

SPECIFICATION

For

NYY-SWA

450/750V 70 °C Copper Conductor

PVC Insulated PVC Inner Sheathed

Steel Wire Armored PVC Outer Sheathed Power Cable

(450/750V, Cu /PVC/PVC/SWA/PVC)

BY



(Wachara Sangsomritphon)

MANAGER, Cable Design Section

APP.



(Winai Ariyasakulsap)

MANAGER, Development Department

APP.

()

CUSTOMER

Rev.	Date	Description
0	25/12/2020	Issued specification
1	8/7/2021	- Cancel code "0010" - Add size 3 x 2.5, 4, 6 mm ²

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 450/750V copper conductor polyvinyl chloride (PVC) insulated polyvinyl chloride (PVC) inner sheathed steel wire armored polyvinyl chloride (PVC) outer sheathed power cable.

Maximum conductor temperature shall be 70°C.

The cable shall be based on TIS 11 Part 101-2559, Table 4.

Flame retardant test TIS 11 Part 2-2553 (Same IEC 60332-1 : 2015).

2. Conductor

The conductor shall be solid and non-compacted concentric stranded uncoated annealed copper conductor in accordance with TIS 2427-2552, 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/C) compound meet the requirements of TIS 11 Part 101-2559.

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 length of lay or 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 of insulation, 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 cable core.

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 polyvinyl chloride (PVC/ST4) compound meet the requirements of TIS 11 Part 101-2559.


The average thickness 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. Designation "NYY-SWA"
3. Rated voltage "450/750V"
4. Insulation and sheath material "PVC/PVC"
5. Max. operating rated temperature at conductor "70°C"
6. Number of cores and size of conductor
7. 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 be meet the requirement in test and inspection and Table 1, when tested in accordance with TIS 11 Part 101-2559 and TIS 2427-2552 and TIS 11 Part 2-2553 (Same IEC 60332-1 : 2015).

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. Rated voltage "450/750V "
2. Max. operating rated temperature at conductor "70°C"
3. Designation "NYY-SWA"
4. Number of cores and size of conductor
5. Cable length
6. Net and gross weight
7. Month and year of manufacture
8. Rolling direction of reel
9. Manufacturer's name and/or trade mark "  **YAZAKI** "

Test and Inspection

Sample Tests

- Maximum conductor resistance, Ohm/km specified in Table 1
- AC test voltage for 5 minutes, kV2.5
- Construction.....specified in Table 1

Type Tests

This cable shall be tested as followed :

- Flame retardant tested according to TIS 11 Part 2-2553 (Same IEC 60332-1)

Definition concerning the tests

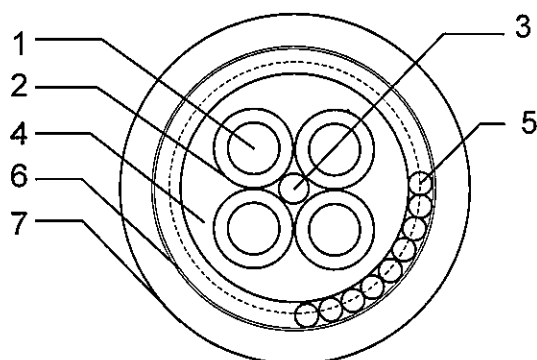
Routine tests: Tests made by the manufacturer on each manufactured length of cable to check that each length meets the specified requirements.

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/C)
3	Filler	PVC Rod (if necessary)
4	Inner Sheath	Polyvinyl chloride (PVC)
5	Armour	Galvanized steel wire
6	Binder tape	PS tape or suitable tape
7	Outer Sheath	Polyvinyl chloride (PVC/ST4)

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.

Table 1

No. of cores	Size (mm ²)	Conductor			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 maximum approx. (mm)	Conductor resistance at 20 °C maximum (Ohm/km)	Weight of cable approx. (kg/km)	Standard packing length (m)
		No. of wires	Type	Diameter approx. (mm)									
2	50	19	Non-compacted	8.73	1.5	1.2	28.0	2.00	2.1	37.0	0.387	3000	500
2	70	19	Non-compacted	10.70	1.5	1.5	32.5	2.00	2.2	41.5	0.268	3900	500
2	95	19	Non-compacted	12.60	1.7	1.5	37.0	2.50	2.4	48.0	0.193	5500	500
2	120	37	Non-compacted	14.21	1.7	1.5	40.5	2.50	2.6	51.5	0.153	6000	500
2	150	37	Non-compacted	15.75	1.9	1.8	45.0	2.50	2.7	56.5	0.124	7500	500
2	185	37	Non-compacted	17.64	2.1	1.8	50.0	2.50	2.9	61.5	0.0991	8500	500
2	240	61	Non-compacted	20.25	2.3	2.0	56.5	2.50	3.1	69.0	0.0754	11000	300
2	300	61	Non-compacted	22.68	2.5	2.0	62.0	3.15	3.4	76.5	0.0601	14000	300

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor		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 maximum approx. (mm)	Conductor resistance at 20 °C maximum (Ohm/km)	Weight of cable approx. (kg/km)	Standard packing length (m)
		No. of wires (wires)	Type									
3	2.5	1	Solid	0.8	0.8	10.0	0.80	1.8	16.0	7.41	430	500
3	4	1	Solid	0.9	0.8	11.5	1.25	1.8	18.5	4.61	650	500
3	6	7	Non-compacted	0.9	0.8	13.5	1.25	1.8	20.5	3.08	800	500
3	50	19	Non-compacted	1.5	1.5	30.5	2.00	2.2	39.5	0.387	3600	500
3	70	19	Non-compacted	1.5	1.5	34.5	2.00	2.3	44.0	0.268	4600	500
3	95	19	Non-compacted	1.7	1.5	39.5	2.50	2.5	50.5	0.193	6500	500
3	120	37	Non-compacted	1.7	1.8	43.5	2.50	2.7	55.0	0.153	7500	500
3	150	37	Non-compacted	1.9	1.8	47.5	2.50	2.8	59.5	0.124	9000	500
3	185	37	Non-compacted	2.1	2.0	53.5	2.50	3.0	65.5	0.0991	10500	300
3	240	61	Non-compacted	2.3	2.0	60.0	2.50	3.2	72.5	0.0754	13000	300
3	300	61	Non-compacted	2.5	2.2	66.5	3.15	3.5	81.0	0.0601	17000	200

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor			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 maximum approx. (mm)	Conductor resistance at 20 °C maximum (Ohm/km)	Weight of cable approx. (kg/km)	Standard packing length (m)
		No. of wires	Type	Diameter approx. (mm)									
4	50	19	Non-compacted	8.73	1.5	1.5	33.5	2.00	2.3	43.0	0.387	4300	500
4	70	19	Non-compacted	10.70	1.5	1.5	38.0	2.50	2.5	49.0	0.268	6000	500
4	95	19	Non-compacted	12.60	1.7	1.8	44.5	2.50	2.7	55.5	0.193	8000	500
4	120	37	Non-compacted	14.21	1.7	1.8	48.5	2.50	2.8	60.0	0.153	9000	300
4	150	37	Non-compacted	15.75	1.9	2.0	53.5	2.50	3.0	65.5	0.124	11000	300
4	185	37	Non-compacted	17.64	2.1	2.0	59.0	2.50	3.2	72.0	0.0991	13000	300
4	240	61	Non-compacted	20.25	2.3	2.2	67.0	3.15	3.5	81.5	0.0754	17500	200
4	300	61	Non-compacted	22.68	2.5	2.2	73.5	3.15	3.8	88.5	0.0601	21000	200