

SPECIFICATION**For****60227 IEC 10**

300/500V 70 °C Copper Conductor PVC Insulated PVC Inner Sheathed PVC Outer Sheathed

Power Cable

(300/500V, Cu/PVC/PVC/PVC)

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Rev.	Date	Description
0	19/09/2019	Issued specification
1	25/5/2022	Change marking

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 300/500V copper conductor polyvinyl chloride (PVC) insulated polyvinyl chloride (PVC) inner sheathed polyvinyl chloride (PVC) outer sheathed power cable. Maximum conductor temperature shall be 70°C.

The wire shall be in accordance with TIS 11 Part 4-2553, Table 1.

(Same IEC 60227-4 : 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.

3. Insulation

The insulation shall be polyvinyl chloride (PVC/C) compound meet the requirements of TIS 11 Part 4-2553 (Same IEC 60227-4 : 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.

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 : blue, brown

3-cores : brown, black, grey

4-cores : blue, brown, black, grey

5-cores : 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 4-2553. (Same IEC 60227-4 : 1997).


The average thickness shall be not less than the value 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 "60227 IEC 10 "
3. Rated voltage "300/500V "
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 101-2553 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 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 package shall be clearly marked as follows.

1. Rated voltage "300/500V "
2. Max. operating rated temperature at conductor "70°C"
3. Designation "60227 IEC 10"
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 (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, kV2.0
- 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

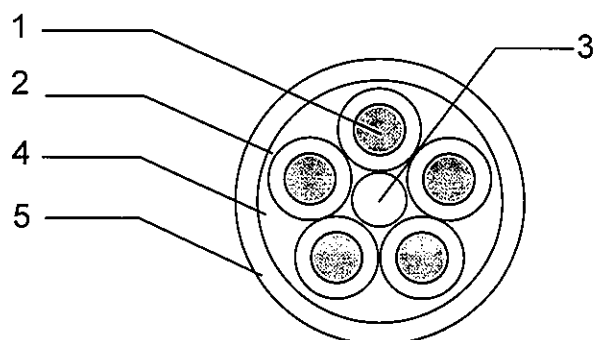
Routine tests: Tests made by the manufacturer on each manufactured length of cable to check that each length meets the specified requirements.

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
4	Inner Sheath	Polyvinyl chloride (PVC)
5	Outer Sheath	Polyvinyl chloride (PVC/ST4)

Application: For installation exposed, or in raceway, wet or dry location, Maximum conductor temperature of 70°C for normal operation and 160°C for short circuit conditions

Table 1

No. of cores	Size (mm ²)	Conductor			Insulation thickness nominal (mm)	Inner sheath thickness approx. (mm)	Outer sheath thickness nominal (mm)	Overall diameter average (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)				Minimum	Maximum				
2	1.5	1	Solid	1.38	0.7	0.4	1.2	7.6	10.0	12.1	0.011	120	100/Coil
2	1.5 (st)	7	Non-compacted	1.59	0.7	0.4	1.2	7.8	10.5	12.1	0.010	130	100/Coil
2	2.5	1	Solid	1.78	0.8	0.4	1.2	8.6	11.5	7.41	0.010	160	100/Coil
2	2.5 (st)	7	Non-compacted	2.01	0.8	0.4	1.2	9.0	12.0	7.41	0.009	180	100/Coil
2	4	1	Solid	2.25	0.8	0.4	1.2	9.6	12.5	4.61	0.0085	210	100/Coil
2	4 (st)	7	Non-compacted	2.55	0.8	0.4	1.2	10.0	13.0	4.61	0.0077	230	100/Coil
2	6	7	Non-compacted	3.12	0.8	0.4	1.2	11.0	14.0	3.08	0.0065	290	100/Coil
2	10	7	Non-compacted	4.05	1.0	0.6	1.4	13.5	17.5	1.83	0.0065	470	100/Coil
2	16	7	Non-compacted	5.10	1.0	0.6	1.4	15.5	20.0	1.15	0.0052	650	500
2	25	7	Non-compacted	6.42	1.2	0.8	1.4	18.5	24.0	0.727	0.0050	950	500
2	35	19	Non-compacted	7.65	1.2	1.0	1.6	21.0	27.5	0.524	0.0044	1300	500

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor			Insulation thickness nominal (mm)	Inner sheath thickness approx. (mm)	Outer sheath thickness nominal (mm)	Overall diameter average (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)				Minimum	Maximum				
3	1.5	1	Solid	1.38	0.7	0.4	1.2	8.0	10.5	12.1	0.011	140	100/Coil
3	1.5 (st)	7	Non-compacted	1.59	0.7	0.4	1.2	8.2	11.0	12.1	0.010	150	100/Coil
3	2.5	1	Solid	1.78	0.8	0.4	1.2	9.2	12.0	7.41	0.010	190	100/Coil
3	2.5 (st)	7	Non-compacted	2.01	0.8	0.4	1.2	9.4	12.5	7.41	0.009	210	100/Coil
3	4	1	Solid	2.25	0.8	0.4	1.2	10.0	13.0	4.61	0.0085	250	100/Coil
3	4 (st)	7	Non-compacted	2.55	0.8	0.4	1.2	10.5	13.5	4.61	0.0077	270	100/Coil
3	6	7	Non-compacted	3.12	0.8	0.4	1.4	12.0	15.5	3.08	0.0065	370	100/Coil
3	10	7	Non-compacted	4.10	1.0	0.6	1.4	14.5	19.0	1.83	0.0065	600	500
3	16	7	Non-compacted	5.10	1.0	0.8	1.4	16.5	21.5	1.15	0.0052	800	500
3	25	7	Non-compacted	6.42	1.2	0.8	1.6	20.5	26.0	0.727	0.0050	1200	500
3	35	19	Non-compacted	7.65	1.2	1.0	1.6	22.0	29.0	0.524	0.0044	1600	500

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor			Insulation thickness nominal (mm)	Inner sheath thickness approx. (mm)	Outer sheath thickness nominal (mm)	Overall diameter average (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)				Minimum	Maximum				
4	1.5	1	Solid	1.38	0.7	0.4	1.2	8.6	11.5	12.1	0.011	170	100/Coil
4	1.5 (st)	7	Non-compacted	1.59	0.7	0.4	1.2	9.0	12.0	12.1	0.010	180	100/Coil
4	2.5	1	Solid	1.78	0.8	0.4	1.2	10.0	13.0	7.41	0.010	230	100/Coil
4	2.5 (st)	7	Non-compacted	2.01	0.8	0.4	1.2	10.0	13.5	7.41	0.009	250	100/Coil
4	4	1	Solid	2.25	0.8	0.4	1.4	11.5	14.5	4.61	0.0085	320	100/Coil
4	4 (st)	7	Non-compacted	2.55	0.8	0.4	1.4	12.0	15.0	4.61	0.0077	340	100/Coil
4	6	7	Non-compacted	3.12	0.8	0.6	1.4	13.0	17.0	3.08	0.0065	470	100/Coil
4	10	7	Non-compacted	4.10	1.0	0.6	1.4	16.0	20.5	1.83	0.0065	700	500
4	16	7	Non-compacted	5.10	1.0	0.8	1.4	18.0	23.5	1.15	0.0052	1000	500
4	25	7	Non-compacted	6.42	1.2	1.0	1.6	22.5	28.5	0.727	0.0050	1600	500
4	35	19	Non-compacted	7.65	1.2	1.0	1.6	24.5	32.0	0.524	0.0044	2100	500

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor			Insulation thickness nominal (mm)	Inner sheath thickness approx. (mm)	Outer sheath thickness nominal (mm)	Overall diameter average (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)				Minimum	Maximum				
5	1.5	1	Solid	1.38	0.7	0.4	1.2	9.4	12.0	12.1	0.011	200	100/Coil
5	1.5 (st)	7	Non-compacted	1.59	0.7	0.4	1.2	9.8	12.5	12.1	0.010	220	100/Coil
5	2.5	1	Solid	1.78	0.8	0.4	1.2	11.0	14.0	7.41	0.010	280	100/Coil
5	2.5 (st)	7	Non-compacted	2.01	0.8	0.4	1.2	11.0	14.5	7.41	0.009	310	100/Coil
5	4	1	Solid	2.25	0.8	0.6	1.4	12.5	16.0	4.61	0.0085	410	100/Coil
5	4 (st)	7	Non-compacted	2.55	0.8	0.6	1.4	13.0	17.0	4.61	0.0077	430	100/Coil
5	6	7	Non-compacted	3.12	0.8	0.6	1.4	14.5	18.5	3.08	0.0065	550	500
5	10	7	Non-compacted	4.10	1.0	0.6	1.4	17.5	22.0	1.83	0.0065	900	500
5	16	7	Non-compacted	5.10	1.0	0.8	1.6	20.5	26.0	1.15	0.0052	1300	500
5	25	7	Non-compacted	6.42	1.2	1.0	1.6	24.5	31.5	0.727	0.0050	1900	500
5	35	19	Non-compacted	7.65	1.2	1.2	1.6	27.0	35.0	0.524	0.0044	2600	500