

# SPECIFICATION

## For

## FD-0.6/1KV-NYCY

0.6/1(1.2)kV PVC Insulated PVC Inner Sheathed  
Concentric Conductor with Copper Contact Tape  
PVC Outer Sheathed Flame Retardant Power Cable  
(0.6/1(1.2)kV, Cu/PVC/PVC/CWS/FR-PVC)

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CUSTOMER

Rev.	Date	Description
0	20/09/2020	Issued specification
1	12/6/2023	Add size 3 x 70/25, 95/25, 120/35 and 185/35 mm <sup>2</sup>

Customer Document	Rev.

### 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 polyvinyl chloride (PVC) insulated polyvinyl chloride (PVC) inner sheathed polyvinyl chloride (PVC) outer sheathed concentric conductor with copper contact tape flame retardant power cable.

The cable shall be in accordance with on IEC 60502-1 : 2004 and Amend.1 : 2009.

The finished cables shall meet the vertical tray flame test requirements per IEC 60332-1 and IEC 60332-3-24 ; Category C.

## **2. Conductor**

The conductor shall be solid and non-compacted concentric stranded uncoated annealed copper conductor in accordance with IEC 60228 : 2004, Class 1 and Class 2.

The direction of lay shall be left hand (S) lay in the outermost layer.

## **3. Insulation**

The insulation shall be polyvinyl chloride (PVC/A) 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 be not fall below the value in Table 1 by more than 10% plus 0.1 mm.

## **4. Cabling**

The individual insulated cores shall be cabled together with length of lay or suitable PVC rod to give the completed cable a circular cross section.

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

## **5. Core Identification**

The cores shall be identified by colors, as follows :

3-cores : brown, black, grey

4-cores : blue, brown, black, grey

## **6. Inner Sheath**

The inner sheath shall be polyvinyl chloride (PVC) compound applied over the cable core.

The approximate thickness given in Table 1.

The color of the inner sheath shall be black.

## **7. Concentric Conductor**

The concentric conductor shall consist of plain annealed round copper wires applied helically over the inner sheathed.

The contact tape shall be an annealed uncoated copper tape and shall be applied helically with a gap over the concentric conductor.

A separator tape shall be applied helically over the contact tape.

## 8. Outer Sheath

The outer sheath shall be sunlight resistant and flame retardant polyvinyl chloride (PVC/ST1) compound meet the requirements of IEC 60502-1 : 2004.


The average thickness of the outer sheath shall be not less than the value 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 outer sheath shall be black.

## 9. 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 and outer sheath "PVC/PVC"
6. Type of cable "SHIELD POWER CABLE"
7. Number of cores and size of conductor
8. The continuous reel length marking (in figure) shall be made on the outer sheath at every 1 meter

## 10. 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.

## 11. 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-NYCY "
2. Number of cores and size of conductor
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

#### **Type Tests**

This cable shall be tested as followed :

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

#### **Definition concerning the tests**

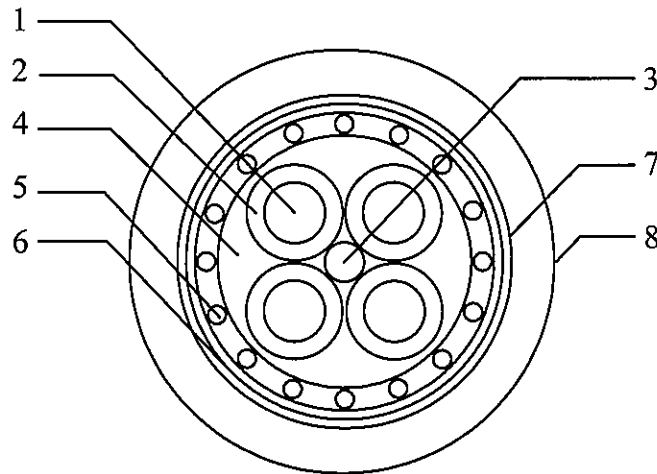
**Routine tests :** Tests made by the manufacturer on each manufactured length of cable to check that each length meets the specified requirements.

**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	Solid and non-compacted concentric stranded annealed copper
2	Insulation	Polyvinyl chloride (PVC/A)
3	Filler	PVC Rod (For 4-cores only)
4	Inner sheath	Polyvinyl chloride (PVC)
5	Concentric conductor	Plain annealed round copper wire
6	Contract tape	Copper contract tape
7	Separator tape	Spun bond tape
8	Outer sheath	Flame retardant polyvinyl chloride (PVC/ST1)

**Application:** For installation exposed, or in raceway, wet or dry location, or direct burial in ground, Maximum conductor temperature of 70°C for normal operation and 160°C for short circuit condition

**Table1**

No. of cores	Size (mm <sup>2</sup> )	Conductor (wires/type)	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	Inner sheath thickness approx. (mm)	Dia. of inner sheath approx. (mm)	Concentric conductor area (mm <sup>2</sup> )	Outer sheath thickness nominal (mm)	Overall diameter approx. (mm)	Conductor resistance at 20 °C maximum (Ohm/km)	Weight of cable approx. (kg/km)	Standard packing length (m)
3	1.5/1.5	Solid	1.38	0.8	1.2	10.0	1.5	1.8	16.0	12.1	290	500
3	2.5/2.5	Solid	1.78	0.8	1.2	11.0	2.5	1.8	16.5	7.41	340	500
3	4/4	Solid	2.25	1.0	1.2	13.0	4	1.8	19.0	4.61	460	500
3	6/6	7/Non-compacted	3.12	1.0	1.2	15.0	6	1.8	21.0	3.08	600	500
3	10/10	7/Non-compacted	4.10	1.0	1.2	16.5	10	1.8	23.0	1.83	800	500
3	16/16	7/Non-compacted	5.10	1.0	1.2	19.0	16	1.8	26.0	1.15	1100	500
3	25/16	7/Non-compacted	6.26	1.2	1.2	22.5	16	1.9	29.5	0.727	1500	500
3	35/16	19/Non-compacted	7.65	1.2	1.2	25.5	16	2.0	33.0	0.524	1900	500
3	50/25	19/Non-compacted	8.73	1.4	1.2	28.5	25	2.1	36.5	0.387	2500	500
3	70/25	19/Non-compacted	10.70	1.4	1.2	32.5	25	2.2	40.5	0.268	3340	500
3	70/35	19/Non-compacted	10.70	1.4	1.2	32.5	35	2.2	41.0	0.268	3400	500
3	95/25	19/Non-compacted	12.60	1.6	1.3	38.5	25	2.4	46.5	0.193	4460	500
3	95/50	19/Non-compacted	12.60	1.6	1.3	38.5	50	2.4	47.5	0.193	4700	500
3	120/35	37/Non-compacted	14.21	1.6	1.4	42.0	35	2.5	50.5	0.153	5510	500
3	120/70	37/Non-compacted	14.21	1.6	1.4	42.0	70	2.6	52.0	0.153	6000	500
3	150/95	37/Non-compacted	15.75	1.8	1.4	46.0	95	2.7	56.5	0.124	7000	500
3	185/35	37/Non-compacted	17.64	2.0	1.5	52.0	35	2.9	61.0	0.0991	8150	500
3	185/95	37/Non-compacted	17.64	2.0	1.5	52.0	95	2.9	62.5	0.0991	8500	500
3	240/120	61/Non-compacted	20.25	2.2	1.7	58.5	120	3.2	70.5	0.0754	11500	300
3	300/150	61/Non-compacted	22.68	2.4	1.8	65.0	150	3.4	77.5	0.0601	14000	300
3	400/240	61/Non-compacted	25.65	2.6	1.9	72.5	240	3.8	88.5	0.0470	18000	200

**Table 1 (continued)**

No. of cores	Size (mm <sup>2</sup> )	Conductor (wires/type)	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	Inner sheath thickness approx. (mm)	Dia. of inner sheath approx. (mm)	Concentric conductor area (mm <sup>2</sup> )	Outer sheath thickness nominal (mm)	Overall diameter approx. (mm)	Conductor resistance at 20 °C maximum (Ohm/km)	Weight of cable approx. (kg/km)	Standard packing length (m)
4	1.5/1.5	Solid	1.38	0.8	1.2	11.0	1.5	1.8	16.5	12.1	320	500
4	2.5/2.5	Solid	1.78	0.8	1.2	12.0	2.5	1.8	17.5	7.41	400	500
4	4/4	Solid	2.25	1.0	1.2	15.0	4	1.8	21.0	4.61	540	500
4	6/6	7/Non-compacted	3.12	1.0	1.2	16.0	6	1.8	22.0	3.08	700	500
4	10/10	7/Non-compacted	4.10	1.0	1.2	18.5	10	1.8	25.0	1.83	970	500
4	16/16	7/Non-compacted	5.10	1.0	1.2	21.0	16	1.8	27.5	1.15	1340	500
4	25/16	7/Non-compacted	6.26	1.2	1.2	24.5	16	1.9	32.0	0.727	1830	500
4	35/16	19/Non-compacted	7.65	1.2	1.2	28.0	16	2.1	35.5	0.524	2400	500
4	50/25	19/Non-compacted	8.73	1.4	1.2	31.5	25	2.2	39.5	0.387	3090	500
4	70/35	19/Non-compacted	10.70	1.4	1.3	36.5	35	2.4	45.5	0.268	4320	500
4	95/50	19/Non-compacted	12.60	1.6	1.4	42.5	50	2.6	52.5	0.193	5910	500
4	120/70	37/Non-compacted	14.21	1.6	1.5	47.0	70	2.8	57.5	0.153	7370	500
4	150/95	37/Non-compacted	15.75	1.8	1.5	52.0	95	2.9	62.5	0.124	9030	500
4	185/95	37/Non-compacted	17.64	2.0	1.7	58.0	95	3.1	69.5	0.0991	11000	300
4	240/120	61/Non-compacted	20.25	2.2	1.8	65.5	120	3.4	78.0	0.0754	14210	300
4	300/150	61/Non-compacted	22.68	2.4	1.9	72.5	150	3.7	85.5	0.0601	17560	300
4	400/240	61/Non-compacted	25.65	2.6	2.1	81.0	240	4.1	98.0	0.0470	22780	100