

**SPECIFICATION****For****CVV-S-SWA**

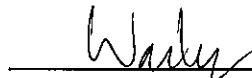
600V PVC Insulated PVC Inner Sheathed

Steel Wire Armored PVC Outer Sheathed

Shielded Control Cable

(600V, Cu/PVC/CTS/PVC/SWA/PVC)

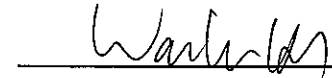
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CUSTOMER

**TTCL**

Rev.	Date	Description
0	6/12/2021	Issued specification
1	19/12/2022	Cancel code "0010"

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 600V copper conductor polyvinyl chloride (PVC) insulated polyvinyl chloride (PVC) inner sheathed steel wire armored polyvinyl chloride (PVC) outer sheathed shielded control cable.

The cables shall be in according to applicable specification of THAI YAZAKI Standard based on JIS C 3401 and TIS 11 Part 5-2553.

The finished cables shall meet the flame test requirements per IEC 60332-1.

## **2. Conductor**

The conductor shall be flexible stranded uncoated annealed copper conductor in accordance with IEC 60228 : 2004, Class 5.

For size 0.5 to 4 mm<sup>2</sup> : The direction of lay shall be left-hand (S) lay.

For size 6 mm<sup>2</sup> : The direction of lay shall be right-hand (Z) lay.

## **3. Insulation**

The insulation shall be polyvinyl chloride (PVC/D) compound meet the requirements of TIS 11 Part 5-2553.

The average insulation thickness shall be based on Table 3 of TIS 11-2531 and not less than the value in Table 1.

The minimum thickness shall not fall below the value in Table 1 by more than 10% plus 0.1mm.

## **4. Cabling**

The individual insulated cores shall be cabled together with suitable non-hygroscopic filler to give the completed cable a substantially circular cross section.

The direction of lay shall be left-hand (S) lay.

A suitable binder tapes shall be applied helically over the cabled core.

## **5. Core Identification**

The cores shall be identified by colors or by number printed on the insulation, as follows :

2-cores : blue, brown

3-cores : brown, black, grey

4-cores : blue, brown, black, grey

For 5-cores to 30-cores :

The cores shall be identified by the arabic numerals printed longitudinally and continuously on the surface of black insulation

## **6. Metallic Shield**

The metallic shield shall be an annealed uncoated copper tape and applied helically with a lap over the binder tape.

The thickness of the tape shall be approximate 0.1 mm.

A suitable separator tape shall be applied helically over the metallic shield.

## **7. Inner Sheath**

The inner sheath shall be polyvinyl chloride (PVC) compound applied over the separator tape.

The approximate thickness given in Table 1.

The color of the inner sheath shall be black.

## **8. Steel Wire Armor**

The armor shall be galvanized round steel wire applied with a minimum gap between adjacent wires over the inner sheathed.

A suitable tape shall be applied helically over the armored core.

## **9. Outer Sheath**

The sheath shall be sunlight resistant, oil resistant and moisture resistant polyvinyl chloride (PVC/ST5) compound meet the requirements of TIS 11 Part 5-2553.


The average thickness shall be not less than the value in Table 1.

The minimum thickness shall be not fall below the value in Table 1 by more than 20% plus 0.2 mm.

The color of the sheath shall be black.

## **10. 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. Year of manufacture

3. Rated circuit voltage "600V"

4. Type of insulation "PVC"

5. Type of cable "SHIELD CONTROL CABLE"

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

## 11. Test and Properties

The cable shall meet the requirements in Test and Inspection and Table 1, when tested in accordance with JIS C 3401, TIS 11 Part 2-2553, TIS 11 Part 5-2553, IEC 60228 : 2004 and IEC 60332-1.


Remark: Sunlight resistant test meet the requirement of TIS 293-2541.

## 12. Packing

The cable shall be placed on the non-returnable wooden reels.

The reel shall be covered with suitable covering to provide the cable with physically protection during transportation and during ordinary storage and handling operations.

Each reel shall be clearly marked as follows.

1. Designation "CVV-S-SWA"
2. Number of cores and size of conductor
3. Length of cable contained in the drum
4. Net weight
5. Gross weight
6. Manufacturer's name and/or trade mark "  **YAZAKI** "
7. Rolling direction of reel
8. Year of manufacture
9. TTCL Work No.
10. Drum Number

## Test and Inspection

### **Routine Tests**

1. Maximum conductor resistance, Ohm/km ..... specified in Table 1
2. AC test voltage for 1 minutes, V .....2000

### **Sample Tests**

3. Construction.....specified in Table 1

### **Type Tests**

4. Minimum insulation resistance at 70 °C, MOhm-km ..... specified in Table 1
5. Flame retardant tested according to IEC 60332-1

### Remark

Reference standard

Test item 1 refer IEC 60228:2004, Class 5

Test item 2 refer JIS C 3401

Test item 3, 4 refer TIS 11-2531

Test item 5 refer IEC 60332-1

### **Definition concerning the tests**

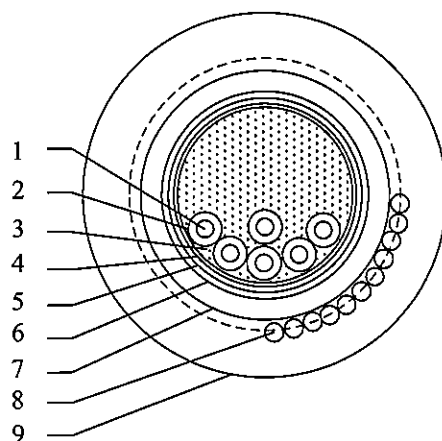
**Routine tests:** Tests made by the manufacturer on each manufactured length of cable to check that each length meets the specified requirements.

**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	Flexible stranded annealed copper
2	Insulation	Polyvinyl chloride (PVC/D)
3	Filler	Non-hygroscopic
4	Binder tape	Spun bond tape or suitable tape
5	Metallic shield	Copper tape
6	Separator tape	Spun bond tape or suitable tape
7	Inner sheath	Polyvinyl chloride (PVC)
8	Aarmor	Galvanized steel wire
9	Outer sheath	Polyvinyl chloride (PVC/ST5)

**Application:** For supervisory electrical equipment, station control circuits, outdoor, suitable installation in the dry or wet cable trenches. Maximum conductor temperature of 70°C for normal operation and 160°C for short circuit conditions.

**Table 1**

No. of cores	Size (mm <sup>2</sup> )	Conductor type	Conductor diameter approx. (mm)	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 approx. (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)
2	0.75	Flexible	1.15	0.6	1.2	8.9	0.80	1.8	14.5	26.0	0.0114	340	300
2	1	Flexible	1.30	0.6	1.2	9.1	0.80	1.8	14.5	19.5	0.0104	360	300
2	1.5	Flexible	1.60	0.6	1.2	9.7	0.80	1.8	15.5	13.3	0.0089	390	300
2	2.5	Flexible	2.10	0.7	1.2	11.0	1.25	1.8	17.5	7.98	0.0081	600	300
2	4	Flexible	2.60	0.8	1.2	12.5	1.25	1.8	19.0	4.95	0.0076	700	300
3	0.75	Flexible	1.15	0.6	1.2	9.2	0.80	1.8	15.0	26.0	0.0114	360	300
3	1	Flexible	1.30	0.6	1.2	9.4	0.80	1.8	15.0	19.5	0.0104	380	300
3	1.5	Flexible	1.60	0.6	1.2	10.0	0.80	1.8	15.5	13.3	0.0089	420	300
3	2.5	Flexible	2.10	0.7	1.2	11.5	1.25	1.8	18.0	7.98	0.0081	650	300
3	4	Flexible	2.60	0.8	1.2	13.0	1.25	1.8	19.5	4.95	0.0076	750	300
4	0.75	Flexible	1.15	0.6	1.2	9.9	0.80	1.8	15.5	26.0	0.0114	390	300
4	1	Flexible	1.30	0.6	1.2	10.0	0.80	1.8	15.5	19.5	0.0104	420	300
4	1.5	Flexible	1.60	0.6	1.2	10.5	1.25	1.8	17.5	13.3	0.0089	600	300
4	2.5	Flexible	2.10	0.7	1.2	12.5	1.25	1.8	19.0	7.98	0.0081	700	300
4	4	Flexible	2.60	0.8	1.2	14.0	1.25	1.8	21	4.95	0.0076	850	300
4	6	Flexible	3.40	0.8	1.2	16.0	1.60	1.8	23	3.30	0.0061	1200	300
5	0.75	Flexible	1.15	0.6	1.2	10.5	0.80	1.8	16.5	26.0	0.0114	430	300
5	1	Flexible	1.30	0.6	1.2	11.0	1.25	1.8	17.5	19.5	0.0104	600	300
5	1.5	Flexible	1.60	0.6	1.2	11.5	1.25	1.8	18.5	13.3	0.0089	650	300
5	2.5	Flexible	2.10	0.7	1.2	13.5	1.25	1.8	20	7.98	0.0081	800	300
5	4	Flexible	2.60	0.8	1.2	15.5	1.25	1.8	22	4.95	0.0076	950	300

**Table 1(continued)**

No. of cores	Size (mm <sup>2</sup> )	Conductor type	Conductor diameter approx. (mm)	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 approx. (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)
6	0.75	Flexible	1.15	0.6	1.2	11.5	1.25	1.8	18.0	26.0	0.0114	600	300
6	1	Flexible	1.30	0.6	1.2	11.5	1.25	1.8	18.5	19.5	0.0104	650	300
6	1.5	Flexible	1.60	0.6	1.2	12.5	1.25	1.8	19.0	13.3	0.0089	700	300
6	2.5	Flexible	2.10	0.7	1.2	14.5	1.25	1.8	21	7.98	0.0081	850	300
7	0.75	Flexible	1.15	0.6	1.2	11.5	1.25	1.8	18.0	26.0	0.0114	600	300
7	1	Flexible	1.30	0.6	1.2	11.5	1.25	1.8	18.5	19.5	0.0104	650	300
7	1.5	Flexible	1.60	0.6	1.2	12.5	1.25	1.8	19.0	13.3	0.0089	700	300
7	2.5	Flexible	2.10	0.7	1.2	14.5	1.25	1.8	21	7.98	0.0081	900	300
7	4	Flexible	2.60	0.8	1.2	17.0	1.60	1.8	24	4.95	0.0076	1200	300
8	0.75	Flexible	1.15	0.6	1.2	12.0	1.25	1.8	19.0	26.0	0.0114	650	300
8	1	Flexible	1.30	0.6	1.2	12.5	1.25	1.8	19.0	19.5	0.0104	700	300
8	1.5	Flexible	1.60	0.6	1.2	13.5	1.25	1.8	20	13.3	0.0089	800	300
8	2.5	Flexible	2.10	0.7	1.2	15.5	1.60	1.8	23	7.98	0.0081	1100	300
8	4	Flexible	2.60	0.8	1.2	18.5	1.60	1.8	25	4.95	0.0076	1400	300
9	0.75	Flexible	1.15	0.6	1.2	13.0	1.25	1.8	19.5	26.0	0.0114	700	300
9	1	Flexible	1.30	0.6	1.2	13.0	1.25	1.8	20	19.5	0.0104	750	300
9	1.5	Flexible	1.60	0.6	1.2	14.5	1.25	1.8	21	13.3	0.0089	850	300
9	2.5	Flexible	2.10	0.7	1.2	17.0	1.60	1.8	24	7.98	0.0081	1200	300



**Table 1 (continued)**

No. of cores	Size (mm <sup>2</sup> )	Conductor type	Conductor diameter approx. (mm)	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 approx. (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)
10	0.75	Flexible	1.15	0.6	1.2	13.5	1.25	1.8	20	26.0	0.0114	750	300
10	1	Flexible	1.30	0.6	1.2	14.0	1.25	1.8	21	19.5	0.0104	800	300
10	1.5	Flexible	1.60	0.6	1.2	15.5	1.25	1.8	22	13.3	0.0089	900	300
10	2.5	Flexible	2.10	0.7	1.2	18.0	1.60	1.8	25	7.98	0.0081	1300	300
10	4	Flexible	2.60	0.8	1.2	21	1.60	1.8	28	4.95	0.0076	1600	300
11	0.75	Flexible	1.15	0.6	1.2	13.5	1.25	1.8	20	26.0	0.0114	750	300
11	1	Flexible	1.30	0.6	1.2	14.0	1.25	1.8	21	19.5	0.0104	800	300
11	1.5	Flexible	1.60	0.6	1.2	15.5	1.25	1.8	22	13.3	0.0089	900	300
11	2.5	Flexible	2.10	0.7	1.2	18.0	1.60	1.8	25	7.98	0.0081	1300	300
12	0.75	Flexible	1.15	0.6	1.2	14.0	1.25	1.8	21	26.0	0.0114	800	300
12	1	Flexible	1.30	0.6	1.2	14.5	1.25	1.8	21	19.5	0.0104	850	300
12	1.5	Flexible	1.60	0.6	1.2	16.0	1.60	1.8	23	13.3	0.0089	1100	300
12	2.5	Flexible	2.10	0.7	1.2	18.5	1.60	1.8	26	7.98	0.0081	1400	300
12	4	Flexible	2.60	0.8	1.2	22	2.00	1.9	30	4.95	0.0076	2000	300
13	0.75	Flexible	1.15	0.6	1.2	15.0	1.25	1.8	21	26.0	0.0114	800	300
13	1	Flexible	1.30	0.6	1.2	15.5	1.25	1.8	22	19.5	0.0104	900	300
13	1.5	Flexible	1.60	0.6	1.2	16.5	1.60	1.8	24	13.3	0.0089	1200	300
13	2.5	Flexible	2.10	0.7	1.2	19.5	1.60	1.8	27	7.98	0.0081	1500	300

**Table 1 (continued)**

No. of cores	Size (mm <sup>2</sup> )	Conductor type	Conductor diameter approx. (mm)	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 approx. (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)
14	0.75	Flexible	1.15	0.6	1.2	15.0	1.25	1.8	21	26.0	0.0114	800	300
14	1	Flexible	1.30	0.6	1.2	15.5	1.25	1.8	22	19.5	0.0104	900	300
14	1.5	Flexible	1.60	0.6	1.2	16.5	1.60	1.8	24	13.3	0.0089	1200	300
14	2.5	Flexible	2.10	0.7	1.2	19.5	1.60	1.8	27	7.98	0.0081	1500	300
14	4	Flexible	2.60	0.8	1.2	23	2.00	1.9	31	4.95	0.0076	2100	300
14	6	Flexible	3.40	0.8	1.2	26	2.00	2.1	35	3.30	0.0061	2700	300
15	0.75	Flexible	1.15	0.6	1.2	15.5	1.25	1.8	22	26.0	0.0114	850	300
15	1	Flexible	1.30	0.6	1.2	16.0	1.60	1.8	23	19.5	0.0104	1100	300
15	1.5	Flexible	1.60	0.6	1.2	17.0	1.60	1.8	24	13.3	0.0089	1200	300
15	2.5	Flexible	2.10	0.7	1.2	20	1.60	1.8	27	7.98	0.0081	1600	300
16	0.75	Flexible	1.15	0.6	1.2	15.5	1.25	1.8	22	26.0	0.0114	900	300
16	1	Flexible	1.30	0.6	1.2	16.0	1.60	1.8	23	19.5	0.0104	1100	300
16	1.5	Flexible	1.60	0.6	1.2	17.5	1.60	1.8	25	13.3	0.0089	1200	300
16	2.5	Flexible	2.10	0.7	1.2	21	1.60	1.9	28	7.98	0.0081	1600	300
16	4	Flexible	2.60	0.8	1.2	24	2.00	2.0	33	4.95	0.0076	2300	300
17	0.75	Flexible	1.15	0.6	1.2	16.5	1.60	1.8	24	26.0	0.0114	1100	300
17	1	Flexible	1.30	0.6	1.2	17.0	1.60	1.8	24	19.5	0.0104	1200	300
17	1.5	Flexible	1.60	0.6	1.2	18.5	1.60	1.8	25	13.3	0.0089	1300	300
17	2.5	Flexible	2.10	0.7	1.2	22	2.00	1.9	30	7.98	0.0081	1900	300

**Table 1 (continued)**

No. of cores	Size (mm <sup>2</sup> )	Conductor type	Conductor diameter approx. (mm)	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 approx. (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)
18	0.75	Flexible	1.15	0.6	1.2	16.5	1.60	1.8	24	26.0	0.0114	1100	300
18	1	Flexible	1.30	0.6	1.2	17.0	1.60	1.8	24	19.5	0.0104	1200	300
18	1.5	Flexible	1.60	0.6	1.2	18.5	1.60	1.8	25	13.3	0.0089	1300	300
18	2.5	Flexible	2.10	0.7	1.2	22	2.00	1.9	30	7.98	0.0081	1900	300
19	0.75	Flexible	1.15	0.6	1.2	16.5	1.60	1.8	24	26.0	0.0114	1100	300
19	1	Flexible	1.30	0.6	1.2	17.0	1.60	1.8	24	19.5	0.0104	1200	300
19	1.5	Flexible	1.60	0.6	1.2	18.5	1.60	1.8	25	13.3	0.0089	1400	300
19	2.5	Flexible	2.10	0.7	1.2	22	2.00	1.9	30	7.98	0.0081	2000	300
20	0.75	Flexible	1.15	0.6	1.2	16.5	1.60	1.8	24	26.0	0.0114	1100	300
20	1	Flexible	1.30	0.6	1.2	17.0	1.60	1.8	24	19.5	0.0104	1200	300
20	1.5	Flexible	1.60	0.6	1.2	19.0	1.60	1.8	26	13.3	0.0089	1400	300
20	2.5	Flexible	2.10	0.7	1.2	22	2.00	1.9	31	7.98	0.0081	2000	300
20	4	Flexible	2.60	0.8	1.2	26	2.00	2.0	35	4.95	0.0076	2700	300
21	0.75	Flexible	1.15	0.6	1.2	17.0	1.60	1.8	24	26.0	0.0114	1300	300
21	1	Flexible	1.30	0.6	1.2	17.5	1.60	1.8	25	19.5	0.0104	1300	300
21	1.5	Flexible	1.60	0.6	1.2	19.0	1.60	1.8	26	13.3	0.0089	1400	300
21	2.5	Flexible	2.10	0.7	1.2	23	2.00	1.9	31	7.98	0.0081	2100	300
22	0.75	Flexible	1.15	0.6	1.2	18.0	1.60	1.8	25	26.0	0.0114	1200	300
22	1	Flexible	1.30	0.6	1.2	18.5	1.60	1.8	26	19.5	0.0104	1300	300
22	1.5	Flexible	1.60	0.6	1.2	20	1.60	1.8	27	13.3	0.0089	1500	300
22	2.5	Flexible	2.10	0.7	1.2	24	2.00	2.0	33	7.98	0.0081	2200	300

**Table 1 (continued)**

No. of cores	Size (mm <sup>2</sup> )	Conductor type	Conductor diameter approx. (mm)	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 approx. (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)
23	0.75	Flexible	1.15	0.6	1.2	18.0	1.60	1.8	25	26.0	0.0114	1200	300
23	1	Flexible	1.30	0.6	1.2	18.5	1.60	1.8	26	19.5	0.0104	1300	300
23	1.5	Flexible	1.60	0.6	1.2	20	1.60	1.8	27	13.3	0.0089	1500	300
23	2.5	Flexible	2.10	0.7	1.2	24	2.00	2.0	33	7.98	0.0081	2300	300
24	0.75	Flexible	1.15	0.6	1.2	19.0	1.60	1.8	26	26.0	0.0114	1300	300
24	1	Flexible	1.30	0.6	1.2	19.5	1.60	1.8	27	19.5	0.0104	1400	300
24	1.5	Flexible	1.60	0.6	1.2	21	1.60	1.8	28	13.3	0.0089	1600	300
24	2.5	Flexible	2.10	0.7	1.2	25	2.00	2.0	34	7.98	0.0081	2400	300
25	0.75	Flexible	1.15	0.6	1.2	19.0	1.60	1.8	26	26.0	0.0114	1300	300
25	1	Flexible	1.30	0.6	1.2	19.5	1.60	1.8	27	19.5	0.0104	1400	300
25	1.5	Flexible	1.60	0.6	1.2	21	1.60	1.8	28	13.3	0.0089	1600	300
25	2.5	Flexible	2.10	0.7	1.2	25	2.00	2.0	34	7.98	0.0081	2400	300
26	0.75	Flexible	1.15	0.6	1.2	19	1.60	1.8	26	26.0	0.0114	1300	300
26	1	Flexible	1.30	0.6	1.2	19.5	1.60	1.8	27	19.5	0.0104	1400	300
26	1.5	Flexible	1.60	0.6	1.2	21	1.60	1.8	28	13.3	0.0089	1600	300
26	2.5	Flexible	2.10	0.7	1.2	25	2.00	2.0	34	7.98	0.0081	2500	300
27	0.75	Flexible	1.15	0.6	1.2	19.0	1.60	1.8	26	26.0	0.0114	1300	300
27	1	Flexible	1.30	0.6	1.2	20	1.60	1.8	27	19.5	0.0104	1400	300
27	1.5	Flexible	1.60	0.6	1.2	22	2.00	1.9	30	13.3	0.0089	1900	300
27	2.5	Flexible	2.10	0.7	1.2	26	2.00	2.0	34	7.98	0.0081	2500	300

**Table 1 (continued)**

No. of cores	Size (mm <sup>2</sup> )	Conductor type	Conductor diameter approx. (mm)	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 approx. (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)
28	0.75	Flexible	1.15	0.6	1.2	20	1.60	1.8	27	26.0	0.0114	1400	300
28	1	Flexible	1.30	0.6	1.2	20	1.60	1.8	28	19.5	0.0104	1500	300
28	1.5	Flexible	1.60	0.6	1.2	22	2.00	1.9	31	13.3	0.0089	2000	300
28	2.5	Flexible	2.10	0.7	1.2	27	2.00	2.1	36	7.98	0.0081	2600	300
29	0.75	Flexible	1.15	0.6	1.2	20	1.60	1.8	27	26.0	0.0114	1400	300
29	1	Flexible	1.30	0.6	1.2	20	1.60	1.8	28	19.5	0.0104	1500	300
29	1.5	Flexible	1.60	0.6	1.2	22	2.00	1.9	31	13.3	0.0089	2000	300
29	2.5	Flexible	2.10	0.7	1.2	27	2.00	2.1	36	7.98	0.0081	2600	300
30	0.75	Flexible	1.15	0.6	1.2	20	1.60	1.8	27	26.0	0.0114	1400	300
30	1	Flexible	1.30	0.6	1.2	20	1.60	1.8	28	19.5	0.0104	1500	300
30	1.5	Flexible	1.60	0.6	1.2	22	2.00	1.9	31	13.3	0.0089	2000	300
30	2.5	Flexible	2.10	0.7	1.2	27	2.00	2.1	36	7.98	0.0081	2700	300