



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 12706.1-2020

**Power cables with extruded insulation and their accessories for rated voltages from 1 kV ($U_m=1.2$ kV) up to 35 kV ($U_m=40.5$ kV) - Part 1:
Cables for rated voltage of 1 kV ($U_m=1.2$ kV) and 3 kV ($U_m=3.6$ kV)**

Issued on: March 31, 2020

Implemented on: October 1, 2020

Issued by: SAMR; SAC

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Foreword

GB/T 12706 Power Cables with Extruded Insulation and Their Accessories for Rated Voltages from 1 kV ($U_m = 1.2$ kV) up to 35 kV ($U_m = 40.5$ kV) is divided into 4 parts.

---Part 1.Cables for Rated Voltage of 1 kV ($U_m = 1.2$ kV) and 3 kV ($U_m = 3.6$ kV);

---Part 2.Cables for Rated Voltages from 6 kV ($U_m = 7.2$ kV) up to 30 kV ($U_m = 36$ kV);

---Part 3.Cables for Rated Voltages of 35 kV ($U_m = 40.5$ kV);

---Part 4.Test Requirements on Accessories for Cables with Rated Voltages from

6 kV ($U_m = 7.2$ kV) up to 35 kV ($U_m = 40.5$ kV).

This is Part 1 of GB/T 12706.

This Part serves as a replacement of GB/T 12706.1-2008 Power Cables with Extruded Insulation and Their Accessories for Rated Voltages from 1 kV ($U_m = 1.2$ kV) up to 35 kV ($U_m = 40.5$ kV) - Part 1. Cables for Rated Voltage of 1 kV ($U_m = 1.2$ kV) and 3 kV ($U_m = 3.6$ kV).

In comparison with GB/T 12706.1-2008, apart from editorial modifications, this Part has the following main technical changes.

---The requirements for materials of inner coverings are modified (see 7.2.2; 7.1.2 of Version 2008);

---The stipulations of extruded inner coverings are modified (see 7.2.3 and Table 9; 7.1.3 and Table 8 of Version 2008);

---The stipulations of lapped inner coverings are modified (see 7.2.4; 7.1.4 of Version 2008);

---The stipulations of copper tape screen overlap rate are modified (see 9.2.3;

9.2.3 of Version 2008);

---The calculation formula of the nominal thickness of lead sheath is modified (see Chapter 11; Chapter 11 of Version 2008);

---The stipulations of armor materials are modified (see 12.2; 12.2 of Version 2008);

---The stipulations of nominal diameter of thick round metal wires and the stipulations of nominal thickness of separation sheath or inner coverings under the armor are added (see 12.4, Table 10 and 12.6);

---The stipulations of over-sheath thickness are modified (see 13.3; 13.3 of Version 2008);

---The requirements for direct-current resistance of aluminum alloy conductors are added (see 15.2);

---The requirements for the measurement of non-metallic sheaths are modified (see 16.5; 16.5 of Version 2008);

---The measurement of overlap rate and clearance rate of lapped tape is added (see 16.10 and 16.11);

---The measurement of the thickness of lapped inner coverings and / or lapped beddings is added (see 16.12 and 18.4);

---The requirements for the measurement of non-metallic sheaths are modified (see 18.3; 18.2 of Version 2008);

---The requirements for pressure test at high temperature are modified (see 18.9.1;

18.7.1 of Version 2008);

---The requirements for flame retardancy test on single cables are modified (see 18.16.1; 18.14.1 of Version 2008);

---The requirements for flame retardancy test on bunched cables are modified (see 18.16.2; 18.14.2 of Version 2008);

---The requirements for smoke density test are modified (see 18.16.3; 18.14.3 of Version 2008);

---The applicable object of the measurement of carbon black content of black PE over-sheaths is modified (see 18.17.1; 18.15.1 of Version 2008);

---The time under load of hot set test is deleted (see Table 14 and Table 15; Table

17 and Table 22 of Version 2008);

---The calculation formula of fictitious diameter of cable core of three-core cable with a small cross-section is added (see A.2.3);

---The rounding-off rules for specified values are added (see B.3);

---The measurement and calculation of the overlap rate and clearance rate of lapped tape are added (see Appendix C);

---The requirements for the delivery length and marking of finished cables are added (see E.3.2 and E.3.3);

---The recommended ambient temperature for the installation of halogen-free flame-retardant sheathed cable is added (see E.4.1).

This Part uses the re-drafting method in the modification and adoption of IEC 60502-

1.2004 Power Cables with Extruded Insulation and Their Accessories for Rated

Voltages from 1 kV ($U_m = 1.2$ kV) up to 30 kV ($U_m = 36$ kV) - Part 1. Cables for Rated Voltage of 1 kV ($U_m = 1.2$ kV) and 3 kV ($U_m = 3.6$ kV). Meanwhile, the content of AMD1.2009 CSV is introduced and marked with a vertical double line (??) on the outer margin of the corresponding clause.

In comparison with IEC 60502-1.2004, this Part has certain structural changes as follows.

---In accordance with the requirements of GB/T 1.1-2009, the suspended paragraphs are adjusted; 7.1, 16.6.1, 17.1, 18.1, 18.19.1 and D.2.1 are added, as a continuance of the subsequent clause numbers;

---In accordance with the sequence of being mentioned, table numbers are adjusted; starting from Table 5, the correspondence of tables between this Part and IEC 60502-1.2009 is as follows. Table 5 corresponds to Table 23, Table 6 corresponds to Table 5, Table 7 corresponds to Table 6, Table 8 corresponds to Table 7, Table 9 corresponds to Table 8, Table 10 corresponds to Table 9, Table

11 corresponds to Table 10, Table 12 corresponds to Table 11, Table 13

corresponds to Table 12, Table 14 corresponds to Table 17, Table 15 corresponds to Table 22, Table 16 corresponds to Table 13, Table 17 corresponds to Table 14, Table 18 corresponds to Table 15, Table 19 corresponds to Table 18, Table 20 corresponds to Table 19, Table 21 corresponds to Table 16, Table 22 corresponds to Table 20, Table 23 corresponds to Table 21;

---11.1 and 11.2 are deleted;

---16.10, 16.11, 16.12, 18.4 and B.3 are added;

---Chapter 20 is added;

---Appendix C and Appendix E are added, which changes appendix numbers.

Appendix D of this Part corresponds to Appendix C of IEC 60502-1.2009.