

# SPECIFICATION

For

## NYY-G-SWA

450/750V 70 °C Copper Conductor

PVC Insulated PVC Inner Sheathed

Steel Wire Armored PVC Outer Sheathed

with Grounded Power Cable

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


BY



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CUSTOMER

Rev.	Date	Description
0	7/11/2023	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 steel wire armored polyvinyl chloride (PVC) outer sheathed with grounded power cable.

Maximum conductor temperature shall be 70°C.

The cable shall be based on 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 of insulation, as follows :

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. 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-G-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, kV .....2.5
- 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

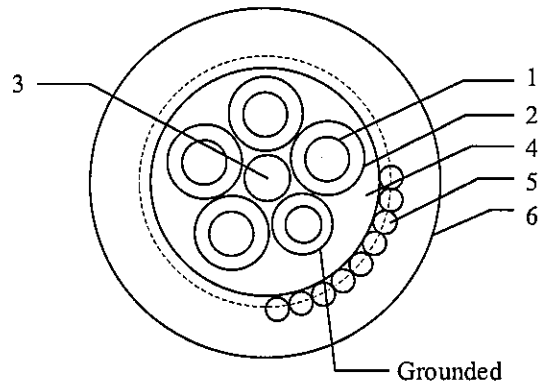
**Routine tests:** Tests made by the manufacturer on each manufactured length of cable to check that each length meets the specified requirements.

**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 and 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	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)	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+G x 1/1	1	Solid	0.8	0.8	9.5	0.80	1.8	15.5	18.1	380	500
3+G x 1/1 (st)	7	Non-compacted	0.8	0.8	10.0	0.80	1.8	15.5	18.1	390	500
3+G x 1.5/1.5	1	Solid	0.8	0.8	10.0	0.80	1.8	16.0	12.1	420	500
3+G x 1.5/1.5 (st)	7	Non-compacted	0.8	0.8	10.5	0.80	1.8	16.5	12.1	440	500
3+G x 2.5/2.5	1	Solid	0.8	0.8	11.0	0.80	1.8	17.0	7.41	490	500
3+G x 2.5/2.5 (st)	7	Non-compacted	0.8	0.8	12.0	1.25	1.8	18.5	7.41	650	500
3+G x 4/4	1	Solid	0.9	0.8	13.0	1.25	1.8	19.5	4.61	750	500
3+G x 4/4 (st)	7	Non-compacted	0.9	0.8	13.5	1.25	1.8	20.0	4.61	800	500
3+G x 6/6	7	Non-compacted	0.9	0.8	15.0	1.25	1.8	21.5	3.08	950	500
3+G x 10/10	7	Non-compacted	1.1	0.8	18.0	1.60	1.8	25.0	1.83	1400	500
3+G x 16/16	7	Non-compacted	1.1	1.2	21.5	1.60	1.8	28.5	1.15	1880	500
3+G x 25/16	7	Non-compacted	1.3	1.2	24.5	2.00	2.0	33.5	0.727	2590	500
3+G x 35/16	19	Non-compacted	1.3	1.2	27.0	2.00	2.1	36.0	0.524	3130	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)	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+G x 50/25	19	Non-compacted	8.73	1.5	32.0	2.00	2.2	41.5	0.387	3950	500
3+G x 70/35	19	Non-compacted	10.70	1.5	36.5	2.50	2.4	47.0	0.268	5520	500
3+G x 95/50	19	Non-compacted	12.60	1.5	41.5	2.50	2.6	53.0	0.193	6960	500
3+G x 120/70	37	Non-compacted	14.21	1.8	46.5	2.50	2.8	58.0	0.153	8480	500
3+G x 150/95	37	Non-compacted	15.75	1.8	51.5	2.50	2.9	63.0	0.124	10130	300
3+G x 185/95	37	Non-compacted	17.64	2.0	56.5	2.50	3.1	69.0	0.0991	11890	300
3+G x 240/120	61	Non-compacted	20.25	2.0	63.0	3.15	3.4	77.5	0.0754	15560	200
3+G x 300/150	61	Non-compacted	22.68	2.2	67.0	3.15	3.5	81.5	0.0601	17330	300
4+G x 1/1	1	Solid	1.13	0.8	10.5	0.80	1.8	16.5	18.1	410	500
4+G x 1/1 (st)	7	Non-compacted	1.29	0.8	11.0	0.80	1.8	16.5	18.1	430	500
4+G x 1.5/1.5	1	Solid	1.38	0.8	11.0	0.80	1.8	17.0	12.1	450	500
4+G x 1.5/1.5 (st)	7	Non-compacted	1.59	0.8	11.5	1.25	1.8	18.5	12.1	600	500
4+G x 2.5/2.5	1	Solid	1.78	0.8	12.0	1.25	1.8	19.0	7.41	670	500
4+G x 2.5/2.5 (st)	7	Non-compacted	2.01	0.8	13.0	1.25	1.8	20.0	7.41	710	500
4+G x 4/4	1	Solid	2.25	0.8	14.0	1.25	1.8	21.0	4.61	820	500
4+G x 4/4 (st)	7	Non-compacted	2.55	0.8	15.0	1.25	1.8	21.5	4.61	870	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)	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									
4+G x 6/6	7	Non-compacted	0.9	0.8	16.5	1.60	1.8	24.0	3.08	1170	500
4+G x 10/10	7	Non-compacted	1.1	0.8	20.0	1.60	1.8	27.5	1.83	1520	500
4+G x 16/16	7	Non-compacted	1.1	1.2	23.5	2.00	1.9	32.0	1.15	2260	500
4+G x 25/16	7	Non-compacted	1.3	1.2	28.0	2.00	2.1	37.0	0.727	2860	500
4+G x 35/16	19	Non-compacted	1.3	1.5	32.0	2.00	2.2	41.0	0.524	3860	500
4+G x 50/25	19	Non-compacted	1.5	1.5	36.5	2.50	2.4	47.5	0.387	5210	500
4+G x 70/35	19	Non-compacted	1.5	1.5	41.5	2.50	2.6	53.0	0.268	6720	500
4+G x 95/50	19	Non-compacted	1.7	1.8	48.5	2.50	2.8	60.0	0.193	8670	500
4+G x 120/70	37	Non-compacted	1.7	1.8	53.5	2.50	2.8	58.0	0.153	8640	500
4+G x 150/95	37	Non-compacted	1.9	2.0	59.5	2.50	3.2	72.0	0.124	12580	300
4+G x 185/95	37	Non-compacted	2.1	2.0	64.5	3.15	3.4	79.0	0.0991	15640	200
4+G x 240/120	61	Non-compacted	2.3	2.2	73.0	3.15	3.7	87.5	0.0754	19410	200
4+G x 300/150	61	Non-compacted	2.5	2.2	80.0	3.15	4.0	96.0	0.0601	23900	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	0.8	18.1
1 (st)	7	Non-compacted	1.29	0.8	18.1
1.5	1	Solid	1.38	0.8	12.1
1.5 (st)	7	Non-compacted	1.59	0.8	12.1
2.5	1	Solid	1.78	0.8	7.41
2.5 (st)	7	Non-compacted	2.01	0.8	7.41
4	1	Solid	2.25	0.9	4.61
4 (st)	7	Non-compacted	2.55	0.9	4.61
6	7	Non-compacted	3.12	0.9	3.08
10	7	Non-compacted	4.10	1.1	1.83
16	7	Non-compacted	5.10	1.1	1.15
25	7	Non-compacted	6.26	1.3	0.727
35	19	Non-compacted	7.65	1.3	0.524
50	19	Non-compacted	8.73	1.5	0.387
70	19	Non-compacted	10.70	1.5	0.268
95	19	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