

# SPECIFICATION

## For

## NYG

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

PVC Outer Sheathed with Grounded Power Cable

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

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Rev.	Date	Description
0	10/11/2020	Issued specification
1	19/3/2024	Update specification

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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 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 "
10. TIS logo and standard number

## Test and Inspection

### **Sample Tests**

- Maximum conductor resistance, Ohm/km ..... specified in Table 1
- AC test voltage for 5 minutes, kV .....2.5
- 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**

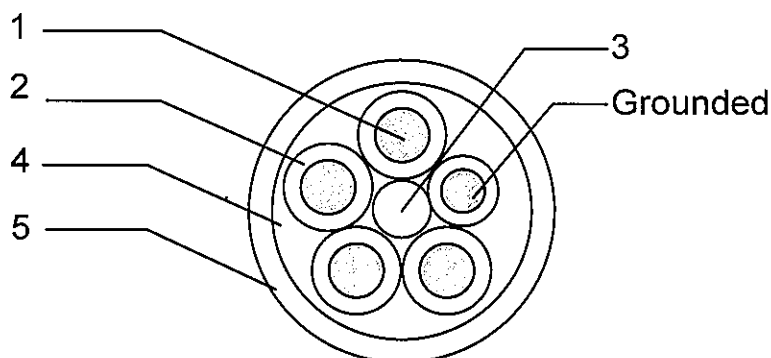
**Routine tests:** Tests made by the manufacturer on each manufactured length of cable to check that each length meets the specified requirements.

**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 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 <sup>2</sup> )	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	Type	Diameter approx. (mm)								
2+G x 1/1	1	Solid	1.13	0.8	0.8	1.8	13.0	18.1	0.0141	190	500
2+G x 1/1 (st)	7	Non-compacted	1.29	0.8	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	0.8	1.8	13.5	12.1	0.0123	210	500
2+G x 1.5/1.5 (st)	7	Non-compacted	1.59	0.8	0.8	1.8	14.0	12.1	0.0116	230	500
2+G x 2.5/2.5	1	Solid	1.78	0.8	0.8	1.8	14.5	7.41	0.0102	260	500
2+G x 2.5/2.5 (st)	7	Non-compacted	2.01	0.8	0.8	1.8	15.0	7.41	0.0093	280	500
2+G x 4/4	1	Solid	2.25	0.9	0.8	1.8	16.0	4.61	0.0094	340	500
2+G x 4/4 (st)	7	Non-compacted	2.55	0.9	0.8	1.8	16.5	4.61	0.0085	360	500
2+G x 6/6	7	Non-compacted	3.12	0.9	0.8	1.8	18.0	3.08	0.0073	450	500
2+G x 10/10	7	Non-compacted	4.10	1.1	0.8	1.8	21.0	1.83	0.0069	660	500
2+G x 16/16	7	Non-compacted	5.10	1.1	0.8	2.0	23.5	1.15	0.0057	920	500

**Table 1 (continued)**

No. of core and size (core x mm <sup>2</sup> )	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	Type								
(wires)										
2+G x 25/16	7	Non-compacted	6.26	1.2	2.0	28.0	0.727	0.0054	1220	500
2+G x 35/16	19	Non-compacted	7.65	1.2	2.0	30.0	0.524	0.0047	1510	500
2+G x 50/25	19	Non-compacted	8.73	1.2	2.2	34.0	0.387	0.0046	1980	500
2+G x 70/35	19	Non-compacted	10.70	1.5	2.2	38.5	0.268	0.0039	2740	500
2+G x 95/50	19	Non-compacted	12.60	1.5	2.2	43.5	0.193	0.0038	3610	500
2+G x 120/70	37	Non-compacted	14.21	1.5	2.4	47.5	0.153	0.0034	4530	500
2+G x 150/95	37	Non-compacted	15.75	1.8	2.6	53.0	0.124	0.0034	5700	500
2+G x 185/95	37	Non-compacted	17.64	1.8	2.8	57.5	0.0991	0.0034	6740	500
2+G x 240/120	61	Non-compacted	20.25	2.0	3.0	64.5	0.0754	0.0033	8640	500
2+G x 300/150	61	Non-compacted	22.68	2.0	3.2	71.0	0.0601	0.0032	10610	300

**Table 1 (continued)**

No. of core and size (core x mm <sup>3</sup> )	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	Type								
	(wires)		(mm)	(mm)	(mm)	(mm)	(Ohm/km)	(MOhm-km)	(kg/km)	(m)
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 (st)	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 (st)	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 (st)	7	Non-compacted	2.01	0.8	1.8	16.0	7.41	0.0093	330	500
3+G x 4/4	1	Solid	2.25	0.8	1.8	17.0	4.61	0.0094	410	500
3+G x 4/4 (st)	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	4.10	0.8	1.8	22.5	1.83	0.0069	810	500
3+G x 16/16	7	Non-compacted	5.10	1.2	2.0	26.5	1.15	0.0057	1180	500



**Table 1 (continued)**

No. of core and size (core x mm <sup>2</sup> )	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	Type								
	(wires)									
3+G x 25/16	7	Non-compacted	6.26	1.2	2.0	30.5	0.727	0.0054	1540	500
3+G x 35/16	19	Non-compacted	7.65	1.2	2.0	33.0	0.524	0.0047	1940	500
3+G x 50/25	19	Non-compacted	8.73	1.5	2.2	38.5	0.387	0.0046	2610	500
3+G x 70/35	19	Non-compacted	10.70	1.5	2.2	42.5	0.268	0.0039	3560	500
3+G x 95/50	19	Non-compacted	12.60	1.5	2.4	48.5	0.193	0.0038	4750	500
3+G x 120/70	37	Non-compacted	14.21	1.8	2.6	53.5	0.153	0.0034	6010	500
3+G x 150/95	37	Non-compacted	15.75	1.8	2.8	59.0	0.124	0.0034	7440	500
3+G x 185/95	37	Non-compacted	17.64	2.0	3.0	64.5	0.0991	0.0034	8950	500
3+G x 240/120	61	Non-compacted	20.25	2.0	3.2	72.0	0.0754	0.0033	11420	300
3+G x 300/150	61	Non-compacted	22.68	2.2	3.4	79.5	0.0601	0.0032	14100	300

**Table 1 (continued)**

No. of core and size (core x mm <sup>2</sup> )	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								
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 (st)	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	290	500
4+G x 1.5/1.5 (st)	7	Non-compacted	1.59	0.8	1.8	16.0	12.1	0.0116	310	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 (st)	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	490	500
4+G x 4/4 (st)	7	Non-compacted	2.55	0.8	1.8	19.0	4.61	0.0085	520	500
4+G x 6/6	7	Non-compacted	3.12	0.8	1.8	20.5	3.08	0.0073	660	500
4+G x 10/10	7	Non-compacted	4.10	0.8	2.0	25.0	1.83	0.0069	1010	500
4+G x 16/16	7	Non-compacted	5.10	1.2	2.0	28.5	1.15	0.0057	1420	500

**Table 1 (continued)**

No. of core and size (core x mm <sup>2</sup> )	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	Type	Diameter approx. (mm)								
(wires)											
4+G x 25/16	7	Non-compacted	6.26	1.3	1.2	2.0	34.0	0.727	0.0054	1900	500
4+G x 35/16	19	Non-compacted	7.65	1.3	1.5	2.2	39.0	0.524	0.0047	2510	500
4+G x 50/25	19	Non-compacted	8.73	1.5	1.5	2.2	43.5	0.387	0.0046	3250	500
4+G x 70/35	19	Non-compacted	10.70	1.5	1.5	2.4	49.0	0.268	0.0039	4510	500
4+G x 95/50	19	Non-compacted	12.60	1.7	1.8	2.6	56.5	0.193	0.0038	6120	500
4+G x 120/70	37	Non-compacted	14.21	1.7	1.8	2.8	61.5	0.153	0.0034	7610	500
4+G x 150/95	37	Non-compacted	15.75	1.9	2.0	3.0	68.0	0.124	0.0034	9480	300
4+G x 185/95	37	Non-compacted	17.64	2.1	2.0	3.2	75.0	0.0991	0.0034	11360	300
4+G x 240/120	61	Non-compacted	20.25	2.3	2.2	3.4	84.5	0.0754	0.0033	14570	300
4+G x 300/150	61	Non-compacted	22.68	2.5	2.2	3.8	93.5	0.0601	0.0032	18030	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 (st)	7	Non-compacted	1.29	18.1
1.5	1	Solid	1.38	12.1
1.5 (st)	7	Non-compacted	1.59	12.1
2.5	1	Solid	1.78	7.41
2.5 (st)	7	Non-compacted	2.01	7.41
4	1	Solid	2.25	4.61
4 (st)	7	Non-compacted	2.55	4.61
6	7	Non-compacted	3.12	3.08
10	7	Non-compacted	4.10	1.83
16	7	Non-compacted	5.10	1.15
25	7	Non-compacted	6.26	0.727
35	19	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		
70	19	Non-compacted	1.5	0.268
95	37	Non-compacted	1.7	0.193
120	37	Non-compacted	1.7	0.153
150	37	Non-compacted	1.9	0.124