

SPECIFICATION
For
FD-0.6/1KV-VV-SWA

0.6/1(1.2)kV

PVC Insulated PVC Inner Sheathed

Steel Wire Armor PVC Outer Sheathed

Flame Retardant Power Cable

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

BY Wachara
(Wachara Sangsomritphon)

MANAGER, Cable Design Section

APP. Winai Ariyasakulsap
(Winai Ariyasakulsap)

MANAGER, Development Department

Rev.	Date	Description
0	10/02/2021	Issued 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) inner sheathed steel wire armored polyvinyl chloride (PVC) outer sheathed flame retardant power cable.

The cable shall be in accordance with 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 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 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 :

2-cores : blue, brown

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 binder tape.

The approximate thickness given in Table 1

The color of the inner sheath shall be black.

7. Steel Wire Armor

The armor shall be galvanized round steel wire and shall be applied with a minimum gap between adjacent wires over the inner sheathed.

A suitable tape may be applied helically over the armored core.

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 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 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 "PVC"
6. Type of cable "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-VV-SWA"
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 and IEC 60332-3-24; Category C.

Definition concerning the tests

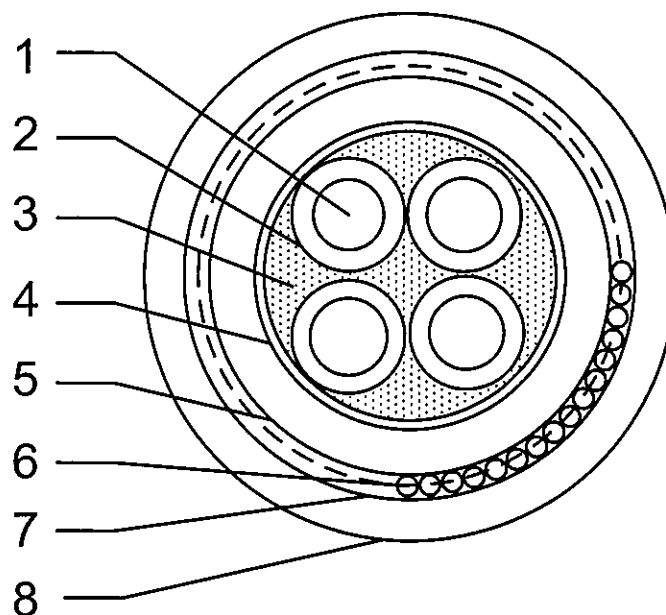
Routine tests: Tests made by the manufacturer on each manufactured length of cable to check that each length meets the specified requirements.

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 & Non-compacted concentric stranded annealed copper
2	Insulation	Polyvinyl chloride (PVC/A)
3	Filler	PP calcium yarn (Non-hygroscopic)
4	Binder tape	Spun bond tape or suitable tape
5	Inner sheath	Polyvinyl chloride (PVC)
6	Aarmor	Galvanized steel wire
7	Binder tape	PS tape or suitable tape
8	Outer sheath	Flame retardant polyvinyl chloride (PVC/ST1)

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 cores	Size (mm ²)	Conductor (wires/type)	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	Inner sheath thickness approx. (mm)	Dia. of inner sheath approx. (mm)	Armor wire dia. nominal (mm)	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)
2	1.5	Solid	1.38	0.8	1.2	10.0	0.80	1.8	16.0	12.1	380	500
2	2.5	Solid	1.78	0.8	1.2	11.0	0.80	1.8	16.5	7.41	430	500
2	4	Solid	2.25	1.0	1.2	12.5	1.25	1.8	19.5	4.61	650	500
2	6	7/Non-compacted	3.12	1.0	1.2	14.5	1.25	1.8	21.5	3.08	800	500
2	10	7/Non-compacted	3.98	1.0	1.2	16.0	1.25	1.8	23.0	1.83	950	500
2	16	7/Non-compacted	5.10	1.0	1.2	18.5	1.60	1.8	26.0	1.15	1300	500
2	25	7/Non-compacted	6.26	1.2	1.2	21.5	2.00	1.8	30.0	0.727	1900	500
2	35	19/Non-compacted	7.65	1.2	1.2	24.5	2.00	1.8	32.5	0.524	2200	500
2	50	19/Non-compacted	8.73	1.4	1.2	27.5	2.00	2.0	36.5	0.387	2700	500
2	70	19/Non-compacted	10.70	1.4	1.2	31.5	2.00	2.1	40.5	0.268	3400	500
2	95	19/Non-compacted	12.60	1.6	1.2	36.5	2.00	2.2	45.5	0.193	4300	500
2	120	37/Non-compacted	14.21	1.6	1.2	40.0	2.00	2.3	49.5	0.153	5000	500
2	150	37/Non-compacted	15.75	1.8	1.3	44.0	2.50	2.5	55.0	0.124	6500	500
2	185	37/Non-compacted	17.64	2.0	1.4	49.0	2.50	2.6	60.0	0.0991	7500	500
2	240	61/Non-compacted	20.25	2.2	1.5	55.5	2.50	2.8	67.0	0.0754	9500	300
2	300	61/Non-compacted	22.68	2.4	1.6	61.0	2.50	3.0	73.5	0.0601	11000	300
2	400	61/Non-compacted	25.65	2.6	1.7	68.5	3.15	3.2	82.0	0.0470	14500	200
2	500	61/Non-compacted	28.80	2.8	1.8	75.5	3.15	3.5	90.0	0.0366	17500	100

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor (wires/type)	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	Inner sheath thickness approx. (mm)	Dia. of inner sheath approx. (mm)	Armor wire dia. nominal (mm)	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	Solid	1.38	0.8	1.2	10.5	0.80	1.8	16.5	12.1	400	500
3	2.5	Solid	1.78	0.8	1.2	11.5	1.25	1.8	18.0	7.41	600	500
3	4	Solid	2.25	1.0	1.2	13.5	1.25	1.8	20.0	4.61	700	500
3	6	7/Non-compacted	3.12	1.0	1.2	15.5	1.25	1.8	22.0	3.08	900	500
3	10	7/Non-compacted	3.98	1.0	1.2	17.0	1.60	1.8	24.5	1.83	1200	500
3	16	7/Non-compacted	5.10	1.0	1.2	19.5	1.60	1.8	27.0	1.15	1500	500
3	25	7/Non-compacted	6.26	1.2	1.2	23.0	2.00	1.8	31.0	0.727	2200	500
3	35	19/Non-compacted	7.65	1.2	1.2	26.0	2.00	1.9	34.5	0.524	2700	500
3	50	19/Non-compacted	8.73	1.4	1.2	29.0	2.00	2.0	38.0	0.387	3300	500
3	70	19/Non-compacted	10.70	1.4	1.2	33.0	2.00	2.1	42.5	0.268	4200	500
3	95	19/Non-compacted	12.60	1.6	1.2	38.5	2.00	2.3	48.0	0.193	5500	500
3	120	37/Non-compacted	14.21	1.6	1.3	42.5	2.50	2.4	53.0	0.153	7000	500
3	150	37/Non-compacted	15.75	1.8	1.4	46.5	2.50	2.6	58.0	0.124	8000	500
3	185	37/Non-compacted	17.64	2.0	1.4	52.0	2.50	2.7	63.5	0.0991	10000	300
3	240	61/Non-compacted	20.25	2.2	1.5	59.0	2.50	2.9	70.5	0.0754	12000	300
3	300	61/Non-compacted	22.68	2.4	1.7	65.0	3.15	3.1	79.0	0.0601	15500	200
3	400	61/Non-compacted	25.65	2.6	1.8	72.5	3.15	3.4	87.0	0.0470	19000	200
3	500	61/Non-compacted	28.80	2.8	1.9	80.5	3.15	3.7	95.5	0.0366	23000	100

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor (wires/type)	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	Inner sheath thickness approx. (mm)	Dia. of inner sheath approx. (mm)	Armor wire dia. nominal (mm)	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	Solid	1.38	0.8	1.2	11.5	1.25	1.8	18.0	12.1	600	500
4	2.5	Solid	1.78	0.8	1.2	12.5	1.25	1.8	19.0	7.41	650	500
4	4	Solid	2.25	1.0	1.2	14.5	1.25	1.8	21.0	4.61	850	500
4	6	7/Non-compacted	3.12	1.0	1.2	16.5	1.25	1.8	23.5	3.08	1000	500
4	10	7/Non-compacted	3.98	1.0	1.2	18.5	1.60	1.8	26.0	1.83	1400	500
4	16	7/Non-compacted	5.10	1.0	1.2	21.5	1.60	1.8	28.5	1.15	1800	500
4	25	7/Non-compacted	6.26	1.2	1.2	25.5	2.00	1.9	33.5	0.727	2600	500
4	35	19/Non-compacted	7.65	1.2	1.2	28.5	2.00	2.0	37.5	0.524	3300	500
4	50	19/Non-compacted	8.73	1.4	1.2	32.5	2.00	2.1	41.5	0.387	4000	500
4	70	19/Non-compacted	10.70	1.4	1.2	37.0	2.00	2.3	46.5	0.268	5000	500
4	95	19/Non-compacted	12.60	1.6	1.3	43.0	2.50	2.5	54.0	0.193	7000	500
4	120	37/Non-compacted	14.21	1.6	1.4	47.5	2.50	2.6	59.0	0.153	8500	500
4	150	37/Non-compacted	15.75	1.8	1.4	52.0	2.50	2.7	63.5	0.124	10000	300
4	185	37/Non-compacted	17.64	2.0	1.5	58.0	2.50	2.9	70.0	0.0991	12000	300
4	240	61/Non-compacted	20.25	2.2	1.7	65.5	3.15	3.1	79.5	0.0754	16000	200
4	300	61/Non-compacted	22.68	2.4	1.8	72.5	3.15	3.4	87.0	0.0601	19500	200
4	400	61/Non-compacted	25.65	2.6	1.9	81.0	3.15	3.7	96.0	0.0470	24000	100