

SPECIFICATION**For****NYY-G**

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

PVC Outer Sheathed with Grounded Power Cable

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

BY Wachara
(Wachara Sangsomritphon)

MANAGER, Cable Design Section

APP. Winai Ariyasakulsap
(Winai Ariyasakulsap)

MANAGER, Development Department

APP. _____
()

CUSTOMER

Rev.	Date	Description
0	10/11/2020	Issued specification

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 polyvinyl chloride (PVC) outer sheathed with grounded power cable

Maximum conductor temperature shall be 70°C.

The cable shall be in accordance with TIS 11 Part 101-2559, Table 5.

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, as follows :

2-cores + G : blue, brown + green/yellow

3-cores + G : brown, black, grey + green/yellow

4-cores + G : blue, brown, black, grey + green/yellow

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. 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.

8. 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. Designation "NYY-G"
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. TIS logo and standard number
8. The continuous reel length marking (in figure) shall be made on the outer sheath at every 1 meter

9. 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).

10. 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-G"
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 :

- Minimum insulation resistance at 70 °C, MOhm-km specified in Table 1
- Flame retardant tested according to TIS 11 Part 2-2553 (Same IEC 60332-1)

Definition concerning the tests

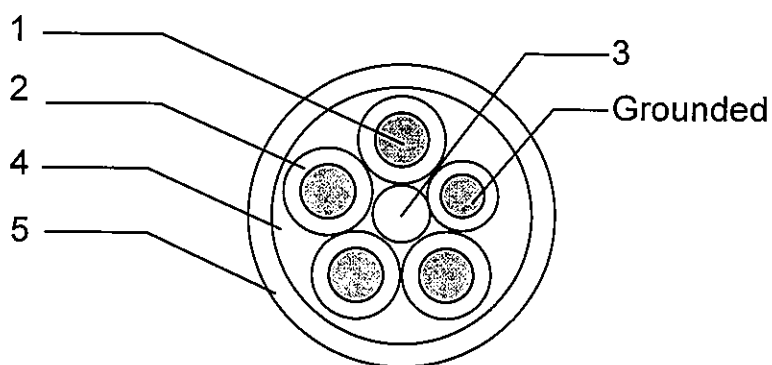
Routine tests: Tests made by the manufacturer on each manufactured length of cable to check that each length meets the specified requirements.

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 and 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	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		Insulation thickness nominal (mm)	Inner sheath thickness approx. (mm)	Outer sheath thickness nominal (mm)	Overall diameter maximum (mm)	Conductor resistance at 20 °C maximum (Ohm/km)	Insulation resistance at 70 °C minimum (MOhm-km)	Weight of cable approx. (kg/km)	Standard packing length (m)
	No. of wires (wires)	Type	Diameter approx. (mm)							
2+G x 1/1	1	Solid	1.13	0.8	1.8	13.0	18.1	0.0141	180	500
2+G x 1/1	7	Non-compacted	1.29	0.8	1.8	13.5	18.1	0.0135	190	500
2+G x 1.5/1.5	1	Solid	1.38	0.8	1.8	13.5	12.1	0.0123	210	500
2+G x 1.5/1.5	7	Non-compacted	1.59	0.8	1.8	14.0	12.1	0.0116	220	500
2+G x 2.5/2.5	1	Solid	1.78	0.8	1.8	14.5	7.41	0.0102	260	500
2+G x 2.5/2.5	7	Non-compacted	2.01	0.8	1.8	15.0	7.41	0.0093	270	500
2+G x 4/4	1	Solid	2.25	0.8	1.8	16.0	4.61	0.0094	340	500
2+G x 4/4	7	Non-compacted	2.55	0.8	1.8	16.5	4.61	0.0085	360	500
2+G x 6/6	7	Non-compacted	3.12	0.8	1.8	18.0	3.08	0.0073	450	500
2+G x 10/10	7	Non-compacted	3.98	0.8	1.8	21.0	1.83	0.0069	650	500
2+G x 16/16	7	Non-compacted	5.10	0.8	2.0	23.5	1.15	0.0057	900	500

Table 1 (continued)

No. of core and size (core x mm ²)	Conductor		Insulation thickness nominal (mm)	Inner sheath thickness approx. (mm)	Outer sheath thickness nominal (mm)	Overall diameter maximum (mm)	Conductor resistance at 20 °C maximum (Ohm/km)	Insulation resistance at 70 °C minimum (MOhm-km)	Weight of cable approx. (kg/km)	Standard packing length (m)
	No. of wires (wires)	Type	Diameter approx. (mm)							
2+G x 25/16	7	Non-compacted	6.26	1.2	2.0	28.0	0.727	0.0054	1200	500
2+G x 35/16	7	Non-compacted	7.65	1.2	2.0	30.0	0.524	0.0047	1500	500
2+G x 50/25	19	Non-compacted	8.73	1.2	2.2	34.0	0.387	0.0046	2000	500
2+G x 70/35	19	Non-compacted	10.70	1.5	2.2	38.5	0.268	0.0039	2700	500
2+G x 95/50	19	Non-compacted	12.60	1.5	2.2	43.5	0.193	0.0038	3600	500
2+G x 120/70	37	Non-compacted	14.21	1.5	2.4	47.5	0.153	0.0034	4500	500
2+G x 150/95	37	Non-compacted	15.75	1.8	2.6	53.0	0.124	0.0034	5500	500
2+G x 185/95	37	Non-compacted	17.64	1.8	2.8	57.5	0.0991	0.0034	6500	500
2+G x 240/120	61	Non-compacted	20.25	2.0	3.0	64.5	0.0754	0.0033	8500	500
2+G x 300/150	61	Non-compacted	22.68	2.0	3.2	71.0	0.0601	0.0032	10500	300

Table 1 (continued)

No. of core and size (core x mm ²)	Conductor		Insulation thickness nominal (mm)	Inner sheath thickness approx. (mm)	Outer sheath thickness nominal (mm)	Overall diameter maximum (mm)	Conductor resistance at 20 °C maximum (Ohm/km)	Insulation resistance at 70 °C minimum (MOhm-km)	Weight of cable approx. (kg/km)	Standard packing length (m)
	No. of wires (wires)	Type	Diameter approx. (mm)							
3+G x 1/1	1	Solid	1.13	0.8	1.8	13.5	18.1	0.0141	210	500
3+G x 1/1	7	Non-compacted	1.29	0.8	1.8	14.0	18.1	0.0135	220	500
3+G x 1.5/1.5	1	Solid	1.38	0.8	1.8	14.0	12.1	0.0123	240	500
3+G x 1.5/1.5	7	Non-compacted	1.59	0.8	1.8	15.0	12.1	0.0116	260	500
3+G x 2.5/2.5	1	Solid	1.78	0.8	1.8	15.5	7.41	0.0102	300	500
3+G x 2.5/2.5	7	Non-compacted	2.01	0.8	1.8	16.0	7.41	0.0093	320	500
3+G x 4/4	1	Solid	2.25	0.8	1.8	17.0	4.61	0.0094	400	500
3+G x 4/4	7	Non-compacted	2.55	0.8	1.8	18.0	4.61	0.0085	430	500
3+G x 6/6	7	Non-compacted	3.12	0.8	1.8	19.0	3.08	0.0073	550	500
3+G x 10/10	7	Non-compacted	3.98	0.8	1.8	22.5	1.83	0.0069	800	500
3+G x 16/16	7	Non-compacted	5.10	1.2	2.0	26.5	1.15	0.0057	1200	500

Table 1 (continued)

No. of core and size (core x mm ²)	Conductor		Insulation thickness nominal (mm)	Inner sheath thickness approx. (mm)	Outer sheath thickness nominal (mm)	Overall diameter maximum (mm)	Conductor resistance at 20 °C maximum (Ohm/km)	Insulation resistance at 70 °C minimum (MOhm-km)	Weight of cable approx. (kg/km)	Standard packing length (m)
	No. of wires (wires)	Type								
3+G x 25/16	7	Non-compacted	6.26	1.2	2.0	30.5	0.727	0.0054	1600	500
3+G x 35/16	7	Non-compacted	7.65	1.2	2.0	33.0	0.524	0.0047	1900	500
3+G x 50/25	19	Non-compacted	8.73	1.5	2.2	38.5	0.387	0.0046	2600	500
3+G x 70/35	19	Non-compacted	10.70	1.5	2.2	42.5	0.268	0.0039	3500	500
3+G x 95/50	19	Non-compacted	12.60	1.5	2.4	48.5	0.193	0.0038	4700	500
3+G x 120/70	37	Non-compacted	14.21	1.8	2.6	53.5	0.153	0.0034	6000	500
3+G x 150/95	37	Non-compacted	15.75	1.8	2.8	59.0	0.124	0.0034	7500	500
3+G x 185/95	37	Non-compacted	17.64	2.0	3.0	64.5	0.0991	0.0034	9000	500
3+G x 240/120	61	Non-compacted	20.25	2.0	3.2	72.0	0.0754	0.0033	11500	300
3+G x 300/150	61	Non-compacted	22.68	2.2	3.4	79.5	0.0601	0.0032	14000	300

Table 1 (continued)

No. of core and size (core x mm ²)	Conductor		Insulation thickness nominal (mm)	Inner sheath thickness approx. (mm)	Outer sheath thickness nominal (mm)	Overall diameter maximum (mm)	Conductor resistance at 20 °C maximum (Ohm/km)	Insulation resistance at 70 °C minimum (MOhm-km)	Weight of cable approx. (kg/km)	Standard packing length (m)
	No. of wires (wires)	Type	Diameter approx. (mm)							
4+G x 1/1	1	Solid	1.13	0.8	1.8	14.5	18.1	0.0141	250	500
4+G x 1/1	7	Non-compacted	1.29	0.8	1.8	15.0	18.1	0.0135	260	500
4+G x 1.5/1.5	1	Solid	1.38	0.8	1.8	15.0	12.1	0.0123	280	500
4+G x 1.5/1.5	7	Non-compacted	1.59	0.8	1.8	16.0	12.1	0.0116	300	500
4+G x 2.5/2.5	1	Solid	1.78	0.8	1.8	16.5	7.41	0.0102	360	500
4+G x 2.5/2.5	7	Non-compacted	2.01	0.8	1.8	17.0	7.41	0.0093	390	500
4+G x 4/4	1	Solid	2.25	0.8	1.8	18.0	4.61	0.0094	480	500
4+G x 4/4	7	Non-compacted	2.55	0.8	1.8	19.0	4.61	0.0085	500	500
4+G x 6/6	7	Non-compacted	3.12	0.8	1.8	20.5	3.08	0.0073	650	500
4+G x 10/10	7	Non-compacted	3.98	0.8	2.0	25.0	1.83	0.0069	1000	500
4+G x 16/16	7	Non-compacted	5.10	1.2	2.0	28.5	1.15	0.0057	1400	500

Table 1 (continued)

No. of core and size (core x mm ²)	Conductor		Insulation thickness nominal (mm)	Inner sheath thickness approx. (mm)	Outer sheath thickness nominal (mm)	Overall diameter maximum (mm)	Conductor resistance at 20 °C maximum (Ohm/km)	Insulation resistance at 70 °C minimum (MOhm-km)	Weight of cable approx. (kg/km)	Standard packing length (m)
	No. of wires (wires)	Type	Diameter approx. (mm)							
4+G x 25/16	7	Non-compacted	6.26	1.2	2.0	34.0	0.727	0.0054	1900	500
4+G x 35/16	7	Non-compacted	7.65	1.5	2.2	39.0	0.524	0.0047	2500	500
4+G x 50/25	19	Non-compacted	8.73	1.5	2.2	43.5	0.387	0.0046	3300	500
4+G x 70/35	19	Non-compacted	10.70	1.5	2.4	49.0	0.268	0.0039	4500	500
4+G x 95/50	19	Non-compacted	12.60	1.8	2.6	56.5	0.193	0.0038	6000	500
4+G x 120/70	37	Non-compacted	14.21	1.8	2.8	61.5	0.153	0.0034	7500	500
4+G x 150/95	37	Non-compacted	15.75	2.0	3.0	68.0	0.124	0.0034	9500	300
4+G x 185/95	37	Non-compacted	17.64	2.0	3.2	75.0	0.0991	0.0034	11500	300
4+G x 240/120	61	Non-compacted	20.25	2.2	3.4	84.5	0.0754	0.0033	14500	300
4+G x 300/150	61	Non-compacted	22.68	2.2	3.8	93.5	0.0601	0.0032	18000	200

Table 1 (continued)

FOR GROUNDED CONDUCTOR

Size	Conductor		Insulation thickness nominal (mm)	Conductor resistance at 20 °C maximum (Ohm/km)
	No. of wires (wires)	Type	Diameter approx. (mm)	
1	1	Solid	1.13	18.1
1	7	Non-compacted	1.29	18.1
1.5	1	Solid	1.38	12.1
1.5	7	Non-compacted	1.59	12.1
2.5	1	Solid	1.78	7.41
2.5	7	Non-compacted	2.01	7.41
4	1	Solid	2.25	4.61
4	7	Non-compacted	2.55	4.61
6	7	Non-compacted	3.12	3.08
10	7	Non-compacted	3.98	1.83
16	7	Non-compacted	5.10	1.15
25	7	Non-compacted	6.26	0.727
35	7	Non-compacted	7.65	0.524
50	19	Non-compacted	8.73	0.387

Table 1 (continued)

FOR GROUNDED CONDUCTOR

Size	Conductor		Insulation thickness nominal (mm)	Conductor resistance at 20 °C maximum (Ohm/km)
	No. of wires (wires)	Type Diameter approx. (mm)		
70	19	Non-compacted 10.70	1.5	0.268
95	37	Non-compacted 12.60	1.7	0.193
120	37	Non-compacted 14.21	1.7	0.153
150	37	Non-compacted 15.75	1.9	0.124