

**SPECIFICATION****For****60227 IEC 01 THW**

450/750V 70 °C Copper Conductor PVC Insulated Single Core

(450/750V, Cu/PVC)

BY Wachara  
(Wachara Sangsomritphon)

MANAGER, Cable Design Section

APP. Wachara  
(Winai Ariyasakulsap)

MANAGER, Development Department

APP. \_\_\_\_\_  
( )

CUSTOMER

Rev.	Date	Description
0	19/09/2019	Issued specification
1	09/06/2020	Cancel size 1x6 mm <sup>2</sup> and 1x10 mm <sup>2</sup>
2	23/10/2020	Add electrical data
3	16/01/2021	Add color light-blue

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 single core. Maximum conductor temperature shall be 70°C.

The wire shall be in accordance with TIS 11 Part 3-2553, Table 1.

(Same IEC 60227-3 : 1997, Table 1)

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.

(Same IEC 60228 : 2004, 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 3-2553. (Same IEC 60227-3 : 1997)


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 or white or blue or brown or grey or red or yellow or green or green/yellow or light-blue.

## 4. 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 "60227 IEC 01 THW "

3. Rated voltage "450/750V"

4. Insulation material "PVC"

5. Max. operating rated temperature at conductor "70°C"

6. Number of core and size of conductor

7. TIS logo and standard number

8. The continuous reel length marking (in figure) shall be made on the insulation at every 1 meter (For size  $\geq 25 \text{ mm}^2$ )

Remark : The white insulation color, the length marking is not application.

## 5. Test and Properties

The test and properties of wire shall be carried out in accordance with TIS 11 Part 3-2553 (Same IEC 60227-3 : 1997), TIS 2427-2552 (Same IEC 60228 : 2004) and TIS 11 Part 2-2553 (Same IEC 60332-1 : 2015).


Remark: Except black color insulation; For longer life of cable should be avoid exposure to direct solar radiation it necessary, cover is required.

## 6. Packing

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

The reels shall be lagged to provide the cable with physical protection during transportation and during ordinary storage and handling operation.

Each package shall be clearly marked as follows.

1. Rated voltage "450/750V "
2. Max. operating rated temperature at conductor "70°C"
3. Designation "60227 IEC 01 THW"
4. Number of core and size of conductor
5. Cable length
6. Net and gross weight
7. Month and year of manufacture
8. Rolling direction of reel (only for reel package)
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 :

- 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**

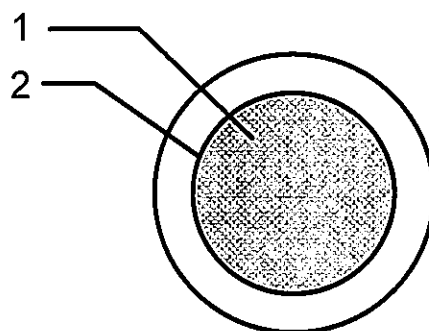
**Routine tests:** Tests made by the manufacturer on each manufactured length of cable to check that each length meets the specified requirements.

**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)

**Application:** Building wiring for installation on insulator or in raceway dry location, Maximum conductor temperature of 70°C for normal operation and 160°C for short circuit conditions.

**Table 1**

Size (mm <sup>2</sup> )	Conductor			Insulation thickness nominal (mm)	Overall diameter average (mm)		Weight approx. (kg/km)	Standard length (m)
	No. of wires (wires)	Type	Diameter approx. (mm)		Minimum	Maximum		
1.5	1	Solid	1.38	0.7	2.6	3.2	21	100/Coil
1.5 (st)	7	Non-Compacted	1.59	0.7	2.7	3.3	23	100/Coil
2.5	1	Solid	1.78	0.8	3.2	3.9	33	100/Coil
2.5 (st)	7	Non-Compacted	2.01	0.8	3.3	4.0	35	100/Coil
4	1	Solid	2.25	0.8	3.6	4.4	50	100/Coil
4 (st)	7	Non-Compacted	2.55	0.8	3.8	4.6	55	100/Coil
300	61	Non-Compacted	22.68	2.4	24.5	29.6	3100	500
400	61	Non-Compacted	25.65	2.6	27.5	33.2	3900	500

Remark : for size 6 mm<sup>2</sup> to 240 mm<sup>2</sup> refer to product name YK 60227 IEC 01 THW

**Table 1 (continuous)**

Size (mm <sup>2</sup> )	A.C. Resistance R (Ohm/km)	Inductance L (mH/km)	Reactance XL (Ohm/km)	Impedance Z (Ohm/km)	Continuous current rating in free air maximum at 40°C (A)	Conductor resistance at 20 °C maximum (Ohm/km)	Insulation resistance at 70 °C minimum (MOhm-km)
1.5	14.4777	0.5259	0.1652	14.4786	21	12.1	0.011
1.5 (st)	14.4777	0.5276	0.1657	14.4786	21	12.1	0.010
2.5	8.8661	0.5121	0.1609	8.8675	28	7.41	0.010
2.5 (st)	8.8661	0.5202	0.1634	8.8676	28	7.41	0.009
4	5.5159	0.4917	0.1545	5.5180	37	4.61	0.0085
4 (st)	5.5159	0.4742	0.1548	5.5181	37	4.61	0.0077
300	0.0734	0.4177	0.1312	0.1503	628	0.0601	0.0030
400	0.0581	0.4160	0.1307	0.1430	736	0.0470	0.0028