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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

中华人民共和国国家标准

GB/T 12706.2–2008

Replace GB/T 12706.2–2002

Power cables with extruded insulation and their accessories for rated voltages from 1kV (U_m=1.2kV) up to 35kV (U_m=40.5kV)

Part 2: Cables for rated voltages from 6 kV (U_m=7.2kV) up to 30kV (U_m=36kV)

额定电压 1kV(U_m=1.2kV)到 35kV(U_m=40.5kV)挤包绝缘电力电缆及附件

第 2 部分：额定电压 6kV(U_m=7.2kV)到 30kV(U_m=36kV)电缆

(IEC 60502-2:2005 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 2: Cables for rated voltages from 6 kV (U_m = 7,2 kV) up to 30 kV (U_m = 36 kV), MOD)

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Standardization Administration of the People's Republic of China

Contents

Foreword

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

—Part 1: Cables for Rated Voltages 1 kV (U_m=1.2kV) and 3kV (U_m=3.6kV);

—Part 2: Cables for Rated Voltages from 6 kV (U_m=7.2kV) up to 30kV (U_m=36kV);

—Part 3: Cables for Rated Voltage 35kV (U_m=40.5kV);

—Part 4: Test requirements on Accessories of Cables for Rated Voltages from 6kV (U_m=7.2kV) up to 35kV (U_m=40.5kV).

This Part is Part 2 of GB/T 12706.

The amendments for this Part adopt IEC 60502-2:2005 *Power Cables with Extruded Insulation and Their Accessories for Rated Voltages from 1*kV *(U_m=1.2*kV*) up to 30kV (U_m=36*kV*)* Part 2: *Cables for Rated Voltages 6*kV *(U_m=7.2*kV*) up to 30*kV *(U_m=36*kV*)* second version (English version).

This Part is redrafted in accordance with IEC 60502-2:2005. Compared its Chapter with IEC 60502-2:2005, except increase of Chapter 21, the remaining is exactly the same.

Considering the China's national conditions, this Part made some modifications in adoption of IEC 60502-2:2005. The relevant technical differences have been incorporated into the body and identify the involved terms on the margin of the page with single vertical line. The main technical differences and explanations are as follows:

—To clarify the requirements of copper strips material used for cable, added the contents of requirements of copper strip material (10.2.3 of this Version) and the corresponding reference standard GB/T 11091-2005 *Copper Strips for Cable* (Chapter 2 of this Version);

—To clarify the requirements of steel strip armoring material used for cable, added the contents of requirements of steel strip armoring material (13.2 in this Version) and the corresponding reference standard YB/T 024-2008 *Steel Strips for Cable Armoring* (Chapter 2 of this Version);

Power cables with extruded insulation and their accessories for rated voltages from 1kV (U_m=1.2kV) up to 35kV (U_m=40.5kV)

Part 2: Cables for rated voltages from 6 kV (U_m=7.2kV) up to 30kV (U_m=36kV)

1 Scope

This part of GB/T 12706 specifies the construction, dimensions and test requirements of power cables with extruded solid insulation from 6 kV up to 30 kV for fixed installations such as distribution networks or industrial installations.

When determining applications, it is recommended that the possible risk of radial water ingress is considered. Cable designs with barriers claimed to prevent longitudinal water penetration and an associated test are included in this part.

Cables for special installation and service conditions are not included, for example cables for overhead networks, the mining industry, nuclear power plants (in and around the containment area) nor for submarine use or shipboard application.

2 Normative References

The articles contained in the following documents have become this part of GB/T 12706 when they are quoted herein. For the dated documents so quoted, all the modifications (excluding corrections) or revisions made thereafter shall not be applicable to this Standard. For the undated documents so quoted, the latest editions shall be applicable to this Standard.

GB/T 156-2007 Standard voltage (IEC 60038: 2002, MOD)

GB/T 2951.11-2008 Common test methods for insulating and sheathing materials of electric and optical cables - Part 11：Methods for general application - Measurement of thickness and overall dimensions - Tests for determining the mechanical properties (IEC 60811-1-1:2001, IDT)

GB/T 2951.12-2008 Common test methods for insulating and sheathing materials of electric and optical cables - Part 12: Methods for general application - Thermal ageing methods (IEC 60811-1-2:1985, IDT)

GB/T 2951.13-2008 Common test methods for insulating and sheathing materials of electric and optical cables—Part 13: Methods for general application—Measurement for determining the density—Water absorption tests—Shrinkage test (IEC 60811-1-3:2001, IDT)

GB/T 2951.14-2008 Common test methods for insulating and sheathing materials of electric and optical cables—Part 14: Methods for general application—Test at low temperature (IEC 60811-1-4:1985, IDT)

GB/T 2951.21-2008 Common test methods for insulating and sheathing materials of electric and optical cables—Part 21: Methods specific to elastomeric compounds—Ozone resistance, hot set and mineral oil immersion tests (IEC 60811-2-1:2001, IDT)

GB/T 2951.31-2008 Common test methods for insulating and sheathing materials of electric and optical cables—Part 31: Methods specific to PVC compounds—Pressure test at high temperature—Test for resistance to cracking (IEC 60811-3-1:1985, IDT)

GB/T 2951.32-2008 Common test methods for insulating and sheathing materials of electric and optical cables—Part 32: Methods specific to PVC compounds—Loss of mass test—Thermal stability test (IEC 60811-3-2:1985, IDT)

GB/T 2951.41-2008 Common test methods for insulating and sheathing materials of electric and optical cables—Part 41: Methods specific to polyethylene and polypropylene compounds—Resistance to environmental stress cracking—Measurement of the melt flow index—Carbon black (IEC 60811-4-1:1985, IDT)

GB/T 3048.10-2007 Test methods for electrical properties of electric cables and wires—Part 10: Spark test of extruded protective sheaths

GB/T 3048.12-2007 Test methods for electrical properties of electric cables and wires—Part 12: Partial discharge test (IEC 60885-3: 1988, MOD)

GB/T 3048.13-2007 Test methods for electrical properties of electric cables and wires—Part 13: Impulse voltage test (IEC 60230: 1996, IEC 60060-1: 1999, MOD)

GB/T 3956-2008 Conductors of insulated cables (IEC 60228: 2004, IDT)

GB/T 6995.3-2008 Markings for electric wires and cables - Part 3：Identifications of cables and wires

GB/T 16927.1-1997 High voltage test techniques--Part 1: General test requirements (eqv IEC 60060-1: 1989)

GB/T 11091-2005 Copper strips for cables

GB/T 12706.1-2008 Power cables with extruded insulation and their accessories for rated voltages from 1kV (Um=1.2kV) up to 35kV (Um=40.5kV) - Part 1: Cables for rated voltage of 1kV (Um=1.2kV) and 3kV (Um=3.6kV) (IEC 60502-1: 2004, Power cables with extruded insulationand their accessories for rated voltagesfrom 1 kV (U m = 1,2 kV) up to 30 kV (U m = 36 kV) –Part 1:Cables for rated voltages of 1 kV ((U m = 1,2 kV)and 3 kV (U m = 3,6 kV), MOD)

GB/T 18380.12-2008 Test on electric and optical fibre cables under fire conditions - Part 12: Test for vertical flame propagation for a single insulated wire or cable - Procedure for 1kW pre-mixed flame (IEC 60332-1-2: 2004, IDT)

JB/T 8137-1999 (All parts) Delivery drums for electric wires and cables

JB/T 8996-1996 Guide to the selection of high-voltage cables (eqv IEC 60183: 1984)

YB/T 024-2008 Steel strips for cable armouring

ISO 48: 2007 Rubber, vulcanized or thermoplastic - Determination of hardness (hardness between 10 IRHD and 100 IRHD)

IEC 60229: 2007 Tests on cable oversheaths which have a special protective function and are applied by extrusion

IEC 60986: 2000 Short-circuit temperature limits of electric cables with rated voltages from 6 kV (Um 7,2 kV) up to 30 kV (Um =36 kV)

3 Terms and definitions

For the purpose of this standard, the following terms and definitions shall apply.

3.1 Definitions of dimensional values (thicknesses, cross-sections, etc.)

3.1.1

nominal value

value by which a quantity is designated and which is often used in tables

NOTE Usually, in this standard, nominal values give rise to values to be checked by measurements taking into account specified tolerances.

3.1.2

approximate value

value which is neither guaranteed nor checked; it is used, for example, for the calculation of other dimensional values

3.1.3

median value

when several test results have been obtained and ordered in an increasing (or decreasing) succession, the median value is the middle value if the number of available values is odd, and the mean of the two middle values if the number is even

3.1.4

fictitious value

value calculated according to the "fictitious method" described in Annex A

3.2 Definitions concerning the tests

3.2.1

routine tests

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