

SPECIFICATION

For


FD-0.6/1KV-VV

0.6/1(1.2)kV

PVC Insulated PVC Sheathed

Flame Retardant Power Cable

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

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Rev.	Date	Description
0	31/1/2023	Issued specification
1	25/10/2024	- Update IEC standard - Change sheath thickness - Add size (5-cores)
2	10/6/2025	Update specification

APP. _____
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CUSTOMER

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) sheathed flame retardant power cable.

The cable shall be in accordance with IEC 60502-1 : 2021.

- Flame retardant test requirements per IEC 60332-1.
- Flame propagation test requirements per 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 : 2021.

The average thickness of the insulation shall be not less than that given in Table 1.

The minimum thickness shall not fall below 90% of the nominal value in Table 1 by more than 0.1 mm.

4. Cabling (For multi-cores only)

The individual insulated cores shall be cabled together with suitable non-hygroscopic filler to give the completed cable a substantially circular cross section.

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

A suitable binder tape shall be applied helically over the cabled core.

5. Core Identification

The cores shall be identified by colors, as follows :

- Single-core : black
- 2-cores : blue, brown
- 3-cores : brown, black, grey
- 4-cores : blue, brown, black, grey
- 5-cores : blue, brown, black, grey, green/yellow

6. Sheath

The sheath shall be sunlight resistant and flame retardant polyvinyl chloride (PVC/ST1) compound meet the requirements of IEC 60502-1 : 2021.


The average thickness of the sheath shall not be less than that given in Table 1.

The minimum thickness shall not fall below 80% of the nominal value in Table 1 by more than 0.2 mm.

The color of the sheath shall be black.

7. Marking on Cable

The marking items shall be marked by printed at intervals not exceeding 1 meter 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 conductor "CU"
6. Type of insulation and sheath "PVC/PVC"
7. Type of cable "POWER CABLE"
8. Number of cores and size of conductor
9. TIS logo and standard number (For size 1x 1.5 to 1 x 95 mm²)
10. The continuous reel length marking (in figure) shall be made on the sheath at every 1 meter (For single-core size 10 up to 1000 mm²)

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 : 2021, 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-VV"
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

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

Definition concerning the tests

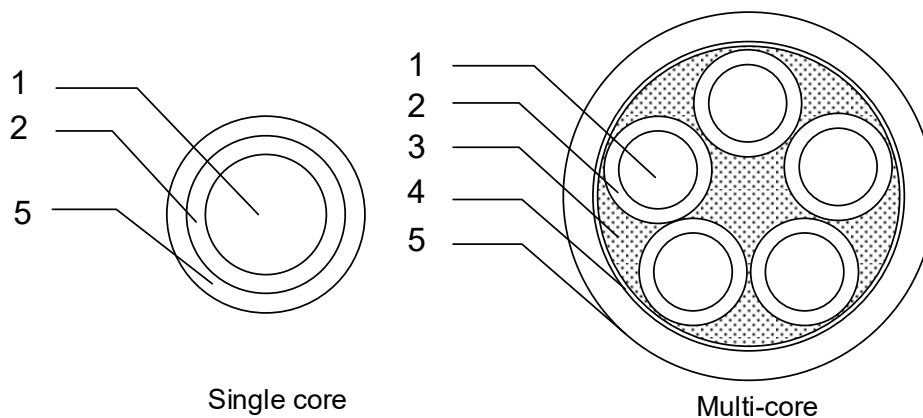
Routine tests: Tests made by the manufacturer on each manufactured length of cable to check that each length meets the specified requirements.

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 Stranded annealed copper
2	Insulation	Polyvinyl chloride (PVC/A) compound
3	Filler	Non-hygroscopic
4	Binder Tape	Spun bond tape or suitable tape
5	Sheath	Flame retardant Polyvinyl chloride (PVC/ST1) compound

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 70 °C for normal operation and 160 °C for short circuit conditions.

Table 1

No. of core	Size (mm ²)	Conductor (wires/type)	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	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)
1	1.5	Solid	1.38	0.8	1.4	6.5	12.1	54	500
1	2.5	Solid	1.78	0.8	1.4	7.0	7.41	67	500
1	4	Solid	2.25	1.0	1.4	8.0	4.61	92	500
1	6	7/Non-compacted	3.12	1.0	1.4	9.0	3.08	124	500
1	10	7/Non-compacted	4.10	1.0	1.4	9.5	1.83	172	500
1	16	7/Non-compacted	5.10	1.0	1.4	10.5	1.15	238	500
1	25	7/Non-compacted	6.26	1.2	1.4	12.5	0.727	339	500
1	35	19/Non-compacted	7.65	1.2	1.4	13.5	0.524	455	500
1	50	19/Non-compacted	8.73	1.4	1.4	15.0	0.387	580	500
1	70	19/Non-compacted	10.70	1.4	1.5	17.5	0.268	827	500
1	95	19/Non-compacted	12.60	1.6	1.6	20.0	0.193	1129	500
1	120	37/Non-compacted	14.21	1.6	1.6	22.0	0.153	1387	500
1	150	37/Non-compacted	15.75	1.8	1.7	24.0	0.124	1693	500
1	185	37/Non-compacted	17.64	2.0	1.8	26.5	0.0991	2107	500
1	240	61/Non-compacted	20.25	2.2	1.9	30.0	0.0754	2725	500
1	300	61/Non-compacted	22.68	2.4	2.0	33.0	0.0601	3383	500
1	400	61/Non-compacted	25.65	2.6	2.1	36.5	0.0470	4277	500
1	500	61/Non-compacted	28.80	2.8	2.2	40.0	0.0366	5331	500
1	630	127/Non-compacted	32.76	2.8	2.4	44.5	0.0283	6791	500
1	800	127/Non-compacted	37.05	2.8	2.5	49.0	0.0221	8547	500
1	1000	127/Non-compacted	41.60	3.0	2.7	54.5	0.0176	10710	300

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor (wires/type)	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	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)
2	1.5	Solid	1.38	0.8	1.8	11.5	12.1	134	500
2	2.5	Solid	1.78	0.8	1.8	12.5	7.41	165	500
2	4	Solid	2.25	1.0	1.8	14.0	4.61	228	500
2	6	7/Non-compacted	3.12	1.0	1.8	16.0	3.08	298	500
2	10	7/Non-compacted	4.10	1.0	1.8	18.0	1.83	410	500
2	16	7/Non-compacted	5.10	1.0	1.8	20.0	1.15	569	500
2	25	7/Non-compacted	6.26	1.2	1.8	23.0	0.727	799	500
2	35	19/Non-compacted	7.65	1.2	1.8	26.0	0.524	1069	500
2	50	19/Non-compacted	8.73	1.4	1.8	29.0	0.387	1358	500
2	70	19/Non-compacted	10.70	1.4	2.0	33.0	0.268	1921	500
2	95	19/Non-compacted	12.60	1.6	2.1	38.5	0.193	2612	500
2	120	37/Non-compacted	14.21	1.6	2.3	42.5	0.153	3238	500
2	150	37/Non-compacted	15.75	1.8	2.4	46.5	0.124	3938	500
2	185	37/Non-compacted	17.64	2.0	2.6	51.5	0.0991	4900	500
2	240	61/Non-compacted	20.25	2.2	2.8	58.0	0.0754	6335	500
2	300	61/Non-compacted	22.68	2.4	3.0	64.5	0.0601	7869	500
2	400	61/Non-compacted	25.65	2.6	3.2	71.5	0.0470	9939	300

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor (wires/type)	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	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	Solid	1.38	0.8	1.8	12.0	12.1	158	500
3	2.5	Solid	1.78	0.8	1.8	13.0	7.41	198	500
3	4	Solid	2.25	1.0	1.8	15.0	4.61	280	500
3	6	7/Non-compacted	3.12	1.0	1.8	16.5	3.08	381	500
3	10	7/Non-compacted	4.10	1.0	1.8	18.5	1.83	531	500
3	16	7/Non-compacted	5.10	1.0	1.8	21.0	1.15	739	500
3	25	7/Non-compacted	6.26	1.2	1.8	24.0	0.727	1055	500
3	35	19/Non-compacted	7.65	1.2	1.8	27.5	0.524	1420	500
3	50	19/Non-compacted	8.73	1.4	1.9	30.5	0.387	1842	500
3	70	19/Non-compacted	10.70	1.4	2.0	35.0	0.268	2598	500
3	95	19/Non-compacted	12.60	1.6	2.2	41.0	0.193	3578	500
3	120	37/Non-compacted	14.21	1.6	2.3	44.5	0.153	4407	500
3	150	37/Non-compacted	15.75	1.8	2.5	49.0	0.124	5408	500
3	185	37/Non-compacted	17.64	2.0	2.7	55.0	0.0991	6733	500
3	240	61/Non-compacted	20.25	2.2	2.9	61.5	0.0754	8731	500
3	300	61/Non-compacted	22.68	2.4	3.1	68.5	0.0601	10860	300
3	400	61/Non-compacted	25.65	2.6	3.3	76.0	0.0470	13733	100

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor (wires/type)	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	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	Solid	1.38	0.8	1.8	13.0	12.1	187	500
4	2.5	Solid	1.78	0.8	1.8	14.0	7.41	239	500
4	4	Solid	2.25	1.0	1.8	16.0	4.61	346	500
4	6	7/Non-compacted	3.12	1.0	1.8	18.0	3.08	472	500
4	10	7/Non-compacted	4.10	1.0	1.8	20.5	1.83	670	500
4	16	7/Non-compacted	5.10	1.0	1.8	22.5	1.15	943	500
4	25	7/Non-compacted	6.26	1.2	1.8	26.5	0.727	1350	500
4	35	19/Non-compacted	7.65	1.2	1.9	30.0	0.524	1846	500
4	50	19/Non-compacted	8.73	1.4	2.0	34.0	0.387	2382	500
4	70	19/Non-compacted	10.70	1.4	2.2	39.0	0.268	3405	500
4	95	19/Non-compacted	12.60	1.6	2.4	45.5	0.193	4667	500
4	120	37/Non-compacted	14.21	1.6	2.5	50.0	0.153	5767	500
4	150	37/Non-compacted	15.75	1.8	2.7	55.0	0.124	7073	500
4	185	37/Non-compacted	17.64	2.0	2.9	61.0	0.0991	8810	500
4	240	61/Non-compacted	20.25	2.2	3.1	69.0	0.0754	11435	300
4	300	61/Non-compacted	22.68	2.4	3.3	76.0	0.0601	14211	300
4	400	61/Non-compacted	25.65	2.6	3.6	85.0	0.0470	18009	200

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor (wires/type)	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	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)
5	1.5	Solid	1.38	0.8	1.8	14.0	12.1	221	500
5	2.5	Solid	1.78	0.8	1.8	15.0	7.41	285	500
5	4	Solid	2.25	1.0	1.8	17.5	4.61	413	500
5	6	7/Non-compacted	3.12	1.0	1.8	20.0	3.08	569	500
5	10	7/Non-compacted	4.10	1.0	1.8	22.5	1.83	816	500
5	16	7/Non-compacted	5.10	1.0	1.8	25.0	1.15	1157	500
5	25	7/Non-compacted	6.26	1.2	1.8	29.5	0.727	1669	500
5	35	19/Non-compacted	7.65	1.2	2.0	33.5	0.524	2282	500
5	50	19/Non-compacted	8.73	1.4	2.1	38.0	0.387	2952	500
5	70	19/Non-compacted	10.70	1.4	2.3	43.5	0.268	4233	500
5	95	19/Non-compacted	12.60	1.6	2.5	51.0	0.193	5808	500
5	120	37/Non-compacted	14.21	1.6	2.7	56.0	0.153	7193	500
5	150	37/Non-compacted	15.75	1.8	2.9	61.5	0.124	8800	500
5	185	37/Non-compacted	17.64	2.0	3.1	68.5	0.0991	10997	300
5	240	61/Non-compacted	20.25	2.2	3.4	77.5	0.0754	14284	300
5	300	61/Non-compacted	22.68	2.4	3.6	85.5	0.0601	17742	200
5	400	61/Non-compacted	25.65	2.6	4.0	95.5	0.0470	22570	200