

SPECIFICATION**For****FD-0.6/1KV-CVQ**

0.6/1(1.2)kV

XLPE Insulated PVC Sheathed

Flame Retardant Quadruplex Type Power Cable

(0.6/1(1.2)kV, Cu/XLPE/FR-PVC)

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CUSTOMER

Rev.	Date	Description
0	14/01/2020	Issued specification

Customer Document	Rev.
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Remark:

This document is based on the Customer Document for the structure and properties of electric wire and cable only. If there are different points, will be shown in deviation table.

1. Scope

This specification covers 1000V copper conductor cross-linked polyethylene (XLPE) insulated polyvinyl chloride (PVC) sheathed flame retardant quadruplex type power cable. The cable shall be in accordance with IEC 60502-1 : 2004 and Amend.1 : 2009. The finished cables shall meet the flame test requirements per IEC 60332-1 and IEC 60332-3-24 ; Category C.

2. Conductor

For size $\leq 6 \text{ mm}^2$:

The conductor shall be non-compacted concentric stranded uncoated annealed copper conductor in accordance with IEC 60228 : 2004, Class 2.
The direction of lay shall be left-hand (S) lay.

For size $\geq 10 \text{ mm}^2$:

The conductor shall be compacted concentric stranded uncoated annealed copper conductor in accordance with IEC 60228 : 2004, Class 2.
The direction of lay shall be reversed in successive layers and left-hand (S) lay in the outermost layer.

3. Insulation

The insulation shall be cross-linked polyethylene (XLPE) compound meet the requirements of IEC 60502-1 : 2004.
The average thickness of the insulation shall be not less than that given in Table 1.
The minimum thickness shall not fall below the value in Table 1 by more than 10% plus 0.1 mm.

4. Core Identification


The cores shall be identified by color, as follows:
4-cores : blue, brown, black, grey

5. Sheath

The sheath shall be sunlight resistant and flame retardant polyvinyl chloride (PVC/ST2) compound meet the requirements of IEC 60502-1 : 2004.
The average thickness of the sheath shall not be less than that given in Table 1.
The minimum thickness shall not fall below the value in Table 1 by more than 20% plus 0.2 mm.
The color of the sheath shall be black.

6. Marking on Cable

The marking items shall be marked with suitable means throughout the length of cable.

1. Manufacturer's name and/or trade mark "  YAZAKI..... : TYE"
2. Year of manufacture
3. Flame retardant "FD"
4. Rated circuit voltage "0.6/1KV"
5. Type of insulation "XLPE"
6. Type of cable "POWER CABLE "
7. Number of cores and size of conductor

7. Quadruplexing

The individual sheathed core shall be cabled together.

The direction of lay shall be left-hand (S) lay.

The length of lay shall be 25 to 60 times the diameter of one of the sheathed core.

8. Test and Properties

The cable shall meet the requirements in Test and Inspection and Table 1, when tested in accordance with IEC 60502-1 : 2004 and Amend.1 : 2009, IEC 60228 : 2004, IEC 60332-1 and IEC 60332-3-24 ; Category C.


Remark: Sunlight resistant test meet the requirement of TIS 293-2541.

9. Packing

The cable shall be placed on non-returnable wooden reels.

The reels shall be covered with suitable covering to provide the cable with physical protection during transportation and during ordinary storage and handling operations.

Each reel shall be clearly marked as follows.

1. Designation "FD-0.6/1KV-CVQ"
2. Number of core and size of cable
3. Cable length
4. Net and gross weight
5. Manufacturer's name and/or trade mark "  YAZAKI "
6. Rolling direction of reel

Test and Inspection

Routine Tests

- Maximum conductor resistance, Ohm/km..... specified in Table 1
- AC test voltage for 5 minutes, kV..... 3.5

Sample Tests

- Construction specified in Table 1
- Hot set test at $200\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$ for XLPE
 - Maximum elongation under load (%) 175
 - Maximum permanent elongation after cooling (%).....15

Type Tests

- Flame retardant tested according to IEC 60332-1 and IEC 60332-3-24; Category C.

Definition concerning the tests

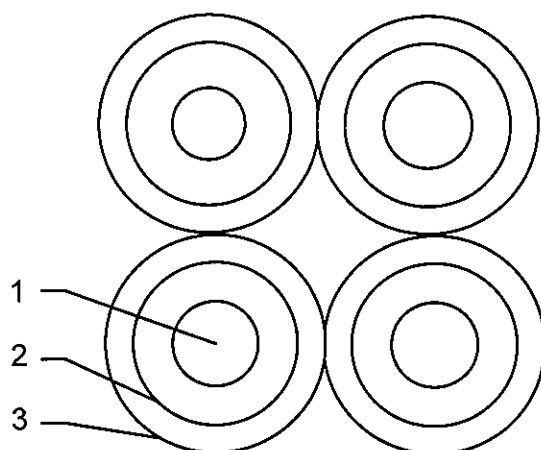
Routine tests: Tests made by the manufacturer on each manufactured length of cable to check that each length meets the specified requirements.

Sample tests: Tests made by the manufacturer on samples of completed cable or components taken from a completed cable, at a specified frequency, so as to verify that the finished product meets the specified requirements.

Type tests: Tests made before supplying, on a general commercial basis, a type of cable covered by this standard, in order to demonstrate satisfactory performance characteristics to meet the intended application.

Cable structure

Cross-sectional (Not scale)



No.	Structure	Material
1	Conductor	Non- compacted & compacted concentric stranded annealed copper
2	Insulation	Cross-Linked Polyethylene (XLPE)
3	Sheath	Flame retardant polyvinyl chloride (PVC/ST2)

Application: Use for installation in open tray, conduit, underground duct trench or direct burial in ground, at wet or dry location. Maximum conductor temperature of 90°C for normal operation and 250°C for short circuit condition

Table 1

No. of cores	Size (mm ²)	Conductor (wires/type)	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Sheath diameter approx (mm)	Overall diameter approx. (mm)	Conductor resistance at 20 °C maximum (Ohm/km)	Weight of cable approx. (kg/km)	Standard packing length (m)
4	2.5	7/Non-compacted	2.01	0.7	1.4	6.8	16.5	7.41	260	500
4	4	7/ Non-compacted	2.55	0.7	1.4	7.3	17.5	4.61	330	500
4	6	7/Non-compacted	3.12	0.7	1.4	7.9	19.0	3.08	430	500
4	10	7/Compacted	3.80	0.7	1.4	8.4	20	1.83	600	500
4	16	7/Compacted	4.80	0.7	1.4	9.4	23	1.15	850	500
4	25	7/Compacted	6.00	0.9	1.4	11.0	27	0.727	1200	500
4	35	7/Compacted	7.10	0.9	1.4	12.0	29	0.524	1600	500
4	50	19/Compacted	8.30	1.0	1.4	13.5	33	0.387	2100	500
4	70	19/Compacted	9.90	1.1	1.4	15.5	37	0.268	2900	500
4	95	19/Compacted	11.70	1.1	1.5	17.5	43	0.193	4000	500
4	120	37/Compacted	13.20	1.2	1.5	19.0	47	0.153	5000	500
4	150	37/Compacted	14.60	1.4	1.6	21	52	0.124	6000	500
4	185	37/Compacted	16.30	1.6	1.6	24	57	0.0991	7500	500
4	240	61/Compacted	18.70	1.7	1.7	26	64	0.0754	10000	300
4	300	61/Compacted	20.90	1.8	1.8	29	70	0.0601	12500	300
4	400	61/Compacted	23.50	2.0	1.9	32	78	0.0470	15500	200