

SPECIFICATION

For

NYCY

450/750V 70 °C Copper Conductor PVC Insulated PVC Inner Sheathed

Concentric Conductor PVC Outer Sheathed Power Cable

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

BY Wachara

(Wachara Sangsomritphon)

MANAGER, Cable Design Section

APP. Winai Ariyasakulsap

(Winai Ariyasakulsap)

MANAGER, Development Department

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CUSTOMER

Rev.	Date	Description
0	2/7/2020	Issued specification
1	24/02/2021	Add size 3 x 70/16 mm ² and delete cable code "0010"
2	24/03/2021	Add size 4 x 2.5/2.5 mm ²
3	8/7/2021	Add size 4 x 4/4 mm ²
4	6/9/2021	Add size 3 x 4/4, 10/10 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 concentric conductor 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 3 and Table 4.

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

2. Conductor

The conductor shall 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 (For multi-cores only)

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, as follows :

Single-core : black

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

The thickness of the copper tape shall be approximate 0.1 mm.

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

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 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 15% plus 0.1 mm.

The color of the outer sheath shall be black.

9. Marking on Cable

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

1. Manufacturer's name and/or trade mark "  YAZAKI..... : TYE"
2. Year of manufacture
3. Designation "NYCY "
4. Rated voltage "450/750V "
5. Insulation and sheath material "PVC/PVC"
6. Max. operating rated temperature at conductor "70°C"
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 be meet the requirement in Test and Inspection and Table 1, when tested in accordance with TIS 11 Part 101-2559, TIS 2427-2552 and IEC 60332-1 : 2015 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 "NYCY"
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

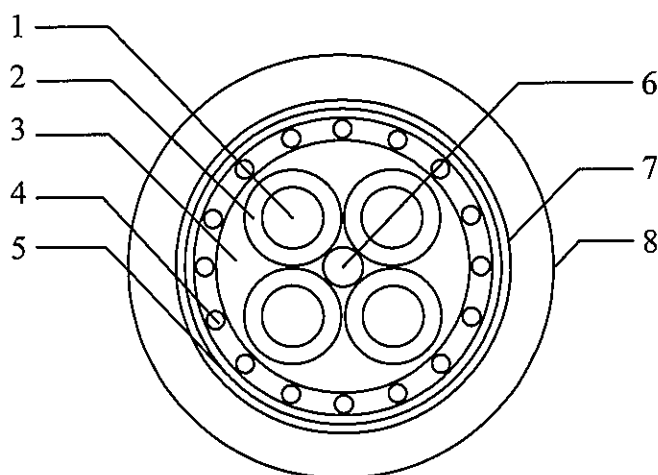
Routine tests: Tests made by the manufacturer on each manufactured length of cable to check that each length meets the specified requirements.

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	Solided and Non-compacted concentric stranded annealed copper
2	Insulation	Polyvinyl chloride (PVC/C)
3	Inner sheath	Polyvinyl chloride (PVC)
4	Concentric conductor	Plain annealed round copper wires
5	Contact tape	Copper contact tape
6	Filler	PVC Rod (For 4-cores only)
7	Separator tape	Spun bond tape
8	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 core and size (core x mm ²)	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 ²)	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)
1 x 1.5/1.5	Solid	1.38	1.5	1.2	8.0	1.5	1.4	12.5	12.1	170	500
1 x 2.5/2.5	Solid	1.78	1.5	1.2	8.0	2.5	1.4	13.0	7.41	200	500
1 x 4/4	Solid	2.25	1.5	1.2	8.5	4	1.4	13.5	4.61	230	500
1 x 6/6	7/Non-compacted	3.12	1.5	1.2	9.5	6	1.4	14.5	3.08	290	500
1 x 10/10	7/Non-compacted	4.10	1.5	1.2	10.5	10	1.4	16.0	1.83	380	500
1 x 16/16	7/Non-compacted	5.10	1.5	1.2	11.5	16	1.5	18.0	1.15	550	500
1 x 25/16	7/Non-compacted	6.26	1.5	1.2	12.5	16	1.5	19.0	0.727	650	500
1 x 35/16	19/Non-compacted	7.65	1.5	1.2	14.0	16	1.6	20.5	0.524	800	500
1 x 50/25	19/Non-compacted	8.73	1.5	1.2	15.0	25	1.6	22.0	0.387	1000	500
1 x 70/35	19/Non-compacted	10.70	1.5	1.2	17.0	35	1.7	24.5	0.268	1300	500
1 x 95/50	19/Non-compacted	12.60	1.7	1.2	19.5	50	1.8	27.5	0.193	1800	500
1 x 120/70	37/Non-compacted	14.21	1.7	1.2	21.0	70	1.9	29.5	0.153	2300	500
1 x 150/95	37/Non-compacted	15.75	1.9	1.2	23.0	95	1.9	31.5	0.124	2800	500
1 x 185/95	37/Non-compacted	17.64	2.1	1.2	25.5	95	2.0	34.5	0.0991	3300	500
1 x 240/120	61/Non-compacted	20.25	2.3	1.2	28.5	120	2.2	38.0	0.0754	4200	500
1 x 300/150	61/Non-compacted	22.68	2.5	1.2	31.0	150	2.2	41.0	0.0601	5000	500
1 x 400/240	61/Non-compacted	25.65	2.7	1.2	34.5	240	2.2	47.5	0.0470	7000	500
1 x 500/240	61/Non-compacted	28.80	3.1	1.3	39.0	240	2.6	52.5	0.0366	8000	500

Table 1 (continued)

No. of core and size (core x mm ²)	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 ²)	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 x 50/25	19/Non-compacted	8.73	1.5	1.2	28.0	25	2.2	36.0	0.387	2100	500
2 x 70/35	19/Non-compacted	10.70	1.5	1.5	32.5	35	2.2	41.0	0.268	2900	500
2 x 95/50	19/Non-compacted	12.60	1.7	1.5	37.0	50	2.2	46.0	0.193	3800	500
2 x 120/70	37/Non-compacted	14.21	1.7	1.5	40.5	70	2.4	50.0	0.153	4800	500
2 x 150/95	37/Non-compacted	15.75	1.9	1.8	45.0	95	2.6	55.0	0.124	6000	500
2 x 185/95	37/Non-compacted	17.64	2.1	1.8	50.0	95	2.8	60.5	0.0991	7000	500
2 x 240/120	61/Non-compacted	20.25	2.3	2.0	56.5	120	3.0	68.0	0.0754	9000	300
2 x 300/150	61/Non-compacted	22.68	2.5	2.0	62.0	150	3.2	74.0	0.0601	11000	300

Table 1 (continued)

No. of core and size (core x mm ²)	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 ²)	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 x 4/4	Solid	2.25	0.9	0.8	11.5	4	1.8	17.5	4.61	410	500
3 x 10/10	7/Non-compacted	4.10	1.1	0.8	16.0	10	1.8	22.5	1.83	750	500
3 x 50/25	19/Non-compacted	8.73	1.5	1.5	30.0	25	2.2	38.0	0.387	2600	500
3 x 70/16	19/Non-compacted	10.70	1.5	1.5	34.5	16	2.2	42.5	0.268	3400	500
3 x 70/35	19/Non-compacted	10.70	1.5	1.5	34.5	35	2.2	43.0	0.268	3500	500
3 x 70/50	19/Non-compacted	10.70	1.5	1.5	34.5	50	2.2	43.0	0.268	3700	500
3 x 95/50	19/Non-compacted	12.60	1.7	1.5	39.5	50	2.4	48.5	0.193	4800	500
3 x 120/70	37/Non-compacted	14.21	1.7	1.8	43.5	70	2.6	53.5	0.153	6000	500
3 x 150/70	37/Non-compacted	15.75	1.9	1.8	47.5	70	2.8	58.0	0.124	7000	500
3 x 150/95	37/Non-compacted	15.75	1.9	1.8	47.5	95	2.8	58.5	0.124	7500	500
3 x 185/95	37/Non-compacted	17.64	2.1	2.0	53.5	95	3.0	64.5	0.0991	9000	500
3 x 240/120	61/Non-compacted	20.25	2.3	2.0	60.0	120	3.2	72.0	0.0754	11500	300
3 x 300/150	61/Non-compacted	22.68	2.5	2.2	66.5	150	3.4	79.0	0.0601	14000	300

Table 1 (continued)

No. of core and size (core x mm ²)	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 ²)	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 x 2.5/2.5	Solid	1.78	0.8	0.8	11.0	2.5	1.8	17.0	7.41	370	500
4 x 4/4	Solid	2.25	0.9	0.8	13.0	4	1.8	19.0	4.61	470	500
4 x 50/25	19/Non-compacted	8.73	1.5	1.5	33.5	25	2.2	41.5	0.387	3200	500
4 x 70/35	19/Non-compacted	10.70	1.5	1.5	38.0	35	2.4	47.0	0.268	4400	500
4 x 95/50	19/Non-compacted	12.60	1.7	1.8	44.5	50	2.6	54.0	0.193	6000	500
4 x 120/70	37/Non-compacted	14.21	1.7	1.8	48.5	70	2.8	58.5	0.153	7500	500
4 x 150/95	37/Non-compacted	15.75	1.9	2.0	53.5	95	3.0	64.5	0.124	9000	300
4 x 185/95	37/Non-compacted	17.64	2.1	2.0	59.0	95	3.2	71.0	0.0991	11000	300
4 x 240/120	61/Non-compacted	20.25	2.3	2.2	67.0	120	3.4	79.5	0.0754	14500	300
4 x 300/150	61/Non-compacted	22.68	2.5	2.2	73.5	150	3.8	87.0	0.0601	18000	200