

**SPECIFICATION****For****THWA-C**

450/750V 70 °C Compacted Aluminium Conductor PVC Insulated Wire

(450/750V, Al/PVC)

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Rev.	Date	Description
0	02/09/2019	Issued specification
1	21/07/2020	Correct the Table 1
2	28/10/2021	Cancel code "0010" Add size 1x10 and 1 x 16 mm <sup>2</sup>
3	19/4/2024	Change packing length size 10 to 50 mm <sup>2</sup>

APP. \_\_\_\_\_  
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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 750V aluminium conductor polyvinyl chloride (PVC) insulated wire.

Maximum conductor temperature shall be 70 °C.

The wire shall be in accordance with TIS 293-2541, Table 2.

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

## **2. Conductor**

The conductor shall be compacted concentric stranded hard drawn aluminium conductor in accordance with TIS 293-2541, Table 2.

The direction of lay shall be right-hand (Z) lay in the outermost layer.

## **3. Insulation**

The insulation shall be polyvinyl chloride (PVC) compound meet the requirements of with TIS 293-2541.


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.

The color of the insulation shall be black.

## **4. Marking on Cable**

The marking items shall be marked with suitable means throughout the length of wire.

1. Manufacturer's name and/or trade mark "  YAZAKI..... : TYE"
2. Rated voltage "750V "
3. Insulation material "PVC"
4. Max. operating rated temperature at conductor "70°C"
5. Designation "THWA-C"
6. Size of conductor
7. Table number of relevant "TABLE 2"
8. Type of conductor "COMPACTED"
9. TIS logo and standard number
10. The continuous reel length marking shall be made on the insulation at every 1 meter  
(Except, cable size 10 mm<sup>2</sup> and 16 mm<sup>2</sup>)

## **5. 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 5-2553 (Same IEC 60227-5 : 2003), TIS 2427-2552


(Same IEC 60228 : 2004) and TIS 11 Part 2-2553 (Same IEC 60332-1 : 2015).

## 6. Packing

The finished wire shall be placed on non-returnable wooden reels or shall be coiled and wrapped with plastic which shall be overlapped and secured.

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 "750V "
2. Insulation material "PVC"
3. Max. operating rated temperature at conductor "70°C"
4. Designation "THWA-C"
5. Number of core and size of conductor
6. Table number of relevant "TABLE 2"
7. Type of conductor "COMPACTED"
8. Cable length
9. Net and gross weight
10. Month and year of manufacture
11. Rolling direction of reel (only for reel package)
12. End of cable
13. Manufacturer's name and/or trade mark "  **YAZAKI** "
14. 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 :

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

#### **Definition concerning the tests**

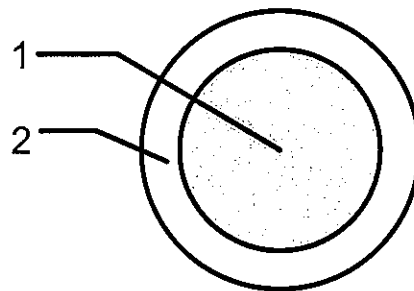
**Routine tests:** Tests made by the manufacturer on each manufactured length of cable to check that each length meets the specified requirements.

**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	Stranded hard drawn aluminium
2	Insulation	Polyvinyl chloride (PVC)

**Application:** For low voltage overhead distribution line, Maximum conductor temperature of 70°C for normal operation and 160°C for short circuit condition.

**Table 1**

Nominal size (mm <sup>2</sup> )	Conductor (wires/type)	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	Overall diameter approx. (mm)	Conductor resistance maximum at 20°C (Ohm/km)	Weight approx. (kg/km)	Standard packing length (m)
10	7/Compacted	3.72	1.1	6.5	3.08	55	100/Coil
16	7/Compacted	4.69	1.1	7.5	1.91	80	100/Coil
25	7/Compacted	5.90	1.3	9.0	1.20	120	100/Coil
35	7/Compacted	6.95	1.3	10.0	0.868	160	100/Coil
50	7/Compacted	8.01	1.5	12.0	0.641	210	100/Coil
70	19/Compacted	9.73	1.5	13.5	0.443	280	100/Coil
95	19/Compacted	11.40	1.7	15.5	0.320	380	100/Coil
120	19/Compacted	12.95	1.7	17.0	0.253	460	100/Coil
150	19/Compacted	14.27	1.9	19.0	0.206	560	500
185	34/Compacted	15.98	2.1	21.0	0.164	710	500
240	34/Compacted	18.47	2.3	24.0	0.125	920	500
300	34/Compacted	20.68	2.5	26.5	0.100	1140	500
400	55/Compacted	23.39	2.7	29.5	0.0778	1440	500
500	55/Compacted	26.67	3.1	34.0	0.0605	1870	500