insulation thickness nominal (mm)	Inner Sheath thickness nominal (mm)	Outer Sheath thickness nominal (mm)	Overall diameter		Conductor resistance at 20°C maximum (Ω/km)	Insulation resistance at 70°C minimum (MΩ·km)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
						Minimum (mm)	Maximum (mm)					
2	1.5	1	0.7	0.4	1.2	7.6	10.0	12.1	0.011	19	120	100/C
	1.5	2	0.7	0.4	1.2	7.8	10.5	12.1	0.010	19	130	100/C
	2.5	1	0.8	0.4	1.2	8.6	11.5	7.41	0.010	26	160	100/C
	2.5	2	0.8	0.4	1.2	9.0	12.0	7.41	0.009	26	180	100/C
	4	1	0.8	0.4	1.2	9.6	12.5	4.61	0.0085	34	210	100/C
	4	2	0.8	0.4	1.2	10.0	13.0	4.61	0.0077	34	220	100/C
	6	1	0.8	0.4	1.2	10.5	13.5	3.08	0.0070	44	270	100/C
	6	2	0.8	0.4	1.2	11.0	14.0	3.08	0.0065	44	190	100/C
	10	1	1.0	0.6	1.4	13.0	16.5	1.83	0.0070	60	420	500/D
	10	2	1.0	0.6	1.4	13.5	17.5	1.83	0.0065	60	460	500/D
	16	2	1.0	0.6	1.4	15.5	20.0	1.15	0.0052	80	650	500/D
	25	2	1.2	0.8	1.4	18.5	24.0	0.727	0.0050	107	950	500/D
	35	2	1.2	1.0	1.6	21.0	27.5	0.524	0.0044	131	1,300	500/D

Class of conductor 1 : Solid
2 : Strand

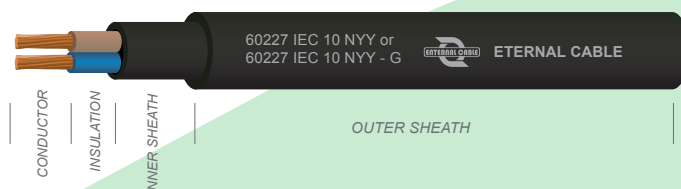
C : Packing in coil
D : Packing in drum



60227 IEC 10 NYY or 60227 IEC 10 NYY - G

TIS 11 Part 4-2553

300/500 V 70 °C SOLID AND STRANDED CONDUCTOR PVC INSULATED AND DOUBLE SHEATHED



CABLE STRUCTURE

- Conductor** : Solid and Stranded annealed copper, Multi-core
- Insulation** : Polyvinyl chloride (PVC/C)
- Core Identification**
- 2 Cores : Blue and Brown
 - 3 Cores : Brown, Black and Grey or Blue, Brown and Green/Yellow
 - 4 Cores : Blue, Brown, Black and Grey or Brown, Black, Grey and Green/Yellow
 - 5 Cores : Blue, Brown, Black, Grey and Black or Blue, Brown, Black, Grey and Green/Yellow
- Inner sheath** : Black polyvinyl chloride (PVC)
- Outer sheath** : Black polyvinyl chloride (PVC/ST4)

TECHNICAL DATA

- Classification** : Maximum conductor temperature 70 °C
: Circuit voltage not exceeding 300/500 Volts
300 Volts between Line-to-Earth
500 Volts between Line-to-Line
- Testing voltage** : 2,000 Volts
- Reference standard** : TIS 11 part 4-2553, Table 1

APPLICATION

For installation exposed, or in raceway, wet or dry location.

Number of core	Nominal cross sectional area (mm ²)	Class of conductor	Insulation thickness nominal (mm)	Inner Sheath thickness nominal (mm)	Outer Sheath thickness nominal (mm)	Overall diameter		Conductor resistance at 20°C maximum (Ω/km)	Insulation resistance at 70°C minimum (MΩ·km)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
						Minimum (mm)	Maximum (mm)					
3	1.5	1	0.7	0.4	1.2	8.0	10.5	12.1	0.011	17	140	100/C
	1.5	2	0.7	0.4	1.2	8.2	11.0	12.1	0.010	17	150	100/C
	2.5	1	0.8	0.4	1.2	9.2	12.0	7.41	0.010	22	190	100/C
	2.5	2	0.8	0.4	1.2	9.4	12.5	7.41	0.009	22	210	100/C
	4	1	0.8	0.4	1.2	10.0	13.0	4.61	0.0085	29	250	100/C
	4	2	0.8	0.4	1.2	10.5	13.5	4.61	0.0077	29	270	100/C
	6	1	0.8	0.4	1.4	11.5	14.5	3.08	0.0070	37	340	100/C
	6	2	0.8	0.4	1.4	12.0	15.5	3.08	0.0065	37	370	100/C
	10	1	1.0	0.6	1.4	14.0	17.5	1.83	0.0070	52	520	500/D
	10	2	1.0	0.6	1.4	14.5	19.0	1.83	0.0065	52	570	500/D
	16	2	1.0	0.6	1.4	16.5	27.5	1.15	0.0052	69	810	500/D
	25	2	1.2	0.8	1.6	20.5	26.0	0.727	0.0050	92	1,200	500/D
	35	2	1.2	1.0	1.6	22.0	29.0	0.524	0.0044	113	1,600	500/D

Class of conductor 1 : Solid
2 : Strand

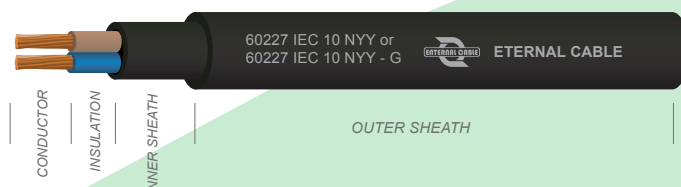
C : Packing in coil
D : Packing in drum



60227 IEC 10 NYY or 60227 IEC 10 NYY - G

TIS 11 Part 4-2553

300/500 V 70 °C SOLID AND STRANDED CONDUCTOR PVC INSULATED AND DOUBLE SHEATHED



CABLE STRUCTURE

- Conductor** : Solid and Stranded annealed copper, Multi-core
- Insulation** : Polyvinyl chloride (PVC/C)
- Core Identification**
- 2 Cores : Blue and Brown
 - 3 Cores : Brown, Black and Grey or Blue, Brown and Green/Yellow
 - 4 Cores : Blue, Brown, Black and Grey or Brown, Black, Grey and Green/Yellow
 - 5 Cores : Blue, Brown, Black, Grey and Black or Blue, Brown, Black, Grey and Green/Yellow
- Inner sheath** : Black polyvinyl chloride (PVC)
- Outer sheath** : Black polyvinyl chloride (PVC/ST4)

TECHNICAL DATA

- Classification** : Maximum conductor temperature 70 °C
: Circuit voltage not exceeding 300/500 Volts
300 Volts between Line-to-Earth
500 Volts between Line-to-Line
- Testing voltage** : 2,000 Volts
- Reference standard** : TIS 11 part 4-2553, Table 1

APPLICATION

For installation exposed, or in raceway, wet or dry location.

Number of core	Nominal cross sectional area (mm ²)	Class of conductor	Insulation thickness nominal (mm)	Inner Sheath thickness nominal (mm)	Outer Sheath thickness nominal (mm)	Overall diameter		Conductor resistance at 20°C maximum (Ω/km)	Insulation resistance at 70°C minimum (MΩ·km)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
						Minimum (mm)	Maximum (mm)					
4	1.5	1	0.7	0.4	1.2	8.6	11.5	12.1	0.011	17	160	100/C
	1.5	2	0.7	0.4	1.2	9.0	12.0	12.1	0.010	17	180	100/C
	2.5	1	0.8	0.4	1.2	10.0	13.0	7.41	0.010	22	230	100/C
	2.5	2	0.8	0.4	1.2	10.0	13.5	7.41	0.009	22	250	100/C
	4	1	0.8	0.4	1.4	11.5	14.5	4.61	0.0085	29	320	100/C
	4	2	0.8	0.4	1.4	12.0	15.0	4.61	0.0077	29	340	100/C
	6	1	0.8	0.6	1.4	12.5	16.0	3.08	0.0070	37	440	500/D
	6	2	0.8	0.6	1.4	13.0	17.0	3.08	0.0065	37	470	500/D
	10	1	1.0	0.6	1.4	15.5	19.0	1.83	0.0070	52	660	500/D
	10	2	1.0	0.6	1.4	16.0	20.5	1.83	0.0065	52	700	500/D
	16	2	1.0	0.8	1.4	18.0	23.5	1.15	0.0052	69	1,000	500/D
	25	2	1.2	1.0	1.6	22.5	28.5	0.727	0.0050	92	1,600	500/D
	35	2	1.2	1.0	1.6	24.5	32.0	0.524	0.0044	113	2,000	500/D

Class of conductor 1 : Solid
2 : Strand

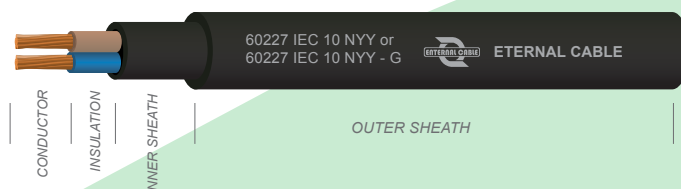
C : Packing in coil
D : Packing in drum



60227 IEC 10 NYY or 60227 IEC 10 NYY - G

TIS 11 Part 4-2553

300/500 V 70 °C SOLID AND STRANDED CONDUCTOR PVC INSULATED AND DOUBLE SHEATHED



CABLE STRUCTURE

- Conductor** : Solid and Stranded annealed copper, Multi-core
- Insulation** : Polyvinyl chloride (PVC/C)
- Core Identification**
- 2 Cores : Blue and Brown
 - 3 Cores : Brown, Black and Grey or Blue, Brown and Green/Yellow
 - 4 Cores : Blue, Brown, Black and Grey or Brown, Black, Grey and Green/Yellow
 - 5 Cores : Blue, Brown, Black, Grey and Black or Blue, Brown, Black, Grey and Green/Yellow
- Inner sheath** : Black polyvinyl chloride (PVC)
- Outer sheath** : Black polyvinyl chloride (PVC/ST4)

TECHNICAL DATA

- Classification** : Maximum conductor temperature 70 °C
: Circuit voltage not exceeding 300/500 Volts
300 Volts between Line-to-Earth
500 Volts between Line-to-Line
- Testing voltage** : 2,000 Volts
- Reference standard** : TIS 11 part 4-2553, Table 1

APPLICATION

For installation exposed, or in raceway, wet or dry location.

Number of core	Nominal cross sectional area (mm ²)	Class of conductor	Insulation thickness nominal (mm)	Inner Sheath thickness nominal (mm)	Outer Sheath thickness nominal (mm)	Overall diameter		Conductor resistance at 20°C maximum (Ω/km)	Insulation resistance at 70°C minimum (MΩ·km)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
						Minimum (mm)	Maximum (mm)					
5	1.5	1	0.7	0.7	1.2	9.4	12.0	12.1	0.011	17	200	100/C
	1.5	2	0.7	0.7	1.2	9.8	12.5	12.1	0.010	17	220	100/C
	2.5	1	0.8	0.8	1.2	11.0	14.0	7.41	0.010	22	280	100/C
	2.5	2	0.8	0.8	1.2	11.0	14.5	7.41	0.009	22	310	100/C
	4	1	0.8	0.8	1.4	12.5	16.0	4.61	0.0085	29	410	100/C
	4	2	0.8	0.8	1.4	13.0	17.0	4.61	0.0077	29	430	100/C
	6	1	0.8	0.8	1.4	13.5	17.5	3.08	0.0070	37	530	500/D
	6	2	0.8	0.8	1.4	14.5	18.5	3.08	0.0065	37	570	500/D
	10	1	1.0	1.0	1.4	17.0	21.0	1.83	0.0070	52	800	500/D
	10	2	1.0	1.0	1.4	17.5	22.0	1.83	0.0065	52	870	500/D
	16	2	1.0	1.0	1.6	20.5	26.0	1.15	0.0052	69	1,300	500/D
	25	2	1.2	1.2	1.6	24.5	31.5	0.727	0.0050	92	1,900	500/D
	35	2	1.2	1.2	1.6	27.0	35.0	0.524	0.0044	113	2,500	500/D

Class of conductor 1 : Solid
2 : Strand

C : Packing in coil
D : Packing in drum



Copper Conductor Cables

Building Wires and Cables

TIS 11 Part 5-2553 : Flexible Cables (Cords)

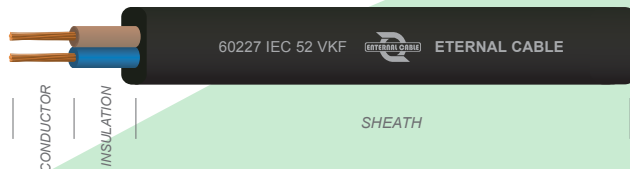
60227 IEC 52 VKF	300/300 V 70 °C FLEXIBLE CONDUCTOR PVC INSULATED AND SHEATHED, ROUND TYPE (TIS 11 PART 5-2553, TABLE 7)	B12
60227 IEC 52 VCT	300/300 V 70 °C FLEXIBLE CONDUCTOR PVC INSULATED AND SHEATHED, ROUND TYPE (TIS 11 PART 5-2553, TABLE 7)	B13
60227 IEC 53 VKF	300/500 V 70 °C FLEXIBLE CONDUCTOR PVC INSULATED AND SHEATHED, ROUND TYPE (TIS 11 PART 5-2553, TABLE 9)	B14
60227 IEC 53 VCT	300/500 V 70 °C FLEXIBLE CONDUCTOR PVC INSULATED AND SHEATHED, ROUND TYPE (TIS 11 PART 5-2553, TABLE 9)	B15



60227 IEC 52 VKF

TIS 11 Part 5-2553

300/300 V 70 °C FLEXIBLE CONDUCTOR PVC INSULATED AND SHEATHED, FLAT TYPE



CABLE STRUCTURE

Conductor : Flexible annealed copper wires
Size 0.5 mm² and 0.75 mm²

Insulation : Polyvinyl chloride (PVC/C)

Core Identification

2 Cores : Blue and Brown

Sheath : Black polyvinyl chloride (PVC/ST5)

TECHNICAL DATA

Classification : Maximum conductor temperature 70 °C
: Circuit voltage not exceeding 300/300 Volts
300 Volts between Line-to-Earth
300 Volts between Line-to-Line

Testing voltage : 2,000 Volts

Reference standard : TIS 11 part 5-2553, Table 7

APPLICATION

For household appliance, electrical equipment and electrical illumination

Number of core	Nominal cross sectional area (mm ²)	Class of conductor	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Overall diameter		Conductor resistance at 20°C maximum (Ω/km)	Insulation resistance at 70°C minimum (MΩ-km)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
					Minimum (mm)	Maximum (mm)					
2	0.5	5	0.5	0.6	3.0 x 4.9	3.7 x 5.9	39.0	0.012	10	28	100/C
	0.75	5	0.5	0.6	3.2 x 5.2	3.8 x 6.3	26.0	0.010	12	35	100/C

Class of conductor 5 : Flexible

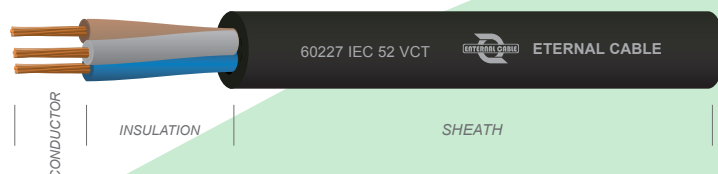
C : Packing in coil



60227 IEC 52 VCT

TIS 11 Part 5-2553

300/300 V 70 °C FLEXIBLE CONDUCTOR PVC INSULATED AND SHEATHED, ROUND TYPE



CABLE STRUCTURE

Conductor : Flexible annealed copper wires
Size 0.5 mm² and 0.75 mm²

Insulation : Polyvinyl chloride (PVC/C)

Core Identification

2 Cores : Blue and Brown
3 Cores : Brown, Black and Grey
or Blue, Brown and Green/Yellow

Sheath : Black polyvinyl chloride (PVC/ST5)

TECHNICAL DATA

Classification : Maximum conductor temperature 70 °C
: Circuit voltage not exceeding 300/300 Volts
300 Volts between Line-to-Earth
300 Volts between Line-to-Line

Testing voltage : 2,000 Volts

Reference standard : TIS 11 part 5-2553, Table 7

APPLICATION

For household appliance, electrical equipment
and electrical illumination

Number of core	Nominal cross sectional area (mm ²)	Class of conductor	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Overall diameter		Conductor resistance at 20°C maximum (Ω/km)	Insulation resistance at 70°C minimum (MΩ·km)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
					Minimum (mm)	Maximum (mm)					
2	0.5	5	0.5	0.6	4.6	5.9	39.0	0.012	10	40	100/C
	0.75	5	0.5	0.6	4.9	6.3	26.0	0.010	12	48	100/C
3	0.5	5	0.5	0.6	4.9	6.3	39.0	0.012	8	47	100/C
	0.75	5	0.5	0.6	5.2	6.7	26.0	0.010	10	58	100/C

Class of conductor 5 : Flexible

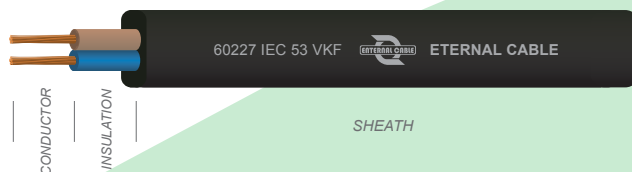
C : Packing in coil



60227 IEC 53 VKF

TIS 11 Part 5-2553

300/500 V 70 °C FLEXIBLE CONDUCTOR PVC INSULATED AND SHEATHED, FLAT TYPE



CABLE STRUCTURE

Conductor : Flexible annealed copper wires
Size 0.75 mm² and 1 mm²

Insulation : Polyvinyl chloride (PVC/C)

Core Identification

2 Cores : Blue and Brown

Sheath : Black polyvinyl chloride (PVC/ST5)

TECHNICAL DATA

Classification : Maximum conductor temperature 70 °C
: Circuit voltage not exceeding 300/500 Volts
300 Volts between Line-to-Earth
500 Volts between Line-to-Line

Testing voltage : 2,000 Volts
Reference standard : TIS 11 part 5-2553, Table 9

APPLICATION

For household appliance, electrical equipment
and electrical illumination

Number of core	Nominal cross sectional area (mm ²)	Class of conductor	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Overall diameter		Conductor resistance at 20°C maximum (Ω/km)	Insulation resistance at 70°C minimum (MΩ·km)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
					Minimum (mm)	Maximum (mm)					
2	0.75	5	0.6	0.8	3.7 x 6.0	4.5 x 7.2	26.0	0.011	12	43	100/C
	1	5	0.6	0.8	3.9 x 6.2	4.7 x 7.5	19.5	0.010	15	50	100/C

Class of conductor 5 : Flexible

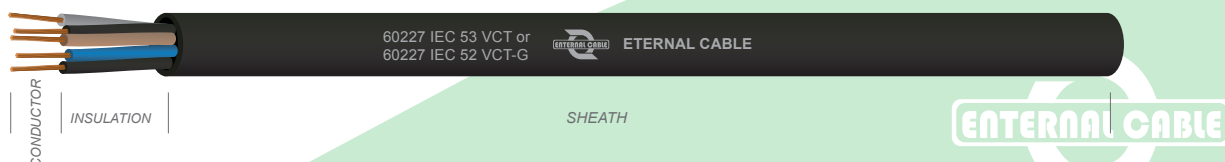
C : Packing in coil



60227 IEC 53 VCT or 60227 IEC 52 VCT-G

TIS 11 Part 5-2553

300/500 V 70 °C FLEXIBLE CONDUCTOR PVC INSULATED AND SHEATHED, ROUND TYPE



CABLE STRUCTURE

Conductor : Flexible annealed copper wires
Size 0.75 mm² and 2.5 mm²
Insulation : Polyvinyl chloride (PVC/C)

Core Identification

2 Cores : Blue and Brown
3 Cores : Brown, Black and Grey
or Blue, Brown and Green/Yellow
4 Cores : Brown, Black, Grey and Blue
or Brown, Black, Grey and Green/Yellow
5 Cores : Blue, Brown, Black, Grey and Black
or Blue, Brown, Black, Grey and Green/Yellow

Sheath : Black polyvinyl chloride (PVC/ST5)

TECHNICAL DATA

Classification : Maximum conductor temperature 70 °C
: Circuit voltage not exceeding 300/500 Volts
300 Volts between Line-to-Earth
500 Volts between Line-to-Line

Testing voltage : 2,000 Volts
Reference standard : TIS 11 part 5-2553, Table 9

APPLICATION

For household appliance, electrical equipment
and electrical illumination

Number of core	Nominal cross sectional area (mm ²)	Class of conductor	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Overall diameter		Conductor resistance at 20°C maximum (Ω/km)	Insulation resistance at 70°C minimum (MΩ·km)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
					Minimum (mm)	Maximum (mm)					
2	0.75	5	0.6	0.8	5.7	7.2	26.0	0.011	12	60	100/C
	1	5	0.6	0.8	5.9	7.5	19.5	0.010	14	70	100/C
	1.5	5	0.7	0.8	6.8	8.6	13.3	0.010	18	93	100/C
	2.5	5	0.8	1.0	8.4	10.6	7.98	0.009	25	140	100/C
3	0.75	5	0.6	0.8	6.0	7.6	26.0	0.011	10	70	100/C
	1	5	0.6	0.8	6.3	8.0	19.5	0.010	12	82	100/C
	1.5	5	0.7	0.9	7.4	9.4	13.3	0.010	16	115	100/C
	2.5	5	0.8	1.1	9.2	11.4	7.98	0.009	21	175	100/C
4	0.75	5	0.6	0.8	6.6	8.3	26.0	0.011	10	84	100/C
	1	5	0.6	0.9	7.1	9.0	19.5	0.010	12	105	100/C
	1.5	5	0.7	1.0	8.4	10.5	13.3	0.010	16	145	100/C
	2.5	5	0.8	1.1	10.1	12.5	7.98	0.009	21	215	100/C
5	0.75	5	0.6	0.9	7.4	9.3	26.0	0.011	10	105	100/C
	1	5	0.6	0.9	7.8	9.8	19.5	0.010	12	125	100/C
	1.5	5	0.7	1.1	9.3	11.6	13.3	0.010	16	175	100/C
	2.5	5	0.8	1.2	11.2	13.9	7.98	0.009	21	265	100/C

Class of conductor 5 : Flexible

C : Packing in coil



Copper Conductor Cables

Building Wires and Cables

TIS 11 Part 101-2559 : Sheathed Cables for General Purchases

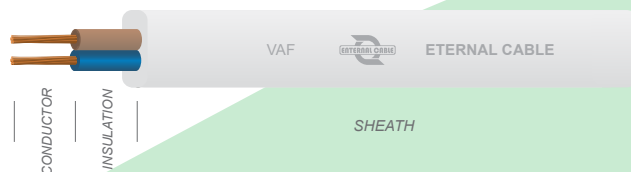
VAF	300/500 V 70 °C SOLID AND STRANDED CONDUCTOR PVC INSULATED AND SHEATHED, FLAT TYPE (TIS 11 PART 101-2559, TABLE 1)	B17
VAF-G	300/500 V 70 °C SOLID AND STRANDED CONDUCTOR PVC INSULATED AND SHEATHED, WITH GROUND FLAT TYPE (TIS 11 PART 101-2559, TABLE 1)	B18
NYY	450/750 V 70 °C SOLID AND STRANDED CONDUCTOR PVC INSULATED AND DOUBLE SHEATHED (TIS 11 PART 101-2559, TABLE 3 AND TABLE 4)	B19
NYY-G	450/750 V 70 °C STRANDED CONDUCTOR PVC INSULATED AND DOUBLE SHEATHED WITH GROUND (TIS 11 PART 101-2559, TABLE 5)	B23
VCT	450/750 V 70 °C FLEXIBLE CONDUCTOR PVC INSULATED AND SHEATHED, ROUND TYPE (TIS 11 PART 101-2559, TABLE 7)	B26
VCT-G	450/750 V 70 °C FLEXIBLE CONDUCTOR PVC INSULATED AND SHEATHED WITH GROUND, ROUND TYPE (TIS 11 PART 101-2559, TABLE 8)	B28



VAF

TIS 11 Part 101-2559

300/500 V 70 °C SOLID AND STRANDED CONDUCTOR PVC INSULATED AND SHEATHED, FLAT TYPE



CABLE STRUCTURE

Conductor : Solid and stranded annealed copper,
Size 1 mm² up to 16 mm²

Insulation : Polyvinyl chloride (PVC/C)

Core Identification

2 Cores : Blue and Brown

Sheath : White polyvinyl chloride (PVC/ST4)

TECHNICAL DATA

Classification : Maximum conductor temperature 70 °C
: Circuit voltage not exceeding 300/500 Volts
300 Volts between Line-to-Earth
500 Volts between Line-to-Line

Testing voltage : 2,000 Volts

Reference standard : TIS 11 part 101-2559, Table 1

APPLICATION

Building wiring for surface or above ceiling wiring or direct
embedded in plaster.

Number of core	Nominal cross sectional area (mm ²)	Class of conductor	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Overall diameter		Conductor resistance at 20°C maximum (Ω/km)	Insulation resistance at 70°C minimum (MΩ·km)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
					Lower limit (mm)	Upper limit (mm)					
2	1	1	0.6	0.9	4.0 x 6.2	4.7 x 7.4	18.1	0.0110	13	50	100/C
	1.5	1	0.7	0.9	4.4 x 7.0	5.4 x 8.4	12.1	0.0110	17	70	100/C
	2.5	1	0.8	1.0	5.2 x 8.4	6.2 x 9.8	7.41	0.0100	23	100	100/C
	4	2	0.8	1.1	5.6 x 9.6	7.2 x 11.5	4.61	0.0077	31	150	100/C
	6	2	0.8	1.1	6.4 x 10.5	8.0 x 13.0	3.08	0.0065	40	200	100/C
	10	2	1.0	1.2	7.8 x 13.0	9.6 x 16.0	1.83	0.0065	55	310	100/C
	16	2	1.0	1.3	9.0 x 15.5	11.0 x 18.5	1.15	0.0052	74	450	100/C

Class of conductor 1 : Solid
2 : Strand

C : Packing in coil



VAF-G

TIS 11 Part 101-2559

300/500 V 70 °C SOLID AND STRANDED CONDUCTOR PVC INSULATED AND SHEATHED WITH GROUND, FLAT TYPE



CABLE STRUCTURE

Conductor : Solid and stranded annealed copper,
Size 1 mm² up to 16 mm²
Ground wire : Solid and stranded annealed copper,
Size 1 mm² up to 16 mm² :
Insulation Polyvinyl chloride (PVC/C)
Core identification
2 Cores : Blue and Brown
Ground-Cores : Green/Yellow

Sheath : White polyvinyl chloride (PVC/ST4)

TECHNICAL DATA

Classification : Maximum conductor temperature 70 °C
: Circuit voltage not exceeding 300/500 Volts
300 Volts between Line-to-Earth
500 Volts between Line-to-Line
Testing voltage : 2,000 Volts
Reference standard : TIS 11 part 101-2559, Table 1

APPLICATION

Building wiring for surface or above ceiling wiring or direct
embedded in plaster.

Number of core	Nominal cross sectional area (mm ²)	Class of conductor	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Overall diameter		Conductor resistance at 20°C maximum (Ω/km)	Insulation resistance at 70°C minimum (MΩ·km)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
					Lower limit (mm)	Upper limit (mm)					
2+G	1	1	0.6	0.9	4.0 x 8.4	4.7 x 9.8	18.1	0.0110	13	75	100/C
	1 (G)	1	0.6	0.9			18.2				
	1.5	1	0.7	0.9	4.4 x 9.8	5.4 x 11.5	12.1	0.0110	17	100	100/C
	1.5 (G)	1	0.7	0.9			12.1				
	2.5	1	0.8	1.0	5.2 x 11.5	6.2 x 13.5	7.41	0.0100	23	150	100/C
	2.5 (G)	1	0.8	1.0			7.41				
	4	2	0.8	1.1	5.8 x 13.4	7.4 x 16.5	4.61	0.0077	31	220	100/C
	4 (G)	2	0.8	1.1			4.61				
	6	2	0.8	1.1	6.4 x 15.0	8.0 x 18.0	3.08	0.0065	40	290	100/C
	6 (G)	2	0.8	1.1			3.08				
	10	2	1.0	1.2	7.8 x 19.0	9.6 x 22.5	1.83	0.0065	55	460	100/C
	10 (G)	2	1.0	1.2			1.83				
	16	2	1.0	1.3	9.0 x 22.0	11.0 x 26.5	1.15	0.0052	74	650	500/D
	16 (G)	2	1.0	1.3			1.13				

Class of conductor 1 : Solid
2 : Strand

G : Ground conductor

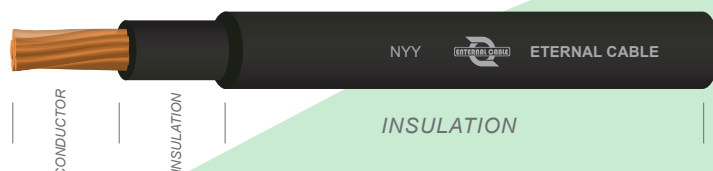
C : Packing in coil
D : Packing in drum



NYY

TIS 11 Part 101-2559

450/750 V 70 °C SOLID AND STRANDED CONDUCTOR PVC INSULATED AND DOUBLE SHEATHED



CABLE STRUCTURE

Conductor : Solid and stranded annealed copper,
 Single-core : Size 1 mm² up to 500 mm²
 Multi-cores : Size 1 mm² up to 300 mm²
Insulation : Polyvinyl chloride (PVC/C)
Core identification

Single-core : Black
 2 Cores : Blue and Brown
 3 Cores : Brown, Black and Grey
 4 Cores : Blue, Brown, Black and Grey

Inner Sheath : Black polyvinyl chloride (PVC) (Multi-cores only)
Outer sheath : Black polyvinyl chloride (PVC/ST4)

TECHNICAL DATA

Classification : Maximum conductor temperature 70 °C
 : Circuit voltage not exceeding 450/750 Volts
 450 Volts between Line-to-Earth
 750 Volts between Line-to-Line

Testing voltage : 2,500 Volts
Reference standard : TIS 11 part 101-2559, Table 3

APPLICATION

For installation exposed, or in raceway, wet or dry location,
 or direct burial in ground.

Number of core	Nominal cross sectional area (mm ²)	Class of conductor	Insulation thickness nominal (mm)	Outer sheath thickness nominal (mm)	Overall diameter maximum (mm)	Conductor resistance at 20°C maximum (Ω/km)	Insulation resistance at 70°C minimum (MΩ·km)	Continuous current rating maximum		Cable weight approx. (kg/km)	Standard length (m)
								Free air at 40 °C (A)	Underground at 30 °C (A)		
1	1	1	1.5	1.8	8.6	18.1	0.0207	19	25	80	100/C
	1	2	1.5	1.8	8.8	18.1	0.0200	19	25	80	100/C
	1.5	1	1.5	1.8	9.0	12.1	0.0184	24	31	85	100/C
	1.5	2	1.5	1.8	9.2	12.1	0.0175	24	31	90	100/C
	2.5	1	1.5	1.8	9.4	7.41	0.0157	32	41	100	100/C
	2.5	2	1.5	1.8	9.8	7.41	0.0146	32	41	110	100/C
	4	1	1.5	1.8	10.0	4.61	0.0135	43	53	120	100/C
	4	2	1.5	1.8	10.5	4.61	0.0124	43	53	130	100/C
	6	2	1.5	1.8	11.0	3.08	0.0107	54	68	160	100/C
	10	2	1.5	1.8	12.0	1.83	0.0088	73	79	210	500/D
	16	2	1.5	1.8	13.0	1.15	0.0074	97	118	280	500/D
	25	2	1.5	1.8	14.5	0.727	0.0061	129	153	390	500/D
	35	2	1.5	1.8	16.0	0.542	0.0053	159	185	490	500/D
	50	2	1.5	1.8	17.0	0.387	0.0046	191	220	620	500/D
	70	2	1.5	1.8	19.0	0.268	0.0039	241	271	850	500/D
	95	2	1.7	1.8	21.5	0.193	0.0038	297	326	1,100	500/D
	120	2	1.7	1.8	23.0	0.153	0.0034	345	372	1,400	500/D
	150	2	1.9	2.0	26.0	0.124	0.0034	397	418	1,700	500/D
	185	2	2.1	2.0	28.0	0.0991	0.0034	456	473	2,100	500/D
	240	2	2.3	2.2	31.5	0.0754	0.0033	541	549	2,700	500/D
	300	2	2.5	2.2	35.0	0.0601	0.0032	628	624	3,400	500/D
	400	2	2.7	2.2	38.5	0.0470	0.0030	733	713	4,300	500/D
	500	2	3.1	2.4	43.0	0.0366	0.0031	848	810	5,400	500/D

Class of conductor 1 : Solid
 2 : Strand

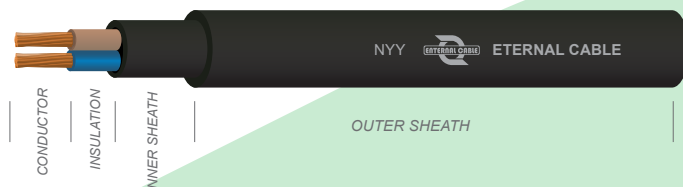
C : Packing in coil
 D : Packing in drum



NY Y

TIS 11 Part 101-2559

450/750 V 70 °C SOLID AND STRANDED CONDUCTOR PVC INSULATED AND DOUBLE SHEATHED



CABLE STRUCTURE

Conductor : Solid and stranded annealed copper,
Single-core : Size 1 mm² up to 500 mm²
Multi-cores : Size 1 mm² up to 300 mm²
Insulation : Polyvinyl chloride (PVC/C)
Core identification

Single-core : Black
2 Cores : Blue and Brown
3 Cores : Brown, Black and Grey
4 Cores : Blue, Brown, Black and Grey

Inner Sheath : Black polyvinyl chloride (PVC) (Multi-cores only)
Outer sheath : Black polyvinyl chloride (PVC/ST4)

TECHNICAL DATA

Classification : Maximum conductor temperature 70 °C
: Circuit voltage not exceeding 450/750 Volts
450 Volts between Line-to-Earth
750 Volts between Line-to-Line

Testing voltage : 2,500 Volts
Reference standard : TIS 11 part 101-2559, Table 4

APPLICATION

For installation exposed, or in raceway, wet or dry location,
or direct burial in ground.

Number of core	Nominal cross sectional area (mm ²)	No. of wires (Min)	Diameter of conductor approx. (mm)	Insulation thickness nominal (mm)	Inner sheath thickness approx. (mm)	Outer sheath thickness nominal (mm)	Overall diameter maximum (mm)	Insulation resistance at 70°C minimum (MΩ·km)	Continuous current rating maximum		Cable weight approx. (kg/km)	Standard length (m)
									Free air at 40 °C (A)	Underground at 30 °C (A)		
2	1	1	1.11	0.8	0.8	1.8	12.0	0.0141	13	21	160	100/C
	1	7	1.29	0.8	0.8	1.8	12.5	0.0135	16	26	170	100/C
	1.5	1	1.36	0.8	0.8	1.8	12.5	0.0123	22	35	180	100/C
	1.5	7	1.59	0.8	0.8	1.8	13.0	0.0116	30	45	190	100/C
	2.5	1	1.75	0.8	0.8	1.8	13.5	0.0102	37	57	220	100/C
	2.5	7	2.01	0.8	0.8	1.8	14.0	0.0093	52	76	230	100/C
	4	1	2.21	0.9	0.8	1.8	15.0	0.0094	70	99	280	100/C
	4	7	2.55	0.9	0.8	1.8	15.5	0.0085	88	128	300	100/C
	6	7	3.12	0.9	0.8	1.8	17.0	0.0073	110	154	370	100/C
	10	7	3.98	1.1	0.8	1.8	19.5	0.0069	133	181	540	500/D
	16	7	5.01	1.1	0.8	2.0	22.5	0.0057	171	223	740	500/D
	25	7	6.33	1.3	1.2	2.0	27.0	0.0054	207	267	1,120	500/D
	35	7	7.60	1.3	1.2	2.0	29.5	0.0047	240	304	1,420	500/D
	50	19	8.83	1.5	1.2	2.2	33.5	0.0046	133	181	1,850	500/D
	70	19	10.58	1.5	1.5	2.2	38.0	0.0039	171	223	2,500	500/D
	95	19	12.50	1.7	1.5	2.2	42.5	0.0038	207	267	3,300	500/D
	120	37	14.07	1.7	1.5	2.4	46.5	0.0034	240	304	4,010	500/D
	150	37	15.61	1.9	1.8	2.6	52.0	0.0034	278	342	4,970	300/D
	185	37	17.50	2.1	1.8	2.8	57.0	0.0034	317	386	6,110	300/D
	240	37	20.07	2.3	2.0	3.0	64.0	0.0033	374	448	7,900	300/D
	300	61	22.50	2.5	2.0	3.2	70.5	0.0032	432	507	9,690	200/D

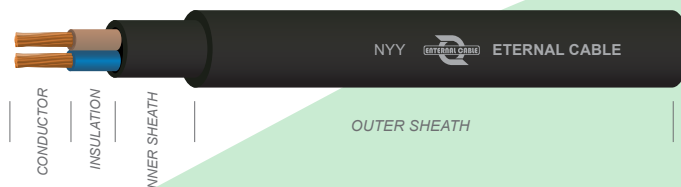
C : Packing in coil
D : Packing in drum



NY Y

TIS 11 Part 101-2559

450/750 V 70 °C SOLID AND STRANDED CONDUCTOR PVC INSULATED AND DOUBLE SHEATHED



CABLE STRUCTURE

Conductor : Solid and stranded annealed copper,
Single-core : Size 1 mm² up to 500 mm²
Multi-cores : Size 1 mm² up to 300 mm²

Insulation

Core identification

Single-core : Black
2 Cores : Blue and Brown
3 Cores : Brown, Black and Grey
4 Cores : Blue, Brown, Black and Grey

Inner Sheath : Black polyvinyl chloride (PVC) (Multi-cores only)

Outer sheath : Black polyvinyl chloride (PVC/ST4)

TECHNICAL DATA

Classification : Maximum conductor temperature 70 °C
: Circuit voltage not exceeding 450/750 Volts
450 Volts between Line-to-Earth
750 Volts between Line-to-Line

Testing voltage : 2,500 Volts

Reference standard : TIS 11 part 101-2559, Table 4

APPLICATION

For installation exposed, or in raceway, wet or dry location,
or direct burial in ground.

Number of core	Nominal cross sectional area (mm ²)	No. of wires (Min)	Diameter of conductor approx. (mm)	Insulation thickness nominal (mm)	Inner sheath thickness approx. (mm)	Outer sheath thickness nominal (mm)	Overall diameter maximum (mm)	Insulation resistance at 70°C minimum (MΩ-km)	Continuous current rating maximum		Cable weight approx. (kg/km)	Standard length (m)
									Free air at 40 °C (A)	Underground at 30 °C (A)		
3	1	1	1.11	0.8	0.8	1.8	12.5	0.0141	13	21	180	100/C
	1	7	1.29	0.8	0.8	1.8	13.0	0.0135	16	26	190	100/C
	1.5	1	1.36	0.8	0.8	1.8	13.0	0.0123	22	35	205	100/C
	1.5	7	1.59	0.8	0.8	1.8	13.5	0.0116	30	45	220	100/C
	2.5	1	1.75	0.8	0.8	1.8	14.0	0.0102	37	57	250	100/C
	2.5	7	2.01	0.8	0.8	1.8	15.0	0.0093	52	76	270	100/C
	4	1	2.21	0.9	0.8	1.8	15.5	0.0094	70	99	335	100/C
	4	7	2.55	0.9	0.8	1.8	16.5	0.0085	88	128	360	100/C
	6	7	3.12	0.9	0.8	1.8	18.0	0.0073	110	154	450	100/C
	10	7	3.98	1.1	0.8	1.8	20.5	0.0069	133	181	660	500/D
	16	7	5.01	1.1	1.2	2.0	24.5	0.0057	171	223	970	500/D
	25	7	6.33	1.3	1.2	2.0	28.5	0.0054	207	267	1,410	500/D
	35	7	7.60	1.3	1.2	2.0	31.5	0.0047	240	304	1,810	500/D
	50	19	8.83	1.5	1.5	2.2	36.0	0.0046	133	181	2,410	500/D
	70	19	10.58	1.5	1.5	2.2	40.5	0.0039	171	223	3,200	500/D
	95	19	12.50	1.7	1.5	2.4	46.0	0.0038	207	267	4,300	500/D
	120	37	14.07	1.7	1.8	2.6	50.5	0.0034	240	304	5,320	500/D
	150	37	15.61	1.9	1.8	2.8	56.0	0.0034	278	342	6,490	300/D
	185	37	17.50	2.1	2.0	3.0	61.5	0.0034	317	386	8,060	300/D
	240	37	20.07	2.3	2.0	3.2	69.0	0.0033	374	448	10,360	200/D
	300	61	22.50	2.5	2.2	3.4	76.0	0.0032	432	507	12,810	200/D

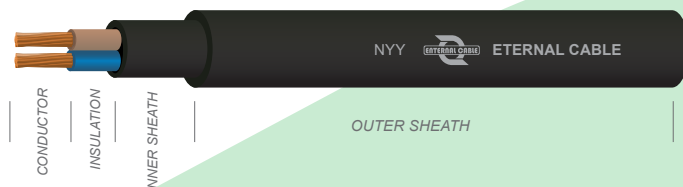
C : Packing in coil
D : Packing in drum



NY Y

TIS 11 Part 101-2559

450/750 V 70 °C SOLID AND STRANDED CONDUCTOR PVC INSULATED AND DOUBLE SHEATHED



CABLE STRUCTURE

Conductor : Solid and stranded annealed copper,
Single-core : Size 1 mm² up to 500 mm²
Multi-cores : Size 1 mm² up to 300 mm²

Insulation

Core identificationn

Single-core : Black
2 Cores : Blue and Brown
3 Cores : Brown, Black and Grey
4 Cores : Blue, Brown, Black and Grey

Inner Sheath : Black polyvinyl chloride (PVC) (Multi-cores only)

Outer sheath : Black polyvinyl chloride (PVC/ST4)

TECHNICAL DATA

Classification : Maximum conductor temperature 70 °C
: Circuit voltage not exceeding 450/750 Volts
450 Volts between Line-to-Earth
750 Volts between Line-to-Line

Testing voltage : 2,500 Volts

Reference standard : TIS 11 part 101-2559, Table 4

APPLICATION

For installation exposed, or in raceway, wet or dry location,
or direct burial in ground.

Number of core	Nominal cross sectional area (mm ²)	No. of wires (Min)	Diameter of conductor approx. (mm)	Insulation thickness nominal (mm)	Inner sheath thickness approx. (mm)	Outer sheath thickness nominal (mm)	Overall diameter maximum (mm)	Insulation resistance at 70°C minimum (MΩ-km)	Continuous current rating maximum		Cable weight approx. (kg/km)	Standard length (m)
									Free air at 40 °C (A)	Underground at 30 °C (A)		
4	1	1	1.11	0.8	0.8	1.8	13.5	0.0141	13	21	210	100/C
	1	7	1.29	0.8	0.8	1.8	14.0	0.0135	16	26	220	100/C
	1.5	1	1.36	0.8	0.8	1.8	14.0	0.0123	22	35	240	100/C
	1.5	7	1.59	0.8	0.8	1.8	14.5	0.0116	30	45	260	100/C
	2.5	1	1.75	0.8	0.8	1.8	15.0	0.0102	37	57	300	100/C
	2.5	7	2.01	0.8	0.8	1.8	16.0	0.0093	52	76	320	100/C
	4	1	2.21	0.9	0.8	1.8	17.0	0.0094	70	99	400	100/C
	4	7	2.55	0.9	0.8	1.8	17.5	0.0085	88	128	440	100/C
	6	7	3.12	0.9	0.8	1.8	19.0	0.0073	110	154	550	100/C
	10	7	3.98	1.1	0.8	2.0	23.0	0.0069	133	181	840	500/D
	16	7	5.01	1.1	1.2	2.0	26.5	0.0057	171	223	1,200	500/D
	25	7	6.33	1.3	1.2	2.0	31.0	0.0054	207	267	1,760	500/D
	35	7	7.60	1.3	1.5	2.2	35.0	0.0047	240	304	2,360	500/D
	50	19	8.83	1.5	1.5	2.2	39.5	0.0046	133	181	3,020	500/D
	70	19	10.58	1.5	1.5	2.4	44.5	0.0039	171	223	4,090	500/D
	95	19	12.50	1.7	1.8	2.6	51.5	0.0038	207	267	5,580	300/D
	120	37	14.07	1.7	1.8	2.8	56.0	0.0034	240	304	6,800	300/D
	150	37	15.61	1.9	2.0	3.0	62.0	0.0034	278	342	8,360	300/D
	185	37	17.50	2.1	2.0	3.2	68.0	0.0034	317	386	10,310	200/D
	240	37	20.07	2.3	2.2	3.4	76.5	0.0033	374	448	13,350	200/D
	300	61	22.50	2.5	2.2	3.8	85.0	0.0032	432	507	16,500	200/D

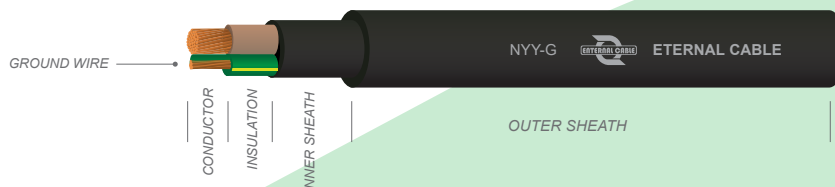
C : Packing in coil
D : Packing in drum



NYY-G

TIS 11 Part 101-2559

450/750 V 70 °C STRANDED CONDUCTOR PVC INSULATED AND DOUBLE SHEATHED WITH GROUND



CABLE STRUCTURE

- Conductor** : Stranded annealed copper,
: 2 cores up to 4 cores with ground
: Size 1 mm² up to 300 mm²
- Ground Wire** : Stranded annealed copper,
: Size 1 mm² up to 150 mm²
- Insulation** : Polyvinyl chloride (PVC/C)
- Core identification**
- 2 Cores : Blue and Brown
3 Cores : Brown, Black and Grey
4 Cores : Blue, Brown, Black and Grey
Ground wire : Green/Yellow

Inner Sheath : Black polyvinyl chloride (PVC)
Outer sheath : Black polyvinyl chloride (PVC/ST4)

TECHNICAL DATA

- Classification** : Maximum conductor temperature 70 °C
: Circuit voltage not exceeding 450/750 Volts
450 Volts between Line-to-Earth
750 Volts between Line-to-Line
- Testing voltage** : 2,500 Volts
- Reference standard** : TIS 11 part 101-2559, Table 5

APPLICATION

For installation exposed, or in raceway, wet or dry location,
or direct burial in ground.

Number of core	Nominal cross sectional area (mm ²)		No. of wires (Min)		Diameter of conductor approx. (mm)		Insulation thickness nominal (mm)		Inner sheath thickness approx. (mm)	Outer sheath thickness nominal (mm)	Overall diameter maximum (mm)	Insulation resistance at 70 °C minimum (MΩ·km)	Continuous current rating maximum		Cable weight approx. (kg/km)	Standard length (m)
	Phase	Ground	Phase	Ground	Phase	Ground	Phase	Ground					Free air at 40 °C (A)	Underground at 30 °C (A)		
2+G	1	1	1	1	1.11	1.11	0.8	0.8	0.8	1.8	13.0	0.0141	13	21	180	100/C
	1	1	7	7	1.29	1.29	0.8	0.8	0.8	1.8	13.5	0.0135	13	21	190	100/C
	1.5	1.5	1	1	1.36	1.36	0.8	0.8	0.8	1.8	13.5	0.0123	16	26	210	100/C
	1.5	1.5	7	7	1.59	1.59	0.8	0.8	0.8	1.8	14.0	0.0116	16	26	220	100/C
	2.5	2.5	1	1	1.75	1.75	0.8	0.8	0.8	1.8	14.5	0.0102	22	35	250	100/C
	2.5	2.5	7	7	2.01	2.01	0.8	0.8	0.8	1.8	15.0	0.0093	22	35	270	100/C
	4	4	1	1	2.21	2.21	0.9	0.9	0.8	1.8	16.0	0.0094	30	45	330	100/C
	4	4	7	7	2.55	2.55	0.9	0.9	0.8	1.8	16.5	0.0085	30	45	360	100/C
	6	6	7	7	3.12	3.12	0.9	0.9	0.8	1.8	18.0	0.0073	37	57	450	100/C
	10	10	7	7	3.98	3.98	1.1	1.1	0.8	1.8	21.0	0.0069	52	76	670	500/D
	16	16	7	7	5.01	5.01	1.1	1.1	0.8	2.0	23.5	0.0057	70	99	930	500/D
	25	16	7	7	6.33	5.01	1.3	1.1	1.2	2.0	28.0	0.0054	88	128	1,280	500/D
	35	16	7	7	7.60	5.01	1.3	1.1	1.2	2.0	30.0	0.0047	110	154	1,550	500/D
	50	25	19	7	8.83	6.33	1.5	1.3	1.2	2.2	34.0	0.0046	133	181	2,080	500/D
	70	35	19	7	10.58	7.60	1.5	1.3	1.5	2.2	38.5	0.0039	171	223	2,810	500/D
	95	50	19	19	12.50	8.83	1.7	1.5	1.5	2.2	43.5	0.0038	207	267	3,710	500/D
	120	70	37	19	14.07	10.58	1.7	1.5	1.5	2.4	47.5	0.0034	240	304	4,620	300/D
	150	95	37	19	15.61	12.50	1.9	1.7	1.8	2.6	53.0	0.0034	278	342	5,840	300/D
	185	95	37	19	17.50	12.50	2.1	1.7	1.8	2.8	57.5	0.0034	317	386	6,910	300/D
	240	120	37	37	20.07	14.07	2.3	1.7	2.0	3.0	64.5	0.0033	374	448	8,860	200/D
	300	150	61	37	22.50	15.61	2.5	1.9	2.0	3.2	71.0	0.0032	432	507	10,880	200/D

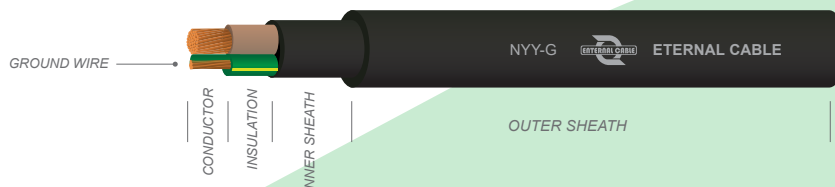
C : Packing in coil
D : Packing in drum



NYY-G

TIS 11 Part 101-2559

450/750 V 70 °C STRANDED CONDUCTOR PVC INSULATED AND DOUBLE SHEATHED WITH GROUND



CABLE STRUCTURE

- Conductor** : Stranded annealed copper,
: 2 cores up to 4 cores with ground
: Size 1 mm² up to 300 mm²
- Ground Wire** : Stranded annealed copper,
: Size 1 mm² up to 150 mm²
- Insulation** : Polyvinyl chloride (PVC/C)
- Core identification**
- 2 Cores : Blue and Brown
3 Cores : Brown, Black and Grey
4 Cores : Blue, Brown, Black and Grey
Ground wire : Green/Yellow

Inner Sheath : Black polyvinyl chloride (PVC)
Outer sheath : Black polyvinyl chloride (PVC/ST4)

TECHNICAL DATA

- Classification** : Maximum conductor temperature 70 °C
: Circuit voltage not exceeding 450/750 Volts
450 Volts between Line-to-Earth
750 Volts between Line-to-Line
- Testing voltage** : 2,500 Volts
- Reference standard** : TIS 11 part 101-2559, Table 5

APPLICATION

For installation exposed, or in raceway, wet or dry location,
or direct burial in ground.

Number of core	Nominal cross sectional area (mm ²)		No. of wires (Min)		Diameter of conductor approx. (mm)		Insulation thickness nominal (mm)		Inner sheath thickness approx. (mm)	Outer sheath thickness nominal (mm)	Overall diameter maximum (mm)	Insulation resistance at 70 °C minimum (MΩ·km)	Continuous current rating maximum		Cable weight approx. (kg/km)	Standard length (m)
	Phase	Ground	Phase	Ground	Phase	Ground	Phase	Ground					Free air at 40 °C (A)	Underground at 30 °C (A)		
3+G	1	1	1	1	1.11	1.11	0.8	0.8	0.8	1.8	13.5	0.0141	13	21	210	100/C
	1	1	7	7	1.29	1.29	0.8	0.8	0.8	1.8	14.0	0.0135	13	21	220	100/C
	1.5	1.5	1	1	1.36	1.36	0.8	0.8	0.8	1.8	14.0	0.0123	16	26	240	100/C
	1.5	1.5	7	7	1.59	1.59	0.8	0.8	0.8	1.8	15.0	0.0116	16	26	250	100/C
	2.5	2.5	1	1	1.75	1.75	0.8	0.8	0.8	1.8	15.5	0.0102	22	35	300	100/C
	2.5	2.5	7	7	2.01	2.01	0.8	0.8	0.8	1.8	16.0	0.0093	22	35	320	100/C
	4	4	1	1	2.21	2.21	0.9	0.9	0.8	1.8	17.0	0.0094	30	45	400	100/C
	4	4	7	7	2.55	2.55	0.9	0.9	0.8	1.8	18.0	0.0085	30	45	430	100/C
	6	6	7	7	3.12	3.12	0.9	0.9	0.8	1.8	19.0	0.0073	37	57	550	100/C
	10	10	7	7	3.98	3.98	1.1	1.1	0.8	1.8	22.5	0.0069	52	76	820	500/D
	16	16	7	7	5.01	5.01	1.1	1.1	1.2	2.0	26.5	0.0057	70	99	1,200	500/D
	25	16	7	7	6.33	5.01	1.3	1.1	1.2	2.0	30.5	0.0054	88	128	1,620	500/D
	35	16	7	7	7.60	5.01	1.3	1.1	1.2	2.0	33.0	0.0047	110	154	1,990	500/D
	50	25	19	7	8.83	6.33	1.5	1.3	1.5	2.2	38.5	0.0046	133	181	2,730	500/D
	70	35	19	7	10.58	7.60	1.5	1.3	1.5	2.2	42.5	0.0039	171	223	3,630	500/D
	95	50	19	19	12.50	8.83	1.7	1.5	1.5	2.4	48.5	0.0038	207	267	4,870	500/D
	120	70	37	19	14.07	10.58	1.7	1.5	1.8	2.6	53.5	0.0034	240	304	6,120	300/D
	150	95	37	19	15.61	12.50	1.9	1.7	1.8	2.8	59.0	0.0034	278	342	7,610	300/D
	185	95	37	19	17.50	12.50	2.1	1.7	2.0	3.0	64.5	0.0034	317	386	9,130	300/D
	240	120	37	37	20.07	14.07	2.3	1.7	2.0	3.2	72.0	0.0033	374	448	11,660	200/D
	300	150	61	37	22.50	15.61	2.5	1.9	2.2	3.4	79.5	0.0032	432	507	14,410	200/D

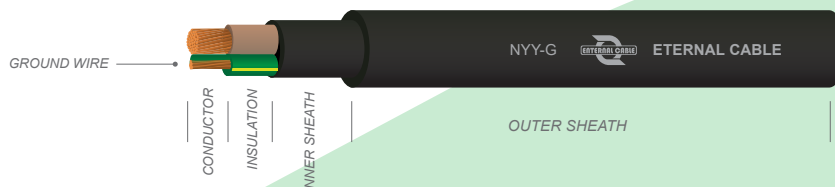
C : Packing in coil
D : Packing in drum



NYG

TIS 11 Part 101-2559

450/750 V 70 °C STRANDED CONDUCTOR PVC INSULATED AND DOUBLE SHEATHED WITH GROUND



CABLE STRUCTURE

- Conductor** : Stranded annealed copper,
: 2 cores up to 4 cores with ground
: Size 1 mm² up to 300 mm²
- Ground Wire** : Stranded annealed copper,
: Size 1 mm² up to 150 mm²
- Insulation** : Polyvinyl chloride (PVC/C)
- Core identification**
- 2 Cores : Blue and Brown
3 Cores : Brown, Black and Grey
4 Cores : Blue, Brown, Black and Grey
Ground wire : Green/Yellow

Inner Sheath : Black polyvinyl chloride (PVC)
Outer sheath : Black polyvinyl chloride (PVC/ST4)

TECHNICAL DATA

- Classification** : Maximum conductor temperature 70 °C
: Circuit voltage not exceeding 450/750 Volts
450 Volts between Line-to-Earth
750 Volts between Line-to-Line
- Testing voltage** : 2,500 Volts
- Reference standard** : TIS 11 part 101-2559, Table 5

APPLICATION

For installation exposed, or in raceway, wet or dry location,
or direct burial in ground.

Number of core	Nominal cross sectional area (mm ²)		No. of wires (Min)		Diameter of conductor approx. (mm)		Insulation thickness nominal (mm)		Inner sheath thickness approx. (mm)	Outer sheath thickness nominal (mm)	Overall diameter maximum (mm)	Insulation resistance at 70 °C minimum (MΩ-km)	Continuous current rating maximum		Cable weight approx. (kg/km)	Standard length (m)
													Free air at 40 °C (A)	Underground at 30 °C (A)		
	Phase	Ground	Phase	Ground	Phase	Ground	Phase	Ground								
4+G	1	1	1	1	1.11	1.11	0.8	0.8	0.8	1.8	14.5	0.0141	13	21	240	100/C
	1	1	7	7	1.29	1.29	0.8	0.8	0.8	1.8	15.0	0.0135	13	21	250	100/C
	1.5	1.5	1	1	1.36	1.36	0.8	0.8	0.8	1.8	15.0	0.0123	16	26	280	100/C
	1.5	1.5	7	7	1.59	1.59	0.8	0.8	0.8	1.8	16.0	0.0116	16	26	290	100/C
	2.5	2.5	1	1	1.75	1.75	0.8	0.8	0.8	1.8	16.5	0.0102	22	35	350	100/C
	2.5	2.5	7	7	2.01	2.01	0.8	0.8	0.8	1.8	17.0	0.0093	22	35	370	100/C
	4	4	1	1	2.21	2.21	0.9	0.9	0.8	1.8	18.0	0.0094	30	45	470	100/C
	4	4	7	7	2.55	2.55	0.9	0.9	0.8	1.8	19.0	0.0085	30	45	500	100/C
	6	6	7	7	3.12	3.12	0.9	0.9	0.8	1.8	20.5	0.0073	37	57	660	500/D
	10	10	7	7	3.98	3.98	1.1	1.1	0.8	2.0	25.0	0.0069	52	76	1,010	500/D
	16	16	7	7	5.01	5.01	1.1	1.1	1.2	2.0	28.5	0.0057	70	99	1,450	500/D
	25	16	7	7	6.33	5.01	1.3	1.1	1.2	2.0	34.0	0.0054	88	128	1,990	500/D
	35	16	7	7	7.60	5.01	1.3	1.1	1.5	2.2	39.0	0.0047	110	154	2,570	500/D
	50	25	19	7	8.83	6.33	1.5	1.3	1.5	2.2	43.5	0.0046	133	181	3,390	500/D
	70	35	19	7	10.58	7.60	1.5	1.3	1.5	2.4	49.0	0.0039	171	223	4,570	500/D
	95	50	19	19	12.50	8.83	1.7	1.5	1.8	2.6	56.5	0.0038	207	267	6,230	300/D
	120	70	37	19	14.07	10.58	1.7	1.5	1.8	2.8	61.5	0.0034	240	304	7,700	300/D
	150	95	37	19	15.61	12.50	1.9	1.7	2.0	3.0	68.0	0.0034	278	342	9,610	300/D
	185	95	37	19	17.50	12.50	2.1	1.7	2.0	3.2	75.0	0.0034	317	386	11,530	200/D
	240	120	37	37	20.07	14.07	2.3	1.7	2.2	3.4	84.5	0.0033	374	448	11,480	200/D
	300	150	61	37	22.50	15.61	2.5	1.9	2.2	3.8	93.5	0.0032	432	507	18,340	150/D

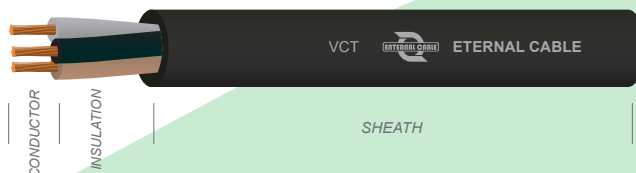
C : Packing in coil
D : Packing in drum



VCT

TIS 11 Part 101-2559

450/750 V 70 °C FLEXIBLE CONDUCTOR PVC INSULATED AND SHEATHED, ROUND TYPE



CABLE STRUCTURE

- Conductor** : Flexible annealed copper,
 Single-core : Size 1 mm² up to 35 mm²
 Multi-cores : Size 1 mm² up to 35 mm²
- Insulation** : Polyvinyl chloride (PVC/D)
- Core identification**
- Single-core : Black
 2 Cores : Blue and Brown
 3 Cores : Brown, Black and Grey
 4 Cores : Blue, Brown, Black and Grey

Sheath : Black polyvinyl chloride (PVC/ST5)

TECHNICAL DATA

- Classification** : Maximum conductor temperature 70 °C
 : Circuit voltage not exceeding 450/750 Volts
 450 Volts between Line-to-Earth
 750 Volts between Line-to-Line
- Testing voltage** : 2,500 Volts
- Reference standard** : TIS 11 part 101-2559, Table 7

APPLICATION

For mobile-electrical equipment used in mines, factories, farm or household appliances. This cable is suitable for use in places where cables come in contact with oils.

Number of core	Nominal cross sectional area (mm ²)	Dia of wires (mm) (Max.)	Diameter of conductor (mm) (Approx.)	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Overall diameter maximum (mm)	Insulation resistance at 70°C minimum (MΩ-km)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
1	1	0.21	1.31	0.8	1.2	6.2	0.0127	10	42	100/C
	1.5	0.26	1.58	0.8	1.2	6.6	0.0111	16	50	100/C
	2.5	0.26	2.04	0.8	1.2	7.4	0.0092	25	63	100/C
	4	0.31	2.59	0.9	1.4	8.6	0.0084	30	93	100/C
	6	0.31	3.60	0.9	1.4	9.4	0.0071	39	120	100/C
	10	0.41	4.79	1.1	1.8	12.0	0.0068	51	210	500/D
	16	0.41	5.88	1.1	1.8	13.5	0.0050	73	280	500/D
	25	0.41	7.32	1.3	2.2	16.0	0.0048	97	420	500/D
	35	0.41	8.61	1.3	2.2	17.5	0.0041	140	540	500/D
2	1	0.21	1.31	0.8	1.2	9.6	0.0127	10	105	100/C
	1.5	0.26	1.58	0.8	1.4	11.0	0.0111	16	135	100/C
	2.5	0.26	2.04	0.8	1.4	12.5	0.0092	25	170	100/C
	4	0.31	2.59	0.9	1.6	14.5	0.0084	30	241	100/C
	6	0.31	3.60	0.9	1.6	16.0	0.0071	39	375	100/C
	10	0.41	4.79	1.1	1.8	20.0	0.0068	51	540	500/D
	16	0.41	5.88	1.1	2.2	23.0	0.0050	73	770	500/D
	25	0.41	7.32	1.3	2.4	27.5	0.0048	97	1,130	500/D
	35	0.41	8.61	1.3	2.6	31.0	0.0041	140	1,470	500/D

Class of conductor 5 : Flexible

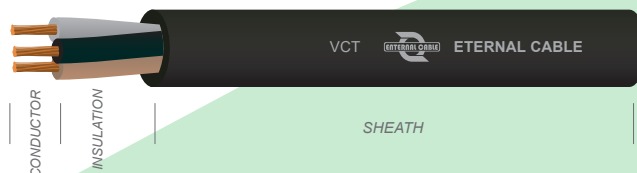
C : Packing in coil
 D : Packing in drum



VCT

TIS 11 Part 101-2559

450/750 V 70 °C FLEXIBLE CONDUCTOR PVC INSULATED AND SHEATHED, ROUND TYPE



CABLE STRUCTURE

- Conductor** : Flexible annealed copper,
Multi-cores : Size 1 mm² up to 35 mm²
- Ground wire** : Flexible annealed copper,
- Insulation** : Polyvinyl chloride (PVC/D)
- Core identification**
- Single-core : Black
 - 2 Cores : Blue and Brown
 - 3 Cores : Brown, Black and Grey
 - 4 Cores : Blue, Brown, Black and Grey
- Sheath** : Black polyvinyl chloride (PVC/ST5)

TECHNICAL DATA

- Classification** : Maximum conductor temperature 70 °C
: Circuit voltage not exceeding 450/750 Volts
450 Volts between Line-to-Earth
750 Volts between Line-to-Line
- Testing voltage** : 2,500 Volts
- Reference standard** : TIS 11 part 101-2559, Table 7

APPLICATION

For mobile-electrical equipment used in mines, factories, farm or household appliances. This cable is suitable for use in places where cables come in contact with oils.

Number of core	Nominal cross sectional area (mm ²)	Dia of wires (mm) (Max.)	Diameter of conductor (mm) (Approx.)	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Overall diameter maximum (mm)	Insulation resistance at 70°C minimum (MΩ-km)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
3	1	0.21	1.31	0.8	1.4	10.5	0.0127	10	130	100/C
	1.5	0.26	1.58	0.8	1.4	11.5	0.0111	16	160	100/C
	2.5	0.26	2.04	0.8	1.4	13.0	0.0092	20	200	100/C
	4	0.31	2.59	0.9	1.6	15.5	0.0084	26	291	100/C
	6	0.31	3.60	0.9	1.8	17.5	0.0071	34	420	100/C
	10	0.41	4.79	1.1	2.0	21.5	0.0068	47	684	500/D
	16	0.41	5.88	1.1	2.4	25.0	0.0050	63	960	500/D
	25	0.41	7.32	1.3	2.6	30.0	0.0048	83	1,420	500/D
	35	0.41	8.61	1.3	2.8	33.5	0.0041	102	1,860	500/D
4	1	0.21	1.31	0.8	1.6	12.0	0.0127	10	170	100/C
	1.5	0.26	1.58	0.8	1.6	12.5	0.0111	16	200	100/C
	2.5	0.26	2.04	0.8	1.6	15.0	0.0092	20	260	100/C
	4	0.31	2.59	0.9	1.8	17.0	0.0084	26	363	100/C
	6	0.31	3.60	0.9	2.0	19.5	0.0071	34	540	100/C
	10	0.41	4.79	1.1	2.2	24.0	0.0068	47	860	500/D
	16	0.41	5.88	1.1	2.6	28.0	0.0050	63	1,220	500/D
	25	0.41	7.32	1.3	2.8	33.0	0.0048	83	1,800	500/D
	35	0.41	8.61	1.3	3.1	37.0	0.0041	102	2,380	500/D

Class of conductor 5 : Flexible

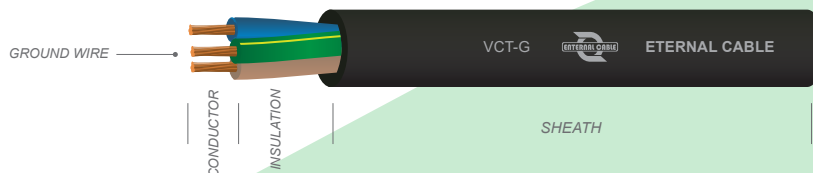
C : Packing in coil
D : Packing in drum



VCT-G

TIS 11 Part 101-2559

450/750 V 70 °C FLEXIBLE CONDUCTOR PVC INSULATED AND SHEATHED WITH GROUND, ROUND TYPE



CABLE STRUCTURE

- Conductor** : Flexible annealed copper,
Multi-cores : Size 1 mm² up to 35 mm²
- Ground wire** : Flexible annealed copper,
Multi-cores : Size 1 mm² up to 16 mm²
- Insulation** : Polyvinyl chloride (PVC/D)
- Core identification**
- 2 Cores : Blue and Brown
 - 3 Cores : Brown, Black and Grey
 - 4 Cores : Blue, Brown, Black and Grey
 - Ground core : Green/Yellow
- Sheath** : Black polyvinyl chloride (PVC/ST5)

TECHNICAL DATA

- Classification** : Maximum conductor temperature 70 °C
: Circuit voltage not exceeding 450/750 Volts
450 Volts between Line-to-Earth
750 Volts between Line-to-Line
- Testing voltage** : 2,500 Volts
- Reference standard** : TIS 11 part 101-2559, Table 8

APPLICATION

For mobile-electrical equipment used in mines, factories, farm or household appliances. This cable is suitable for use in places where cables come in contact with oils.

Number of core	Nominal cross sectional area (mm ²)	Dia of wires (mm) (Max.)	Diameter of conductor (mm) (Approx.)	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Overall diameter maximum (mm)	Insulation resistance at 70°C minimum (MΩ-km)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
2+G	1	0.21	1.31	0.8	1.2	10.0	0.0127	10	120	100/C
	1 (G)	0.21	1.31	0.8						
	1.5	0.26	1.58	0.8	1.4	12.0	0.0111	16	160	100/C
	1.5 (G)	0.26	1.58	0.8						
	2.5	0.26	2.04	0.8	1.4	13.0	0.0092	25	200	100/C
	2.5 (G)	0.26	2.04	0.8						
	4	0.31	2.59	0.9	1.6	15.5	0.0084	30	300	100/C
	4 (G)	0.31	2.59	0.9						
	6	0.31	3.60	0.9	1.8	17.5	0.0071	39	420	100/C
	6 (G)	0.31	3.60	0.9						
	10	0.41	4.79	1.1	2.0	21.5	0.0068	51	670	500/D
	10 (G)	0.41	4.79	1.1						
	16	0.41	5.88	1.1	2.4	25.0	0.0050	73	960	500/D
	16 (G)	0.41	5.88	1.1						
	25	0.41	7.32	1.3	2.6	28.5	0.0048	97	1,290	500/D
	16 (G)	0.41	5.88	1.1						
	35	0.41	8.61	1.3	2.8	31.5	0.0041	140	1,610	500/D
	16 (G)	0.41	5.88	1.1						

Class of conductor 5 : Flexible

G : Ground conductor

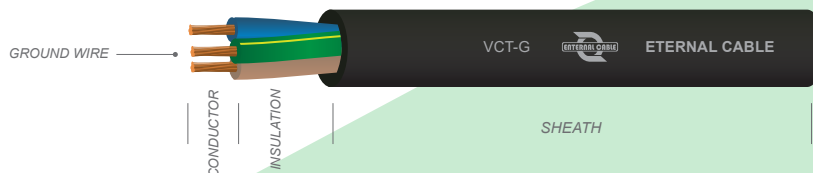
C : Packing in coil
D : Packing in drum



VCT-G

TIS 11 Part 101-2559

450/750 V 70 °C FLEXIBLE CONDUCTOR PVC INSULATED AND SHEATHED WITH GROUND, ROUND TYPE



CABLE STRUCTURE

- Conductor** : Flexible annealed copper,
Multi-cores : Size 1 mm² up to 35 mm²
- Ground wire** : Flexible annealed copper,
Multi-cores : Size 1 mm² up to 16 mm²
- Insulation** : Polyvinyl chloride (PVC/D)
- Core identification**
- 2 Cores : Blue and Brown
 - 3 Cores : Brown, Black and Grey
 - 4 Cores : Blue, Brown, Black and Grey
 - Ground core : Green/Yellow
- Sheath** : Black polyvinyl chloride (PVC/ST5)

TECHNICAL DATA

- Classification** : Maximum conductor temperature 70 °C
: Circuit voltage not exceeding 450/750 Volts
450 Volts between Line-to-Earth
750 Volts between Line-to-Line
- Testing voltage** : 2,500 Volts
- Reference standard** : TIS 11 part 101-2559, Table 8

APPLICATION

For mobile-electrical equipment used in mines, factories, farm or household appliances. This cable is suitable for use in places where cables come in contact with oils.

Number of core	Nominal cross sectional area (mm ²)	Dia of wires (mm) (Max.)	Diameter of conductor (mm) (Approx.)	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Overall diameter maximum (mm)	Insulation resistance at 70°C minimum (MΩ-km)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
3+G	1	0.21	1.31	0.8	1.4	11.5	0.0127	10	160	100/C
	1 (G)	0.21	1.31	0.8						
	1.5	0.26	1.58	0.8	1.4	12.5	0.0111	16	190	100/C
	1.5 (G)	0.26	1.58	0.8						
	2.5	0.26	2.04	0.8	1.4	14.0	0.0092	25	250	100/C
	2.5 (G)	0.26	2.04	0.8						
	4	0.31	2.59	0.9	1.8	17.0	0.0084	26	380	100/C
	4 (G)	0.31	2.59	0.9						
	6	0.31	3.60	0.9	2.0	19.5	0.0071	34	540	100/C
	6 (G)	0.31	3.60	0.9						
	10	0.41	4.79	1.1	2.2	24.0	0.0068	47	860	500/D
	10 (G)	0.41	4.79	1.1						
	16	0.41	5.88	1.1	2.6	28.0	0.0050	63	1,220	500/D
	16 (G)	0.41	5.88	1.1						
	25	0.41	7.32	1.3	2.8	33.0	0.0048	83	1,670	500/D
	16 (G)	0.41	5.88	1.1						
	35	0.41	8.61	1.3	3.1	37.0	0.0041	102	2,110	500/D
	16 (G)	0.41	5.88	1.1						

Class of conductor 5 : Flexible

G : Ground conductor

C : Packing in coil

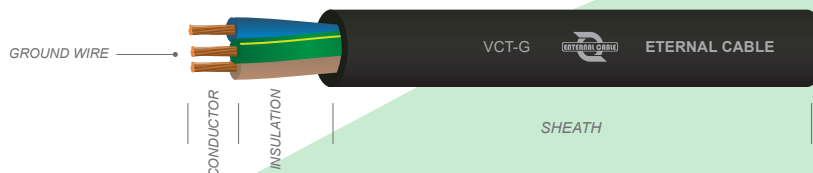
D : Packing in drum



VCT-G

TIS 11 Part 101-2559

450/750 V 70 °C FLEXIBLE CONDUCTOR PVC INSULATED AND SHEATHED WITH GROUND, ROUND TYPE



CABLE STRUCTURE

- Conductor** : Flexible annealed copper,
Multi-cores : Size 1 mm² up to 35 mm²
- Ground wire** : Flexible annealed copper,
Multi-cores : Size 1 mm² up to 16 mm²
- Insulation** : Polyvinyl chloride (PVC/D)
- Core identification**
- 2 Cores : Blue and Brown
 - 3 Cores : Brown, Black and Grey
 - 4 Cores : Blue, Brown, Black and Grey
 - Ground core : Green/Yellow
- Sheath** : Black polyvinyl chloride (PVC/ST5)

TECHNICAL DATA

- Classification** : Maximum conductor temperature 70 °C
: Circuit voltage not exceeding 450/750 Volts
450 Volts between Line-to-Earth
750 Volts between Line-to-Line
- Testing voltage** : 2,500 Volts
- Reference standard** : TIS 11 part 101-2559, Table 8

APPLICATION

For mobile-electrical equipment used in mines, factories, farm or household appliances. This cable is suitable for use in places where cables come in contact with oils.

Number of core	Nominal cross sectional area (mm ²)	Dia of wires (mm) (Max.)	Diameter of conductor (mm) (Approx.)	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Overall diameter maximum (mm)	Insulation resistance at 70°C minimum (MΩ-km)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
4+G	1	0.21	1.31	0.8	1.6	13.0	0.0127	10	200	100/C
	1 (G)	0.21	1.31	0.8						
	1.5	0.26	1.58	0.8	1.6	14.0	0.0111	16	240	100/C
	1.5 (G)	0.26	1.58	0.8						
	2.5	0.26	2.04	0.8	1.6	15.5	0.0092	20	310	100/C
	2.5 (G)	0.26	2.04	0.8						
	4	0.31	2.59	0.9	1.8	18.5	0.0084	26	460	100/C
	4 (G)	0.31	2.59	0.9						
	6	0.31	3.60	0.9	2.0	21.5	0.0071	34	650	100/C
	6 (G)	0.31	3.60	0.9						
	10	0.41	4.79	1.1	2.2	26.5	0.0068	47	1,030	500/D
	10 (G)	0.41	4.79	1.1						
	16	0.41	5.88	1.1	2.6	30.5	0.0050	63	1,480	500/D
	16 (G)	0.41	5.88	1.1						
	25	0.41	7.32	1.3	2.8	36.5	0.0048	83	2,050	500/D
	16 (G)	0.41	5.88	1.1						
	35	0.41	8.61	1.3	3.1	41.5	0.0041	102	2,630	500/D
	16 (G)	0.41	5.88	1.1						

Class of conductor 5 : Flexible

G : Ground conductor

C : Packing in coil

D : Packing in drum



Copper Conductor Cables

Low Voltage Power Cables

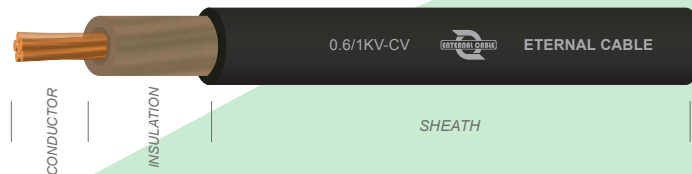
0.6/1KV-CV	0.6/1 kV 90 °C CROSS-LINKED POLYETHYLENE INSULATED PVC SHEATHED FLAM RETARDANT POWER CABLE	B32
0.6/1KV-CV-SWA	0.6/1 kV 90 °C CROSS-LINKED POLYETHYLENE INSULATED PVC SHEATHED, WITH GALVANIZED STEEL WIRES ARMORED POWER CABLE	B42



0.6/1KV-CV

IEC 60502-1

0.6/1 kV 90 °C CROSS-LINKED POLYETHYLENE INSULATED PVC SHEATHED FLAM RETARDANT POWER CABLE



CABLE STRUCTURE

Conductor : Concentric Stranded and compacted round annealed copper
 Single-core : Size 1.5 mm² up to 1,000 mm²
 Multi-cores : Size 1.5 mm² up to 400 mm²

Insulation : Cross-linked Polyethylene (XLPE)

Core identification

Single-core : Natural (translucent)
 2 Cores : Blue and Brown
 3 Cores : Brown, Black and Grey
 4 Cores : Blue, Brown, Black and Grey
 Other colors are available on customer request

Sheath : Black polyvinyl chloride (PVC/ST2)

TECHNICAL DATA

Classification : Maximum conductor temperature 90 °C
 : Circuit voltage not exceeding 1,100 Volts
 Rated voltage (U₀/U) 0.6/1 kV
 600 Volts between Line-to-Earth
 1,000 Volts between Line-to-Line

Testing voltage : 3,500 Volts

Reference standard : IEC 60502-1, IEC 60228, IEC 60332-1

APPLICATION

Use for installation in open tray, conduit, underground duct trench or direct burial in ground, at wet or dry location.

Number of core	Nominal cross sectional area (mm ²)	Number of wires minimum (No./mm)	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Overall diameter maximum (mm)	Conductor resistance at 20°C maximum (Ω/km)	Insulation resistance at 70°C minimum (MΩ-km)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
1	1.5	7/0.53	0.7	1.4	6.3	12.1	2,500	31	50	500/D
	2.5	7/0.67	0.7	1.4	6.8	7.41	2,100	42	60	500/D
	4	7/0.85	0.7	1.4	7.3	4.61	1,700	55	80	500/D
	6	7/1.04	0.7	1.4	7.9	3.08	1,450	69	100	500/D
	10	6	0.7	1.4	8.4	1.83	1,250	93	140	500/D
	16	6	0.7	1.4	9.4	1.15	1,000	123	200	500/D
	25	6	0.9	1.4	11.0	0.727	1,050	164	310	500/D
	35	6	0.9	1.4	12.0	0.524	900	202	400	500/D
	50	6	1.0	1.4	13.5	0.387	850	245	500	500/D
	70	12	1.1	1.4	15.0	0.268	800	309	750	500/D
	95	15	1.1	1.5	17.5	0.193	650	383	1,000	500/D
	120	18	1.2	1.5	19.0	0.153	650	446	1,200	500/D
	150	18	1.4	1.6	21	0.124	700	510	1,500	500/D
	185	30	1.6	1.6	23	0.0991	700	591	1,900	500/D
	240	34	1.7	1.7	26	0.0754	650	705	2,500	500/D
	300	34	1.8	1.8	29	0.0601	600	814	3,100	500/D
	400	53	2.0	1.9	32	0.0470	600	950	3,900	500/D
	500	53	2.2	2.0	36	0.0366	600	1,111	5,000	500/D
	630	53	2.4	2.2	40	0.0283	550	1,293	6,500	500/D
	800	53	2.6	2.3	45	0.0221	550	1,486	8,500	300/D
	1,000	53	2.8	2.4	51	0.0176	500	1,701	10,500	300/D

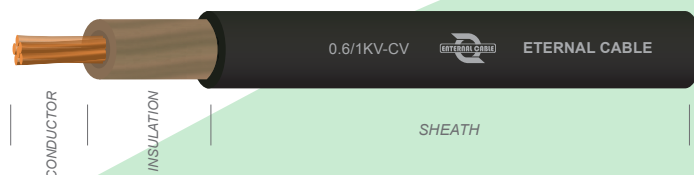
D : Packing in drum



0.6/1KV-CV

IEC 60502-1

0.6/1 kV 90 °C CROSS-LINKED POLYETHYLENE INSULATED PVC SHEATHED FLAM RETARDANT POWER CABLE



CABLE STRUCTURE

Conductor : Concentric Stranded and compacted round annealed copper
 Single-core : Size 1.5 mm² up to 1,000 mm²
 Multi-cores : Size 1.5 mm² up to 400 mm²

Insulation : Cross-linked Polyethylene (XLPE)

Core identification

Single-core : Natural (translucent)
 2 Cores : Blue and Brown
 3 Cores : Brown, Black and Grey
 4 Cores : Blue, Brown, Black and Grey
 Other colors are available on customer request

Sheath : Black flame retardant polyvinyl chloride (PVC/ST2)

TECHNICAL DATA

Classification : Maximum conductor temperature 90 °C
 : Circuit voltage not exceeding 1,200 Volts
 Rated voltage (U₀/U) 0.6/1 kV
 600 Volts between Line-to-Earth
 1,000 Volts between Line-to-Line

Testing voltage : 3,500 Volts

Reference standard : IEC 60502-1, IEC 60228, IEC 60332-1
 IEC 60332-3 Cat.C

APPLICATION

Use for installation in open tray, conduit, underground duct trench or direct burial in ground, at wet or dry location.

Number of core	Nominal cross sectional area (mm ²)	A.C. Resistance R (V/km)	Inductance L (mH/km)	Reactance XL (V/km)	Impedance Z (V/km)
1	1.5	15.4287	0.5005	0.1572	15.4295
	2.5	9.4485	0.4665	0.1466	9.4496
	4	5.8782	0.4339	0.1363	5.8798
	6	3.9273	0.4103	0.1289	3.9295
	10	2.3335	0.3916	0.1230	2.3367
	16	1.4665	0.3670	0.1153	1.4710
	25	0.9272	0.3540	0.1112	0.9338
	35	0.6684	0.3410	0.1070	0.6769
	50	0.4938	0.3300	0.1037	0.5046
	70	0.3423	0.3200	0.1005	0.3567
	95	0.2469	0.3120	0.0982	0.2657
	120	0.1961	0.3070	0.0965	0.2185
	150	0.1594	0.3070	0.0965	0.1863
	185	0.1279	0.3050	0.0958	0.1598
	240	0.0983	0.3000	0.0943	0.1362
	300	0.0793	0.2970	0.0934	0.1225
	400	0.0633	0.2950	0.0927	0.1122
	500	0.0510	0.2920	0.0914	0.1050
	630	0.0415	0.2900	0.0911	0.1001
	800	0.0348	0.2870	0.0903	0.0967
	1,000	0.0303	0.2830	0.0889	0.0939

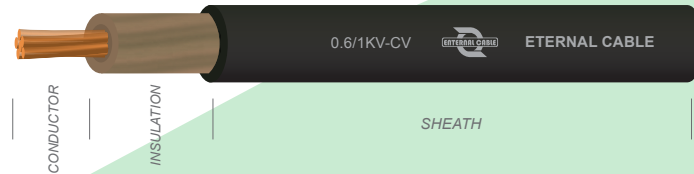
Laying Type : Touching



0.6/1KV-CV

IEC 60502-1

0.6/1 kV 90 °C CROSS-LINKED POLYETHYLENE INSULATED PVC SHEATHED FLAM RETARDANT POWER CABLE



CABLE STRUCTURE

- Conductor** : Concentric Stranded and compacted round annealed copper
 Single-core : Size 1.5 mm² up to 1,000 mm²
 Multi-cores : Size 1.5 mm² up to 400 mm²
- Insulation** : Cross-linked Polyethylene (XLPE)
- Core identification**
 Single-core : Natural (translucent)
 2 Cores : Blue and Brown
 3 Cores : Brown, Black and Grey
 4 Cores : Blue, Brown, Black and Grey
 Other colors are available on customer request
- Sheath** : Black flame retardant polyvinyl chloride (PVC/ST2)

TECHNICAL DATA

- Classification** : Maximum conductor temperature 90 °C
 : Circuit voltage not exceeding 1,200 Volts
 Rated voltage (U₀/U) 0.6/1 kV
 600 Volts between Line-to-Earth
 1,000 Volts between Line-to-Line
- Testing voltage** : 3,500 Volts
- Reference standard** : IEC 60502-1, IEC 60228, IEC 60332-1
 IEC 60332-3 Cat.C

APPLICATION

Use for installation in open tray, conduit, underground duct trench or direct burial in ground, at wet or dry location.

Number of core	Nominal cross sectional area (mm ²)	A.C. Resistance R (V/km)	Inductance L (mH/km)	Reactance XL (V/km)	Impedance Z (V/km)
1	1.5	15.4287	0.6391	0.2008	15.4300
	2.5	9.4485	0.6051	0.1901	9.4500
	4	5.9782	0.5726	0.1799	5.8810
	6	3.9273	0.5489	0.1724	3.9311
	10	2.3335	0.5302	0.1666	2.3394
	16	1.4665	0.5056	0.1589	1.4750
	25	0.9271	0.4930	0.1547	0.9399
	35	0.6683	0.4790	0.1506	0.6851
	50	0.4937	0.4690	0.1473	0.5152
	70	0.3420	0.4590	0.1441	0.3711
	95	0.2465	0.4510	0.1417	0.2844
	120	0.1957	0.4460	0.1400	0.2406
	150	0.1588	0.4460	0.1400	0.2117
	185	0.1272	0.4440	0.1394	0.1887
	240	0.0973	0.4390	0.1379	0.1688
	300	0.0781	0.4360	0.1369	0.1576
	400	0.0618	0.3430	0.1362	0.1496
	500	0.0490	0.4310	0.1353	0.1439
	630	0.0390	0.4290	0.1347	0.1402
	800	0.0318	0.4260	0.1338	0.1375
	1,000	0.0268	0.4210	0.1324	0.1351

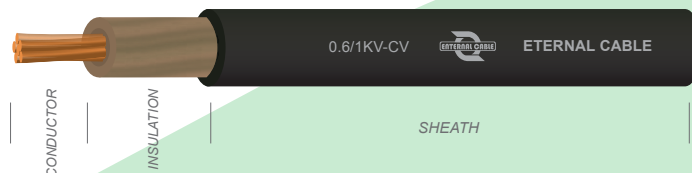
Laying Type : Spacing



0.6/1KV-CV

IEC 60502-1

0.6/1 kV 90 °C CROSS-LINKED POLYETHYLENE INSULATED PVC SHEATHED FLAM RETARDANT POWER CABLE



CABLE STRUCTURE

Conductor : Concentric Stranded and compacted round annealed copper
 Single-core : Size 1.5 mm² up to 1,000 mm²
 Multi-cores : Size 1.5 mm² up to 400 mm²

Insulation : Cross-linked Polyethylene (XLPE)

Core identification

Single-core : Natural (translucent)
 2 Cores : Blue and Brown
 3 Cores : Brown, Black and Grey
 4 Cores : Blue, Brown, Black and Grey
 Other colors are available on customer request

Sheath : Black flame retardant polyvinyl chloride (PVC/ST2)

TECHNICAL DATA

Classification : Maximum conductor temperature 90 °C
 : Circuit voltage not exceeding 1,200 Volts
 Rated voltage (U₀/U) 0.6/1 kV
 600 Volts between Line-to-Earth
 1,000 Volts between Line-to-Line

Testing voltage : 3,500 Volts

Reference standard : IEC 60502-1, IEC 60228, IEC 60332-1
 IEC 60332-3 Cat.C

APPLICATION

Use for installation in open tray, conduit, underground duct trench or direct burial in ground, at wet or dry location.

Number of core	Nominal cross sectional area (mm ²)	A.C. Resistance R (V/km)	Inductance L (mH/km)	Reactance XL (V/km)	Impedance Z (V/km)
1	1.5	15.4287	0.4542	0.1427	15.4294
	2.5	9.4485	0.4203	0.1320	9.4494
	4	5.8782	0.3877	0.1218	5.8795
	6	3.9273	0.3640	0.1144	3.9280
	10	2.3335	0.3453	0.1085	2.3360
	16	1.4665	0.3208	0.1008	1.4699
	25	0.9272	0.3080	0.0967	0.9322
	35	0.6684	0.2950	0.0925	0.6748
	50	0.4938	0.2840	0.0892	0.5018
	70	0.3423	0.2740	0.0860	0.3529
	95	0.2469	0.2660	0.0836	0.2607
	120	0.1961	0.2610	0.0820	0.2125
	150	0.1594	0.2610	0.0819	0.1792
	185	0.1279	0.2590	0.0813	0.1516
	240	0.0983	0.2540	0.0798	0.1266
	300	0.0793	0.2510	0.0788	0.1118
	400	0.0633	0.2490	0.0781	0.1006
	500	0.0501	0.2460	0.0772	0.0925
	630	0.0415	0.2440	0.0766	0.0871
	800	0.0348	0.2410	0.0757	0.0834
	1,000	0.0303	0.2370	0.0743	0.0803

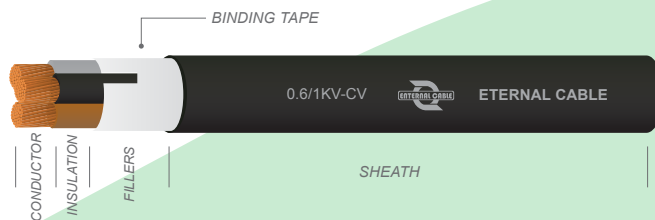
Laying Type : Trefoil



0.6/1KV-CV

IEC 60502-1

0.6/1 kV 90 °C CROSS-LINKED POLYETHYLENE INSULATED PVC SHEATHED FLAM RETARDANT POWER CABLE



CABLE STRUCTURE

Conductor : Concentric Stranded and compacted round annealed copper
 Single-core : Size 1.5 mm² up to 1,000 mm²
 Multi-cores : Size 1.5 mm² up to 400 mm²

Insulation : Cross-linked Polyethylene (XLPE)

Core identification

Single-core : Natural (translucent)
 2 Cores : Blue and Brown
 3 Cores : Brown, Black and Grey
 4 Cores : Blue, Brown, Black and Grey
 Other colors are available on customer request

Sheath : Black polyvinyl chloride (PVC/ST2)

TECHNICAL DATA

Classification : Maximum conductor temperature 90 °C
 : Circuit voltage not exceeding 1,100 Volts
 Rated voltage (U₀/U) 0.6/1 kV
 600 Volts between Line-to-Earth
 1,000 Volts between Line-to-Line

Testing voltage : 3,500 Volts

Reference standard : IEC 60502-1, IEC 60228, IEC 60332-1

APPLICATION

Use for installation in open tray, conduit, underground duct trench or direct burial in ground, at wet or dry location.

Number of core	Nominal cross sectional area (mm ²)	Number of wires minimum (No./mm)	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Overall diameter maximum (mm)	Conductor resistance at 20°C maximum (Ω/km)	Insulation resistance at 70°C minimum (MΩ-km)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
2	1.5	7/0.53	0.7	1.8	11.0	12.1	2,500	27	130	500/D
	2.5	7/0.67	0.7	1.8	12.0	7.41	2,100	35	160	500/D
	4	7/0.85	0.7	1.8	13.0	4.61	1,700	46	200	500/D
	6	7/1.04	0.7	1.8	14.0	3.08	1,450	59	260	500/D
	10	6	0.7	1.8	15.0	1.83	1,250	79	340	500/D
	16	6	0.7	1.8	17.0	1.15	1,000	106	480	500/D
	25	6	0.9	1.8	20	0.727	1,050	141	700	500/D
	35	6	0.9	1.8	23	0.524	900	173	900	500/D
	50	6	1.0	1.8	25	0.387	850	213	1,200	500/D
	70	12	1.1	1.8	29	0.268	800	268	1,700	500/D
	95	15	1.1	2.0	33	0.193	650	329	2,300	500/D
	120	18	1.2	2.1	37	0.153	650	381	2,800	500/D
	150	18	1.4	2.2	41	0.124	700	436	3,500	500/D
	185	30	1.6	2.3	45	0.0991	700	503	4,300	500/D
	240	34	1.7	2.5	51	0.0754	650	593	5,500	500/D
	300	34	1.8	2.7	56	0.0601	600	676	7,000	300/D
	400	53	2.0	2.9	63	0.0470	600	777	9,000	300/D

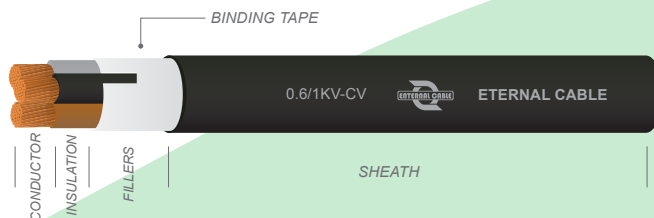
D : Packing in drum



0.6/1KV-CV

IEC 60502-1

0.6/1 kV 90 °C CROSS-LINKED POLYETHYLENE INSULATED PVC SHEATHED FLAM RETARDANT POWER CABLE



CABLE STRUCTURE

Conductor : Concentric Stranded and compacted round annealed copper
 Single-core : Size 1.5 mm² up to 1,000 mm²
 Multi-cores : Size 1.5 mm² up to 400 mm²

Insulation : Cross-linked Polyethylene (XLPE)

Core identification

Single-core : Natural (translucent)
 2 Cores : Blue and Brown
 3 Cores : Brown, Black and Grey
 4 Cores : Blue, Brown, Black and Grey
 Other colors are available on customer request

Sheath : Black flame retardant polyvinyl chloride (PVC/ST2)

TECHNICAL DATA

Classification : Maximum conductor temperature 90 °C
 : Circuit voltage not exceeding 1,200 Volts
 Rated voltage (U₀/U) 0.6/1 kV
 600 Volts between Line-to-Earth
 1,000 Volts between Line-to-Line

Testing voltage : 3,500 Volts

Reference standard : IEC 60502-1, IEC 60228, IEC 60332-1
 IEC 60332-3 Cat.C

APPLICATION

Use for installation in open tray, conduit, underground duct trench or direct burial in ground, at wet or dry location.

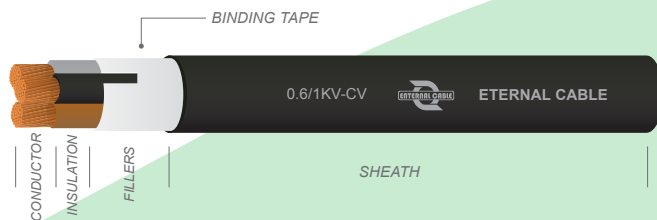
Number of core	Nominal cross sectional area (mm ²)	A.C. Resistance R (V/km)	Inductance L (mH/km)	Reactance XL (V/km)	Impedance Z (V/km)
2	1.5	15.3997	0.3270	0.1028	15.4000
	2.5	9.4495	0.3000	0.0941	9.4500
	4	5.8803	0.2790	0.0876	5.8810
	6	3.9301	0.2660	0.0837	3.9310
	10	2.3296	0.2570	0.0806	2.3310
	16	1.4700	0.2440	0.0767	1.4720
	25	0.9272	0.2440	0.0768	0.9304
	35	0.6232	0.2380	0.0748	0.6277
	50	0.4939	0.2340	0.0736	0.4994
	70	0.3424	0.2310	0.0726	0.3500
	95	0.2456	0.2250	0.0725	0.2561
	120	0.1963	0.2240	0.0706	0.2086
	150	0.1599	0.2250	0.0702	0.1747
	185	0.1283	0.2270	0.0712	0.1468
	240	0.0987	0.2240	0.0704	0.1212
	300	0.0799	0.2220	0.0698	0.1061
	400	0.0640	0.2220	0.0696	0.0946



0.6/1KV-CV

IEC 60502-1

0.6/1 kV 90 °C CROSS-LINKED POLYETHYLENE INSULATED PVC SHEATHED FLAM RETARDANT POWER CABLE



CABLE STRUCTURE

Conductor : Concentric Stranded and compacted round annealed copper
 Single-core : Size 1.5 mm² up to 1,000 mm²
 Multi-cores : Size 1.5 mm² up to 400 mm²

Insulation : Cross-linked Polyethylene (XLPE)

Core identification

Single-core : Natural (translucent)
 2 Cores : Blue and Brown
 3 Cores : Brown, Black and Grey
 4 Cores : Blue, Brown, Black and Grey
 Other colors are available on customer request

Sheath : Black polyvinyl chloride (PVC/ST2)

TECHNICAL DATA

Classification : Maximum conductor temperature 90 °C
 : Circuit voltage not exceeding 1,100 Volts
 Rated voltage (U₀/U) 0.6/1 kV
 600 Volts between Line-to-Earth
 1,000 Volts between Line-to-Line

Testing voltage : 3,500 Volts

Reference standard : IEC 60502-1, IEC 60228, IEC 60332-1

APPLICATION

Use for installation in open tray, conduit, underground duct trench or direct burial in ground, at wet or dry location.

Number of core	Nominal cross sectional area (mm ²)	Number of wires minimum (No./mm)	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Overall diameter maximum (mm)	Conductor resistance at 20°C maximum (Ω/km)	Insulation resistance at 70°C minimum (MΩ-km)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
3	1.5	7/0.53	0.7	1.8	11.5	12.1	2,500	22	150	500/D
	2.5	7/0.67	0.7	1.8	12.5	7.41	2,100	29	190	500/D
	4	7/0.85	0.7	1.8	13.5	4.61	1,700	39	240	500/D
	6	7/1.04	0.7	1.8	15.0	3.08	1,450	49	320	500/D
	10	6	0.7	1.8	16.0	1.83	1,250	66	440	500/D
	16	6	0.7	1.8	18.0	1.15	1,000	88	650	500/D
	25	6	0.9	1.8	22	0.727	1,050	118	950	500/D
	35	6	0.9	1.8	24	0.524	900	145	1,300	500/D
	50	6	1.0	1.8	27	0.387	850	176	1,600	500/D
	70	12	1.1	1.9	31	0.268	800	222	2,300	500/D
	95	15	1.1	2.0	36	0.193	650	272	3,100	500/D
	120	18	1.2	2.1	39	0.153	650	320	4,000	500/D
	150	18	1.4	2.3	44	0.124	700	366	4,900	500/D
	185	30	1.6	2.4	49	0.0991	700	422	6,000	500/D
	240	34	1.7	2.6	55	0.0754	650	498	8,000	300/D
	300	34	1.8	2.8	61	0.0601	600	567	10,000	300/D
	400	53	2.0	3.1	68	0.0470	600	652	12,500	200/D

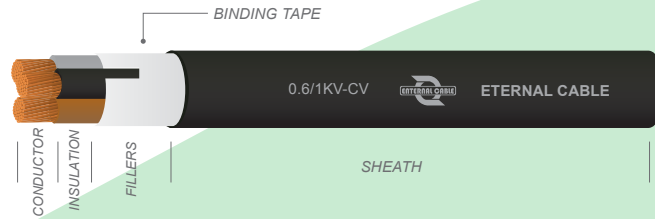
D : Packing in drum



0.6/1KV-CV

IEC 60502-1

0.6/1 kV 90 °C CROSS-LINKED POLYETHYLENE INSULATED PVC SHEATHED FLAM RETARDANT POWER CABLE



CABLE STRUCTURE

- Conductor** : Concentric Stranded and compacted round annealed copper
 Single-core : Size 1.5 mm² up to 1,000 mm²
 Multi-cores : Size 1.5 mm² up to 400 mm²
- Insulation** : Cross-linked Polyethylene (XLPE)
- Core identification**
 Single-core : Natural (translucent)
 2 Cores : Blue and Brown
 3 Cores : Brown, Black and Grey
 4 Cores : Blue, Brown, Black and Grey
 Other colors are available on customer request
- Sheath** : Black flame retardant polyvinyl chloride (PVC/ST2)

TECHNICAL DATA

- Classification** : Maximum conductor temperature 90 °C
 : Circuit voltage not exceeding 1,200 Volts
 Rated voltage (U₀/U) 0.6/1 kV
 600 Volts between Line-to-Earth
 1,000 Volts between Line-to-Line
- Testing voltage** : 3,500 Volts
- Reference standard** : IEC 60502-1, IEC 60228, IEC 60332-1
 IEC 60332-3 Cat.C

APPLICATION

Use for installation in open tray, conduit, underground duct trench or direct burial in ground, at wet or dry location.

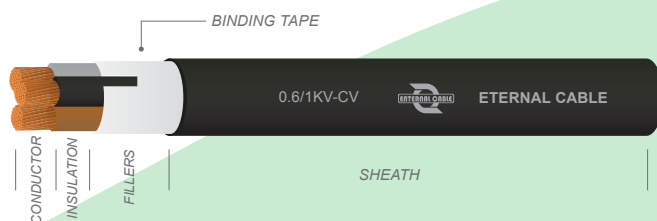
Number of core	Nominal cross sectional area (mm ²)	A.C. Resistance R (V/km)	Inductance L (mH/km)	Reactance XL (V/km)	Impedance Z (V/km)
3	1.5	15.4000	0.3273	0.1028	15.4000
	2.5	9.4500	0.2996	0.0941	9.4500
	4	5.8800	0.2787	0.0876	5.8810
	6	3.9300	0.2663	0.0837	3.9310
	10	2.3300	0.2567	0.0806	2.3310
	16	1.4700	0.2440	0.0767	1.4720
	25	0.9272	0.2445	0.0768	0.9304
	35	0.6685	0.2381	0.0748	0.6727
	50	0.4939	0.2342	0.0736	0.4994
	70	0.3424	0.2308	0.0725	0.3500
	95	0.2471	0.2248	0.0706	0.2561
	120	0.1964	0.2235	0.0702	0.2086
	150	0.1597	0.2251	0.0707	0.1747
	185	0.1283	0.2267	0.0712	0.1468
	240	0.0987	0.2240	0.0704	0.1212
	300	0.0799	0.2222	0.0698	0.1061
	400	0.0640	0.2216	0.0696	0.0946



0.6/1KV-CV

IEC 60502-1

0.6/1 kV 90 °C CROSS-LINKED POLYETHYLENE INSULATED PVC SHEATHED FLAM RETARDANT POWER CABLE



CABLE STRUCTURE

Conductor : Concentric Stranded and compacted round annealed copper
 Single-core : Size 1.5 mm² up to 1,000 mm²
 Multi-cores : Size 1.5 mm² up to 400 mm²

Insulation : Cross-linked Polyethylene (XLPE)

Core identification

Single-core : Natural (translucent)
 2 Cores : Blue and Brown
 3 Cores : Brown, Black and Grey
 4 Cores : Blue, Brown, Black and Grey
 Other colors are available on customer request

Sheath : Black polyvinyl chloride (PVC/ST2)

TECHNICAL DATA

Classification : Maximum conductor temperature 90 °C
 : Circuit voltage not exceeding 1,100 Volts
 Rated voltage (U₀/U) 0.6/1 kV
 600 Volts between Line-to-Earth
 1,000 Volts between Line-to-Line

Testing voltage : 3,500 Volts

Reference standard : IEC 60502-1, IEC 60228, IEC 60332-1
 IEC 60332-3 Cat.C

APPLICATION

Use for installation in open tray, conduit, underground duct trench or direct burial in ground, at wet or dry location.

Number of core	Nominal cross sectional area (mm ²)	Number of wires minimum (No./mm)	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Overall diameter maximum (mm)	Conductor resistance at 20°C maximum (Ω/km)	Insulation resistance at 70°C minimum (MΩ·km)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
4	1.5	7/0.53	0.7	1.8	12.0	12.1	2,500	22	180	500/D
	2.5	7/0.67	0.7	1.8	13.5	7.41	2,100	29	230	500/D
	4	7/0.85	0.7	1.8	14.5	4.61	1,700	39	300	500/D
	6	7/1.04	0.7	1.8	16.0	3.08	1,450	49	400	500/D
	10	6	0.7	1.8	17.5	1.83	1,250	66	550	500/D
	16	6	0.7	1.8	20	1.15	1,000	88	800	500/D
	25	6	0.9	1.8	24	0.727	1,050	118	1,200	500/D
	35	6	0.9	1.8	27	0.524	900	145	1,600	500/D
	50	6	1.0	1.9	30	0.387	850	176	2,200	500/D
	70	12	1.1	2.0	35	0.268	800	222	3,000	500/D
	95	15	1.1	2.1	39	0.193	650	272	4,100	500/D
	120	18	1.2	2.3	44	0.153	650	320	5,000	500/D
	150	18	1.4	2.4	49	0.124	700	366	6,500	500/D
	185	30	1.6	2.6	54	0.0991	700	422	8,000	300/D
	240	34	1.7	2.8	61	0.0754	650	498	10,500	300/D
	300	34	1.8	3.0	68	0.0601	600	567	13,000	200/D
	400	53	2.0	3.3	76	0.0470	600	652	16,500	200/D

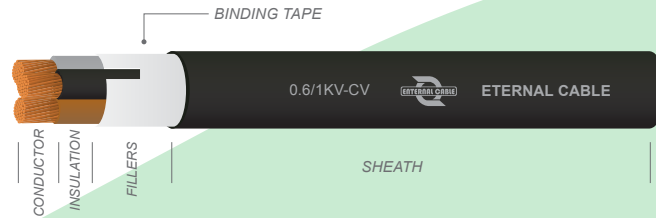
D : Packing in drum



0.6/1KV-CV

IEC 60502-1

0.6/1 kV 90 °C CROSS-LINKED POLYETHYLENE INSULATED PVC SHEATHED FLAM RETARDANT POWER CABLE



CABLE STRUCTURE

Conductor : Concentric Stranded and compacted round annealed copper
 Single-core : Size 1.5 mm² up to 1,000 mm²
 Multi-cores : Size 1.5 mm² up to 400 mm²

Insulation : Cross-linked Polyethylene (XLPE)

Core identification

Single-core : Natural (translucent)
 2 Cores : Blue and Brown
 3 Cores : Brown, Black and Grey
 4 Cores : Blue, Brown, Black and Grey
 Other colors are available on customer request

Sheath : Black flame retardant polyvinyl chloride (PVC/ST2)

TECHNICAL DATA

Classification : Maximum conductor temperature 90 °C
 : Circuit voltage not exceeding 1,200 Volts
 Rated voltage (U₀/U) 0.6/1 kV
 600 Volts between Line-to-Earth
 1,000 Volts between Line-to-Line

Testing voltage : 3,500 Volts

Reference standard : IEC 60502-1, IEC 60228, IEC 60332-1
 IEC 60332-3 Cat.C

APPLICATION

Use for installation in open tray, conduit, underground duct trench or direct burial in ground, at wet or dry location.

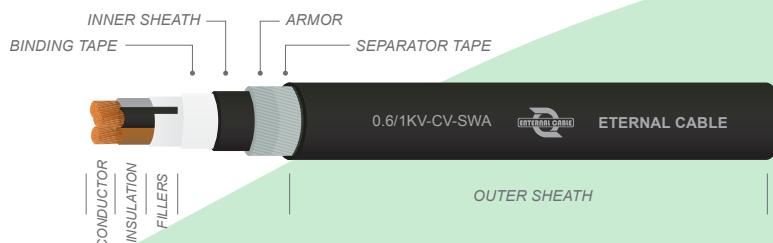
Number of core	Nominal cross sectional area (mm ²)	A.C. Resistance R (V/km)	Inductance L (mH/km)	Reactance XL (V/km)	Impedance Z (V/km)
4	1.5	15.3996	0.3740	0.1175	15.4000
	2.5	9.4504	0.3460	0.1088	9.4510
	4	5.8801	0.3250	0.1022	5.8810
	6	3.9298	0.3130	0.0983	3.9310
	10	2.3301	0.3040	0.0953	2.3320
	16	1.4702	0.2910	0.0913	1.4730
	25	0.9272	0.2910	0.0915	0.9317
	35	0.6684	0.2850	0.0895	0.6744
	50	0.4939	0.2810	0.0882	0.5017
	70	0.3423	0.2770	0.0872	0.3532
	95	0.2470	0.2710	0.0853	0.2613
	120	0.1962	0.2700	0.0849	0.2138
	150	0.1595	0.2720	0.0854	0.1809
	185	0.1280	0.2730	0.0859	0.1542
	240	0.0983	0.2710	0.0850	0.1300
	300	0.0794	0.2690	0.0845	0.1159
	400	0.0634	0.2680	0.0843	0.1055



0.6/1KV-CV-SWA

IEC 60502-1

0.6/1 kV 90 °C CROSS-LINKED POLYETHYLENE INSULATED PVC SHEATHED, WITH GALVANIZED STEEL WIRES ARMORED POWER CABLE



CABLE STRUCTURE

- Conductor** : Concentric Stranded and compacted
Stranded annealed copper
Size 1.5 mm² up to 400 mm²
- Insulation** : Cross-linked Polyethylene (XLPE)
Color : Natural (Translucent)
- Core identification** : Compound color or color tape
- 2 Cores : Blue and Brown
3 Cores : Brown, Black and Grey
4 Cores : Blue, Brown, Black and Grey
Other colors are available on customer request
- Armor** : Black polyvinyl chloride (PVC)
Inner Sheath : Galvanized Steel Wires
Outer Sheath : Black polyvinyl chloride (PVC/ST2)

TECHNICAL DATA

- Classification** : Maximum conductor temperature 90 °C
: Circuit voltage not exceeding 1,100 Volts
Rated voltage (U₀/U) 0.6/1 kV
600 Volts between Line-to-Earth
1,000 Volts between Line-to-Line
- Testing voltage** : 3,500 Volts
- Reference standard** : IEC 60502-1, IEC 60228, IEC 60332-1

APPLICATION

For installation exposed, or in raceway, wet or dry location, or direct burial in ground.

Number of core	Nominal cross sectional area (mm ²)	Number of wires minimum (No./mm)	Insulation thickness nominal (mm)	Inner sheath thickness nominal (mm)	Inner sheath diameter approx. (mm)	Diameter of steel wire armor nominal (mm)	Outer sheath thickness nominal (mm)	Overall diameter approx. (mm)	Conductor resistance at 20°C maximum (Ω/km)	Cable weight approx. (kg/km)	Standard length (m)
2	1.5	7/0.53	0.7	1.2	9.7	0.80	1.8	15.0	12.1	360	500/D
	2.5	7/0.67	0.7	1.2	10.5	0.80	1.8	16.5	7.41	400	500/D
	4	7/0.85	0.7	1.2	11.5	1.25	1.8	18.0	4.61	600	500/D
	6	7/1.04	0.7	1.2	12.5	1.25	1.8	19.5	3.08	700	500/D
	10	6	0.7	1.2	14.0	1.25	1.8	20	1.83	800	500/D
	16	6	0.7	1.2	16.0	1.25	1.8	23	1.15	1,000	500/D
	25	6	0.9	1.2	19.0	1.60	1.8	26	0.727	1,500	500/D
	35	6	0.9	1.2	22	2.0	1.8	30	0.524	2,000	500/D
	50	6	1.0	1.2	24	2.0	1.9	33	0.387	2,400	500/D
	70	12	1.1	1.2	28	2.0	2.0	36	0.268	3,100	500/D
	95	15	1.1	1.2	32	2.0	2.1	40	0.193	3,800	500/D
	120	18	1.2	1.2	35	2.0	2.3	44	0.153	4,600	500/D
	150	18	1.4	1.3	39	2.0	2.4	48	0.124	5,500	500/D
	185	30	1.6	1.3	43	2.50	2.6	54	0.091	7,000	500/D
	240	34	1.7	1.4	49	2.50	2.7	60	0.0754	8,500	500/D
	300	34	1.8	1.5	54	2.50	2.9	66	0.0601	10,000	300/D
	400	53	2.0	1.7	61	2.50	3.2	73	0.0470	12,500	300/D

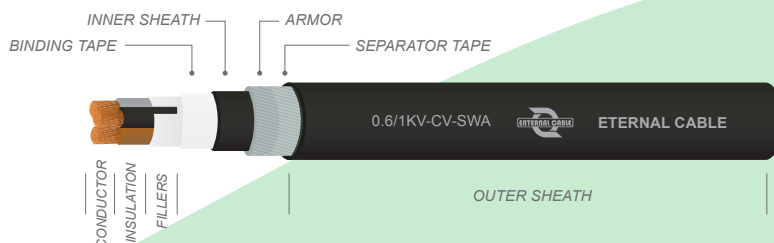
D : Packing in drum



0.6/1KV-CV-SWA

IEC 60502-1

0.6/1 kV 90 °C CROSS-LINKED POLYETHYLENE INSULATED PVC SHEATHED, WITH GALVANIZED STEEL WIRES ARMORED POWER CABLE



CABLE STRUCTURE

- Conductor** : Concentric Stranded and compacted
Stranded annealed copper
Size 1.5 mm² up to 400 mm²
- Insulation** : Cross-linked Polyethylene (XLPE)
Color : Natural (Translucent)
- Core identification** : Compound color or color tape
- 2 Cores : Blue and Brown
3 Cores : Brown, Black and Grey
4 Cores : Blue, Brown, Black and Grey
Other colors are available on customer request
- Inner Sheath** : Black polyvinyl chloride (PVC)
Armor : Galvanized Steel Wires
Outer Sheath : Black flame retardant polyvinyl chloride (PVC/ST2)

TECHNICAL DATA

- Classification** : Maximum conductor temperature 90 °C
: Circuit voltage not exceeding 1,200 Volts
Rated voltage (U₀/U) 0.6/1 kV
600 Volts between Line-to-Earth
1,000 Volts between Line-to-Line
- Testing voltage** : 3,500 Volts
- Reference standard** : IEC 60502-1, IEC 60228, IEC 60332-1
IEC 60332-3 Cat.C

APPLICATION

For installation exposed, or in raceway, wet or dry location, or direct burial in ground.

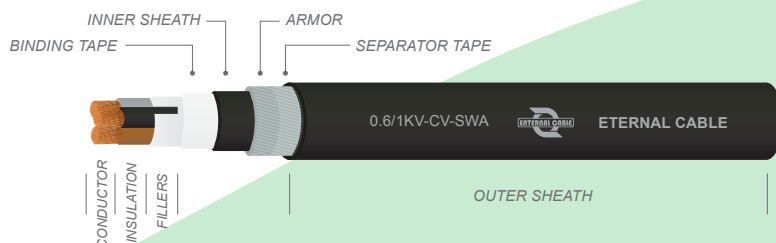
Number of core	Nominal cross sectional area (mm ²)	A.C. Resistance R (V/km)	Inductance L (mH/km)	Reactance XL (V/km)	Impedance Z (V/km)
2	1.5	15.3997	0.3273	0.1028	15.4000
	2.5	9.4495	0.2996	0.0941	9.4500
	4	5.8803	0.2787	0.0876	5.8810
	6	3.9301	0.2663	0.0837	3.9310
	10	2.3296	0.2567	0.0806	2.3310
	16	1.4700	0.2440	0.0767	1.4720
	25	0.9272	0.2445	0.0768	0.9304
	35	0.6685	0.2381	0.0748	0.6727
	50	0.4939	0.2342	0.0736	0.4994
	70	0.3424	0.2308	0.0725	0.3500
	95	0.2462	0.2248	0.0706	0.2561
	120	0.1964	0.2235	0.0702	0.2086
	150	0.1567	0.2251	0.0707	0.1747
	185	0.1283	0.2267	0.0712	0.1768
	240	0.0987	0.2240	0.0704	0.1212
	300	0.0799	0.2222	0.0698	0.1061
	400	0.0640	0.2216	0.0696	0.0946



0.6/1KV-CV-SWA

IEC 60502-1

0.6/1 kV 90 °C CROSS-LINKED POLYETHYLENE INSULATED PVC SHEATHED, WITH GALVANIZED STEEL WIRES ARMORED FLAME RETARDANT POWER CABLE



CABLE STRUCTURE

- Conductor** : Concentric Stranded and compacted
Stranded annealed copper
Size 1.5 mm² up to 400 mm²
- Insulation** : Cross-linked Polyethylene (XLPE)
Color : Natural (Translucent)
- Core identification** : Compound color or color tape
- 2 Cores : Blue and Brown
3 Cores : Brown, Black and Grey
4 Cores : Blue, Brown, Black and Grey
Other colors are available on customer request
- Armor** : Black polyvinyl chloride (PVC)
Inner Sheath : Galvanized Steel Wires
Outer Sheath : Black polyvinyl chloride (PVC/ST2)

TECHNICAL DATA

- Classification** : Maximum conductor temperature 90 °C
: Circuit voltage not exceeding 1,100 Volts
Rated voltage (U₀/U) 0.6/1 kV
600 Volts between Line-to-Earth
1,000 Volts between Line-to-Line
- Testing voltage** : 3,500 Volts
- Reference standard** : IEC 60502-1, IEC 60228, IEC 60332-1

APPLICATION

For installation exposed, or in raceway, wet or dry location, or direct burial in ground.

Number of core	Nominal cross sectional area (mm ²)	Number of wires minimum (No./mm)	Insulation thickness nominal (mm)	Inner sheath thickness nominal (mm)	Inner sheath diameter approx. (mm)	Diameter of steel wire armor nominal (mm)	Outer sheath thickness nominal (mm)	Overall diameter approx. (mm)	Conductor resistance at 20°C maximum (Ω/km)	Cable weight approx. (kg/km)	Standard length (m)
3	1.5	7/0.53	0.7	1.2	10.0	0.80	1.8	16.0	12.1	400	500/D
	2.5	7/0.67	0.7	1.2	11.0	1.25	1.8	18.0	7.41	550	500/D
	4	7/0.85	0.7	1.2	12.0	1.25	1.8	19.0	4.61	650	500/D
	6	7/1.04	0.7	1.2	13.5	1.25	1.8	20	3.08	800	500/D
	10	6	0.7	1.2	14.5	1.25	1.8	21	1.83	950	500/D
	16	6	0.7	1.2	17.0	1.60	1.8	24	1.15	1,300	500/D
	25	6	0.9	1.2	21.0	1.60	1.8	28	0.727	1,800	500/D
	35	6	0.9	1.2	23	2.0	1.8	31	0.524	2,400	500/D
	50	6	1.0	1.2	26	2.0	2.0	34	0.387	3,000	500/D
	70	12	1.1	1.2	30	2.0	2.1	39	0.268	3,800	500/D
	95	15	1.1	1.2	34	2.0	2.2	43	0.193	4,800	500/D
	120	18	1.2	1.2	38	2.0	2.3	47	0.153	6,000	500/D
	150	18	1.4	1.3	42	2.5	2.5	52	0.124	7,500	500/D
	185	30	1.6	1.4	47	2.5	2.7	58	0.091	9,000	500/D
	240	34	1.7	1.5	53	2.5	2.9	64	0.0754	11,000	300/D
	300	34	1.8	1.6	58	2.5	3.0	70	0.0601	13,500	300/D
	400	53	2.0	1.8	65	3.2	3.4	80	0.0470	17,500	300/D

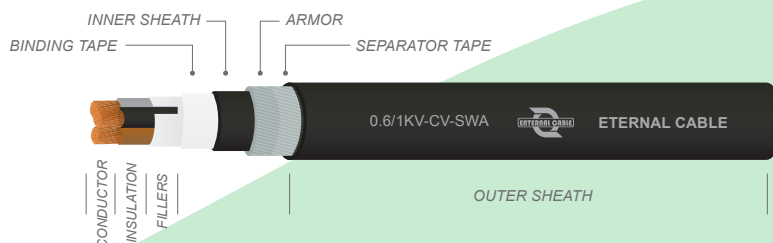
D : Packing in drum



0.6/1KV-CV-SWA

IEC 60502-1

0.6/1 kV 90 °C CROSS-LINKED POLYETHYLENE INSULATED PVC SHEATHED, WITH GALVANIZED STEEL WIRES ARMORED FLAME RETARDANT POWER CABLE



CABLE STRUCTURE

- Conductor** : Concentric Stranded and compacted
Stranded annealed copper
Size 1.5 mm² up to 400 mm²
- Insulation** : Cross-linked Polyethylene (XLPE)
Color : Natural (Translucent)
- Core identification** : Compound color or color tape
- 2 Cores : Blue and Brown
3 Cores : Brown, Black and Grey
4 Cores : Blue, Brown, Black and Grey
Other colors are available on customer request
- Inner Sheath** : Black polyvinyl chloride (PVC)
Armor : Galvanized Steel Wires
Outer Sheath : Black polyvinyl chloride (PVC/ST2)

TECHNICAL DATA

- Classification** : Maximum conductor temperature 90 °C
: Circuit voltage not exceeding 1,100 Volts
Rated voltage (U₀/U) 0.6/1 kV
600 Volts between Line-to-Earth
1,000 Volts between Line-to-Line
- Testing voltage** : 3,500 Volts
- Reference standard** : IEC 60502-1, IEC 60228, IEC 60332-1

APPLICATION

For installation exposed, or in raceway, wet or dry location, or direct burial in ground.

Number of core	Nominal cross sectional area (mm ²)	Number of wires minimum (No./mm)	Insulation thickness nominal (mm)	Inner sheath thickness nominal (mm)	Inner sheath diameter approx. (mm)	Diameter of steel wire armor nominal (mm)	Outer sheath thickness nominal (mm)	Overall diameter approx. (mm)	Conductor resistance at 20°C maximum (Ω/km)	Cable weight approx. (kg/km)	Standard length (m)
3	1.5	7/0.53	0.7	1.2	11.0	1.25	1.8	17.5	12.1	550	500/D
	2.5	7/0.67	0.7	1.2	12.0	1.25	1.8	19.0	7.41	650	500/D
	4	7/0.85	0.7	1.2	13.5	1.25	1.8	20	4.61	750	500/D
	6	7/1.04	0.7	1.2	15.0	1.25	1.8	21	3.08	900	500/D
	10	6	0.7	1.2	16.0	1.25	1.8	23	1.83	1,100	500/D
	16	6	0.7	1.2	18.5	1.60	1.8	26	1.15	1,600	500/D
	25	6	0.9	1.2	23	2.0	1.8	31	0.727	2,300	500/D
	35	6	0.9	1.2	25	2.0	1.9	34	0.524	2,900	500/D
	50	6	1.0	1.2	29	2.0	2.1	37	0.387	3,600	500/D
	70	12	1.1	1.2	33	2.0	2.2	42	0.268	4,700	500/D
	95	15	1.1	1.2	38	2.0	2.3	47	0.193	6,000	500/D
	120	18	1.2	1.3	42	2.5	2.5	53	0.153	7,500	500/D
	150	18	1.4	1.4	46	2.5	2.7	58	0.124	9,000	500/D
	185	30	1.6	1.5	52	2.5	2.8	64	0.091	11,000	300/D
	240	34	1.7	1.6	59	2.5	3.1	71	0.0754	14,000	300/D
	300	34	1.8	1.7	65	2.5	3.3	78	0.0601	17,000	200/D
	400	53	2.0	1.9	73	3.15	3.6	87	0.0470	22,000	200/D

D : Packing in drum



Copper Conductor Cables

Bare Conductor

FHC

HARD DRAWN COPPER STRANDED CONDUCTOR

B47



FHC

TIS 64-2517

HARD DRAWN COPPER STRANDED CONDUCTOR



CONDUCTOR



CABLE STRUCTURE

Conductor Hard drawn copper wires, concentric stranded conductor
 Sizes 10 mm² up to 500 mm²
 Stranding derrection the outermost layer Z

TECHNICAL DATA

Reference standard TIS 64-2517

APPLICATION

For grounding wire

Nominal cross sectional area (mm ²)	Number and diameter of wires (No./mm)	Conductor diameter approx. (mm)	Conductor resistance at 20°C maximum (Ω/km)	Breaking strength (kgf)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
10	7/1.35	4.05	1.80548	438	90	9	100/D
16	7/1.70	5.10	1.13857	694	125	140	100/D
25	7/2.14	6.42	0.71851	1,076	160	230	100/D
35	7/2.52	7.56	0.51815	1,459	200	320	100/D
50	7/3.02	9.06	0.35896	2,095	250	450	100/D
50	19/1.78	8.90	0.38252	2,021	250	430	100/D
70	19/2.14	10.70	0.26466	2,921	310	600	500/D
95	19/2.52	12.60	0.19183	3,961	380	850	500/D
120	19/2.85	14.25	0.14922	5,067	440	1,100	500/D
150	37/2.25	15.75	0.12384	6,289	510	1,300	500/D
185	37/2.25	17.64	0.09813	7,713	585	1,700	500/D
240	61/2.25	20.25	0.07528	10,369	700	2,200	500/D
300	61/2.52	22.68	0.06002	12,717	800	2,800	500/D
400	61/2.85	25.65	0.04692	16,266	900	3,600	500/D
500	61/3.20	28.80	0.03703	20,506	1,110	4,500	500/D

C : Packing in coil
 D : Packing in drum



Aluminium Conductor Cables

Building Wires and Cables

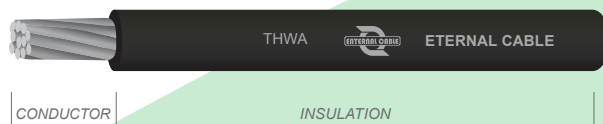
THWA	750 V 70°C ALUMINIUM CONDUCTOR PVC INSULATED, SINGLE CORE (TIS 293-2541)	C2
THWA-C	750 V 70°C COMPACTED ALUMINIUM CONDUCTOR PVC INSULATED, SINGLE CORE (TIS 293-2541)	C3



THWA

TIS 293-2541

750 V 70 °C ALUMINIUM CONDUCTOR PVC INSULATED, SINGLE CORE



CABLE STRUCTURE

Conductor : Solid and stranded hard drawn aluminium wires
Size 10 mm² up 500 mm²

Insulation : Polyvinyl chloride (PVC/D)
Color : Black

TECHNICAL DATA

Classification : Maximum conductor temperature 70 °C
: Circuit voltage not exceeding 750 Volts

Testing voltage : 2,500 Volts
Reference standard : TIS 293-2541, Table 1

APPLICATION

For aerial cable (Service & Main)

Nominal cross sectional area (mm ²)	Number and diameter of wires (No./mm)	Insulation thickness nominal (mm)	Overall diameter approx. (mm)	Conductor resistance at 20°C maximum (Ω/km)	Insulation resistance at 70°C minimum (Ω/km)	Breaking strength of conductor minimum (kgf)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
10	1/3.49	1.1	6.0	3.08	0.0078	1,562	52	50	500/C
10	7/1.32	1.1	6.5	3.08	0.0070	1,769	52	55	500/C
16	1/4.43	1.1	7.0	1.91	0.0064	2,445	70	70	500/C
16	7/1.68	1.1	7.6	1.91	0.0058	2,781	70	80	500/C
25	7/2.12	1.3	9.3	1.20	0.0055	4,241	95	120	300/C
35	7/2.49	1.3	10.5	0.868	0.0048	5,703	117	160	200/C
50	7/2.90	1.5	12.0	0.641	0.0047	7,423	143	210	200/C
50	19/1.76	1.5	12.5	0.641	0.0047	8,114	143	210	200/C
70	19/2.12	1.5	14.0	0.443	0.0040	11,487	185	280	100/C
95	19/2.49	1.7	16.5	0.320	0.0038	15,470	226	390	100/C
120	19/2.80	1.7	18.0	0.253	0.0035	18,810	264	470	500/D
120	37/2.01	1.7	18.0	0.253	0.0034	20,114	264	470	500/D
150	37/2.23	1.9	20.0	0.206	0.0035	24,704	302	600	500/D
185	37/2.50	2.1	22.0	0.164	0.0034	30,187	352	700	500/D
240	61/2.23	2.3	25.0	0.125	0.0033	38,568	421	900	500/D
300	61/2.49	2.5	28.0	0.100	0.0032	46,901	487	1,100	500/D
400	61/2.82	2.7	32.0	0.0778	0.0031	57,948	574	1,400	500/D
500	61/3.20	3.1	36.0	0.0605	0.0031	73,194	675	1,900	500/D

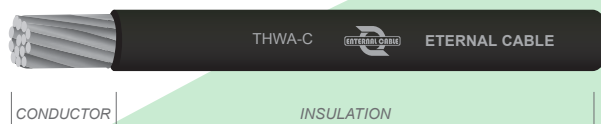
C : Packing in coil
D : Packing in drum



THWA-C

TIS 293-2541

750 V 70 °C ALUMINIUM CONDUCTOR PVC INSULATED, SINGLE CORE



CABLE STRUCTURE

Conductor : Solid and stranded hard drawn aluminium wires
Size 10 mm² up 500 mm²

Insulation : Polyvinyl chloride (PVC/D)
Color : Black

TECHNICAL DATA

Classification : Maximum conductor temperature 70 °C
: Circuit voltage not exceeding 750 Volts

Testing voltage : 2,500 Volts
Reference standard : TIS 293-2541, Table 2

APPLICATION

For aerial cable (Service & Main)

Nominal cross sectional area (mm ²)	Actual cross sectional area (mm ²)	Minimum number of wires (No.)	Compact conductor diameter approx. (mm)	Insulation thickness nominal (mm)	Overall diameter maximum (mm)	Conductor resistance at 20°C maximum (Ω/km)	Insulation resistance at 70°C minimum (Ω/km)	Breaking strength of conductor minimum (kgf)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
10	9.64	6	3.72	1.1	6.3	3.08	0.0084	1,768	52	50	500/C
16	15.55	6	4.69	1.1	7.2	1.91	0.0068	2,734	69	75	500/C
25	24.75	6	5.90	1.3	8.8	1.20	0.0064	4,120	93	110	300/C
35	34.21	6	6.95	1.3	9.9	0.868	0.0056	5,591	115	150	300/C
50	46.32	6	8.01	1.5	11.5	0.641	0.0059	7,313	141	200	200/C
70	67.03	12	9.73	1.5	13.5	0.443	0.0050	10,420	178	270	100/C
95	92.79	15	11.40	1.7	15.5	0.320	0.0047	14,098	220	370	100/C
120	117.37	15	12.95	1.7	17.0	0.253	0.0042	18,518	258	450	100/C
150	144.15	15	14.27	1.9	18.5	0.206	0.0042	22,457	294	550	500/D
185	181.06	30	15.98	2.1	21.0	0.164	0.0042	28,974	342	700	500/D
240	237.55	30	18.47	2.3	24.0	0.125	0.0040	37,506	410	900	500/D
300	296.94	30	20.68	2.5	26.0	0.100	0.0038	45,642	475	1,100	500/D
400	381.67	53	23.39	2.7	30.0	0.0778	0.0036	56,992	560	1,400	500/D
500	490.81	53	26.67	3.1	34.0	0.0605	0.0037	72,195	659	1,800	500/D

C : Packing in coil
D : Packing in drum



Aluminium Conductor Cables

High Voltage Power Cables

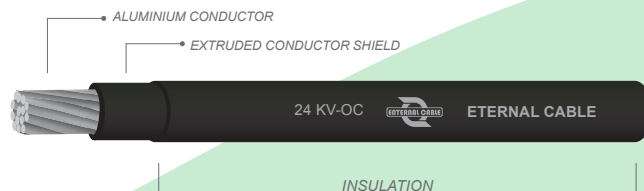
24KV-OC	24kV CROSS-LINKED POLYETHYLENE PARTIAL INSULATED ALL ALUMINIUM CABLE (ICEA S-66-524, ICEA S-93-639)	C5
33KV-OC	33kV CROSS-LINKED POLYETHYLENE PARTIAL INSULATED ALL ALUMINIUM CABLE (ICEA S-66-524, ICEA S-93-639)	C6



24 KV-OC

ICEA S-66-524
ICEA S-93-639

24 kV CROSS-LINKED POLYETHYLENE PARTIAL INSULATED ALL ALUMINIUM CABLE



CABLE STRUCTURE

Conductor : Compacted round stranded hard drawn aluminium wires
Single core : Size 35 mm² up to 185 mm²
Insulation : Cross-linked polyethylene (XLPE)
Core identification

Color : Black

TECHNICAL DATA

Classification : Maximum conductor temperature 90 °C
: Circuit voltage not exceeding 24,000 Volts

Testing voltage : 11,000 Volts
Reference standard : ICEA S-66-524, ICEA S-93-639

APPLICATION

Aerial distribution cable (installed with pin insulator)

Number of core	Nominal cross sectional area (mm ²)	Minimum number of wires (No.)	Diameter of conductor approx. (mm)	Insulation thickness nominal (mm)	Overall diameter approx. (mm)	Conductor resistance at 20°C maximum (Ω/km)	Insulation resistance at 15.6°C minimum (Ω/km)	Continuous current rating in free air maximum (A)	Breaking strength (N)	Cable weight approx. (kg/km)	Standard length (m)
1	35	6	7.05	1.8	12.0	0.868	900	140	5,591	170	1,000/D
	50	6	8.11	2.2	14.0	0.641	880	170	7,313	220	1,000/D
	70	12	9.73	2.1	15.0	0.443	800	215	10,420	290	1,000/D
	95	15	11.43	2.5	18.0	0.320	750	270	14,098	400	1,000/D
	120	15	13.05	2.6	19.5	0.253	700	310	18,518	490	1,000/D
	150	15	14.37	2.6	21.0	0.206	650	355	22,457	550	1,000/D
	185	30	16.08	2.55	23.0	0.164	600	410	28,974	700	1,000/D

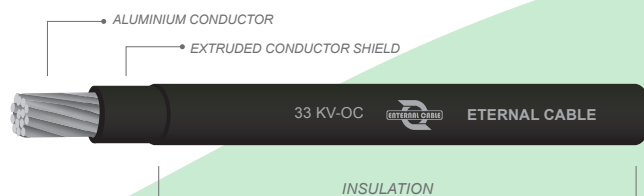
D : Packing in drum



33 KV-OC

ICEA S-66-524
ICEA S-93-639

33 kV CROSS-LINKED POLYETHYLENE PARTIAL INSULATED ALL ALUMINIUM CABLE



CABLE STRUCTURE

Conductor : Compacted round stranded hard drawn aluminium wires
Single core : Size 35 mm² up to 185 mm²
Insulation : Cross-linked polyethylene (XLPE)
Core identification

Color : Black

TECHNICAL DATA

Classification : Maximum conductor temperature 90 °C
: Circuit voltage not exceeding 33,000 Volts

Testing voltage : 17,000 Volts
Reference standard : ICEA S-66-524, ICEA S-93-639

APPLICATION

Aerial distribution cable (installed with pin insulator)

Number of core	Nominal cross sectional area (mm ²)	Minimum number of wires (No.)	Diameter of conductor approx. (mm)	Insulation thickness nominal (mm)	Overall diameter approx. (mm)	Conductor resistance at 20°C maximum (Ω/km)	Insulation resistance at 15.6°C minimum (Ω/km)	Continuous current rating in free air maximum (A)	Breaking strength (N)	Cable weight approx. (kg/km)	Standard length (m)
1	35	6	7.05	3.0	14.5	0.868	1,350	145	5,591	220	1,000/D
	50	6	8.11	3.2	16.5	0.641	1,300	175	7,313	280	1,000/D
	70	12	9.73	3.2	18.0	0.443	1,200	220	10,420	350	1,000/D
	95	15	11.43	3.5	20.0	0.320	1,100	270	14,098	460	1,000/D
	120	15	13.05	3.6	22.0	0.253	1,000	315	18,518	550	1,000/D
	150	15	14.37	3.6	23.0	0.206	950	360	22,457	650	1,000/D
	185	30	16.08	3.9	26.0	0.164	900	415	28,974	800	1,000/D

D : Packing in drum



Aluminium Conductor Cables

Bare Conductor

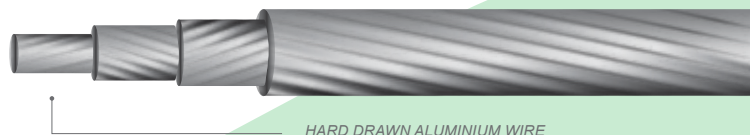
ACC	ALL ALUMINIUM STRANDED CONDUCTOR (TIS 85-2548)	C8
ACSR	ALL ALUMINIUM CONDUCTOR STEEL REINFORCED (TIS 85-2548)	C9



AAC

TIS 85-2548

ALL ALUMINIUM STRANDED CONDUCTOR



HARD DRAWN ALUMINIUM WIRE



CABLE STRUCTURE

Conductor : Concentric stranded hard drawn aluminium wires
Size 16 mm² up to 1,000 mm²

Stranding Direction : The outermost layer Z

TECHNICAL DATA

Reference standard : TIS 85-2548

APPLICATION

For overhead transmission and distribution line

Nominal cross sectional area (mm ²)	Number and diameter of wires (No./mm)	Overall conductor diameter approx. (mm)	Conductor resistance at 20°C maximum (Ω/km)	Breaking strength (kgf)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
16	7/1.70	5.10	1.802	290	110	44	3000/D
25	7/2.14	6.42	1.138	440	145	70	3000/D
35	7/2.52	7.56	0.820	585	180	95	3000/D
50	7/3.02	9.06	0.571	805	225	140	2500/D
50	19/1.83	9.15	0.5757	890	225	140	2500/D
70	19/2.15	10.75	0.4171	1,205	270	190	2500/D
95	19/2.52	12.60	0.3036	1,585	340	260	2500/D
120	19/2.85	14.25	0.2374	1,980	390	330	2000/D
150	37/2.25	15.75	0.1960	2,570	455	400	2000/D
185	37/2.52	17.64	0.1563	3,085	550	500	2000/D
240	61/2.25	20.25	0.1192	4,015	625	650	1500/D
300	91/2.52	22.68	0.0950	4,820	710	850	1500/D
400	61/2.85	25.65	0.0743	6,025	855	1,100	1000/D
500	61/3.25	29.25	0.0571	7,695	990	1,400	1000/D
625	91/2.96	32.56	0.0463	9,694	1,140	1,700	500/D
800	91/3.35	36.85	0.0361	12,055	1,340	2,200	500/D
1000	91/3.74	41.14	0.0290	14,845	1,540	2,800	500/D

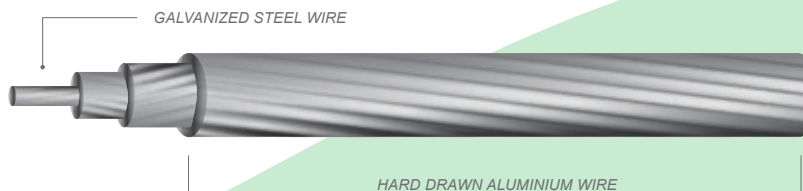
D : Packing in drum



ACSR

TIS 85-2548

ALUMINIUM CONDUCTOR STEEL REINFORCED



CABLE STRUCTURE

- Conductor** : Hard drawn aluminium wire
Size 16 mm² up to 680 mm²
- Steel Core** : Galvanized steel (Zinc coated), solid and
concentric stranded, sizes 2.5 mm²
up to 85 mm²

Standing Direction
: The outermost layer Z

TECHNICAL DATA

Reference standard : TIS 85-2548

APPLICATION

For overhead transmission and distribution line

Nominal cross sectional area (mm ²)	ALUMINIUM		STEEL WIRE		Overall conductor diameter approx. (mm)	Conductor resistance at 20°C maximum (Ω/km)	Breaking strength (kgf)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
	Number and approx diameter of wire (No./mm)	Cross sectional area (mm ²)	Number and approx diameter of wire (No./mm)	Cross sectional area (mm ²)						
16/2.5	6/1.80	15.3	1/1.80	2.54	5.40	1.880	592	90	60	4,000/D
25/4	6/2.25	23.9	1/2.25	3.98	6.75	1.203	916	125	95	4,000/D
35/6	6/2.70	34.4	1/2.70	5.73	8.10	0.8353	1,265	145	140	3,000/D
50/8	6/3.20	48.3	1/3.20	8.04	9.60	0.5947	1,716	170	200	3,000/D
50/30	12/2.33	51.2	7/2.33	29.85	11.50	0.5644	4,380	170	380	3,000/D
70/12	26/1.85	69.9	7/1.44	11.40	11.50	0.4131	2,676	290	280	3,000/D
95/15	26/2.15	94.4	7/1.67	15.33	13.50	0.3058	3,565	350	380	3,000/D
95/55	12/3.20	96.5	7/3.20	56.30	16.00	0.2993	7,965	350	700	3,000/D
120/20	26/2.44	121.6	7/1.90	19.85	15.50	0.2375	4,555	410	490	2,000/D
120/70	12/3.60	122.1	7/3.60	71.25	18.00	0.2365	10,034	410	900	2,000/D
125/30	30/2.33	127.9	7/2.33	29.85	16.00	0.2259	5,759	425	600	2,000/D
150/25	26/2.70	148.9	7/2.10	24.25	17.00	0.1939	5,513	470	600	2,000/D

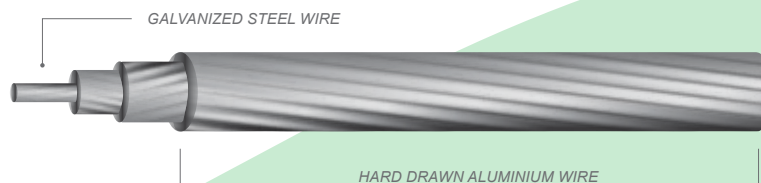
D : Packing in drum



ACSR

TIS 85-2548

ALUMINIUM CONDUCTOR STEEL REINFORCED



CABLE STRUCTURE

- Conductor** : Hard drawn aluminium wire
Size 16 mm² up to 680 mm²
- Steel Core** : Galvanized steel (Zinc coated), solid and concentric stranded, sizes 2.5 mm² up to 85 mm²

Standing Direction
: The outermost layer Z

TECHNICAL DATA

Reference standard : TIS 85-2548

APPLICATION

For overhead transmission and distribution line

Nominal cross sectional area (mm ²)	ALUMINIUM		STEEL WIRE		Overall conductor diameter approx. (mm)	Conductor resistance at 20°C maximum (Ω/km)	Breaking strength (kgf)	Continuous current rating in free air maximum (A)	Cable weight approx. (kg/km)	Standard length (m)
	Number and approx diameter of wire (No./mm)	Cross sectional area (mm ²)	Number and approx diameter of wire (No./mm)	Cross sectional area (mm ²)						
170/40	30/2.70	171.8	7/2.70	40.08	18.50	0.1683	7,675	520	800	2,000/D
185/30	26/3.00	183.8	7/2.33	29.85	18.50	0.1571	6,618	535	750	2,000/D
210/35	26/3.20	209.1	7/2.49	34.09	20.00	0.1381	7,489	590	850	1,500/D
210/50	30/3.00	212.1	7/3.00	49.48	21.00	0.1363	9,390	610	1,000	1,500/D
230/10	24/3.50	230.9	7/2.33	29.85	21.00	0.1250	7,313	630	900	1,500/D
240/40	26/3.45	243.1	7/2.68	39.49	21.00	0.1188	8,640	645	1,000	1,500/D
265/35	24/3.74	263.7	7/2.49	34.10	22.00	0.1095	8,307	680	1,000	1,000/D
300/50	26/3.86	304.3	7/3.00	49.50	24.00	0.0949	10,702	740	1,200	1,000/D
305/40	54/2.68	304.6	7/2.68	39.50	24.00	0.0949	9,942	740	1,200	1,000/D
380/50	54/3.00	381.7	7/3.00	49.50	27.00	0.0758	12,312	840	1,500	1,000/D
435/55	54/3.20	434.3	7/3.20	56.30	28.00	0.0666	13,673	900	1,700	1,000/D
490/65	54/3.40	490.3	7/3.40	63.60	30.00	0.0590	15,343	960	1,900	1,000/D
550/70	54/3.60	549.7	7/3.60	71.30	32.00	0.0526	17,096	1,020	2,100	500/D
680/85	54/4.00	678.6	19/2.40	86.00	36.00	0.0426	12,040	1,150	2,600	500/D

D : Packing in drum



Electrical Insulation Tape

Electrical Insulation Tape

VTA

LEAD FREE PVC PLASTIC ELECTRICAL INSULATION TAPE

D2



VTA

TIS 386-2531

LEAD FREE PVC PLASTIC ELECTRICAL INSULATION TAPE



SCOPE : This specification covers Lead Free PVC plastic electrical insulation tape to be used in electrical service at temperature 0 ~ 80°C.
The tape shall be used for insulation of jointed splices of cables and wires. The tape must have good insulation properties, heat, weather, flame resistance, and lead free materials for environment, suitable for tropical country.

STANDARD : The Lead Free PVC plastic electrical insulation tape shall be manufactured and tested in accordance with TIS 386-2531

Dimension

1) Thickness (mm)	0.125 ± 0.025, 0.18 ± 0.025
2) Width (mm)	19 ± 1.0
3) Length (m)	10 ± 1.0
	- 0

PROPERTY AND REQUIREMENTS		PACKING	
1) Electrolytic corrosion after 24h		The Lead Free PVC plastic electrical insulation tape shall be packing in paper core Cellophane and shrinkage wrapped.	
at 27 ± 2° Cand 93 ± 2% relative humidity	(Ω) > 10 ¹¹		
2) Penetration at elevated temperature	(°C) > 50		
3) Flammability	non-ignitable or self-extinguishing	1) Dimension of each roll	: Diameter (cm) 5.8
4) Thermal endurance	no-crack		Width (cm) 1.9
5) Tensile strength	(N/10 mm width/mm thick.)>150		
6) Adhension to steel	(N/10 mm width/mm thick.)>1.8	2) Weight of each roll (approx.)	: Net (kg) 0.036
7) Adhension to backing	(N/10 mm width/mm thick.)>1.8		Gross (kg) 0.037
8) Shear adhension after immersion in water	(N) > 1.80		
9) Electric strength		3) Number of roll in each package	(Rolls) 10
- after 24 hour at 27 ± 2°	(kV/mm) ≥ 40	4) Number of package in one case	(Package) 10
and 65 ± 5% relative humidity		5) Dimension of each case : WxLxH	(cm) 12.5x30x19.5
- after 24 hour at 27 ± 2°	(kV/mm) ≥ 35	6) Gross weight of each case (approx.)	(kg) 4
and 93 ± 2% relative humidity			