JB

MECHANICAL INDUSTRY STANDARD

OF THE PEOPLE'S REPUBLIC OF CHINA

ICS 29.060.20

K 13

Registration No.: 18306-2006

JB/T 7829-2006

Replacing JB/T 7829-1995

Heat-shrinkable terminations for power cables with rated voltages from 1 kV (U_m = 1.2kV) up to 35kV (U_m = 40.5kV)

额定电压 1kV（U_m = 1.2kV）到 35kV（U_m = 40.5kV）电力电缆热收缩式终端

Issued on: August 16, 2006 **Implemented on: February 01, 2007**

Issued by: National Development and Reform Commission

Table of Contents

Heat-shrinkable terminations for power cables with rated voltages from 1 kV (U_m = 1.2kV) up to 35kV (U_m = 40.5kV)

1 Scope

This standard specifies the product marks and codes, technical requirements, test methods, inspection rules, markings, packaging, transport and storage of heat-shrinkable terminals for power cables with rated voltage 1 kV (U_m = 1.2 kV) to 35 kV (U_m = 40.5 kV).

This standard is applicable to the extruded insulated power cable which has a rated voltage of 1 kV (U_m = 1.2 kV) to 35 kV (U_m = 40.5 kV) as well as the heat-shrinkable indoor and outdoor terminals for paper-insulated power cables which have rated voltage of 1 kV (U_m = 1.2 kV) to 10 kV (U_m = 12 kV); the conditions of use comply with the provisions of 5.1 and 5.2 in GB/T 12706.4-2002 and the provisions of 22.2 and 22.3 in IEC 60055-1:1997.

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For the dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this Standard; however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB/T 1034-1998 Plastics - Determination of water absorption (eqv ISO 62:1980)

GB/T 1040-1992 Plastics - Determination of tensile properties

GB/T 1408.1-1999 Methods of test for electric strength of solid insulating materials - Tests at power frequencies (eqv IEC 60243-1:1988)

GB/T 1409-1988 Methods for the determination of the permittivity and dielectric dissipation factor of solid electrical insulating materials at power, audio and radio frequencies including meter wavelengths eqv IEC 60250:1969)

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 1: Cables for rated voltages from 6kV (U_m = 7.2kV) up to 30kV (U_m = 36kV) (eqv IEC 60502-2:1997)

GB/T 12706.3-2002 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 3: Cables for rated voltages of 35kV (U_m = 40.5kV) (IEC 60502 2:1997, NEQ).

GB/T 12706.4-2002 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 4:Test requirements on accessories for cables with rated voltages from 6kV (U_m = 7.2kV) up to 35kV (U_m = 40.5kV) (eqv IEC 60502-4:1997)

GB/T 12976.1 ~ 12976.3-1991 Copper or aluminum conductor paper-insulated power cables with rated voltages up to 35kV

GB/T 14049-1993 Rated voltage 35kV, 10kV overhead insulated cable

GB/T 14315-1993 Crimp-type copper and aluminum terminals and connecting sleeves for power cable conductors

GB/T 18889-2002 Electric cables-test methods for accessories for power cables with rated voltage from 6kV (U_m = 7.2kV) up to 35kV (U_m = 40.5kV) (IEC 61442:1997, MOD)

IEC 60055-1:1997 Paper-insulated metal-sheathed cables for rated voltages up to 18/30 kV (with copper or aluminum conductors and excluding gas-pressure and oil-filled cables) - Part 1: Tests on cables and their accessories

3 Terms and definitions

The terms and definitions as defined in GB/T 2900.10-2001 and GB/T 12706.4-2002 as well as the following terms and definitions are applicable to this standard.

3.1

Heat-shrinkable material

The heat-shrinkable parts are made of polymer as the basic material to make the required profiles. After the cross-linking process, the linear molecules of the polymer are transformed into body-shaped molecules with a network structure. After heating, they expand to a specified size, then they can shrink

semi-conductive breakout in this standard).

3.8

Heat-shrinkable rain shield (referred to as rain shield in this standard)

Umbrella-shaped heat-shrinkable parts for cable terminals to increase leakage distance and wet flashover distance.

3.9

Hot-melt adhesive

An adhesive which is used to heat to melt the flame-bonded adhesive material, used with heat-shrinkable parts, to ensure that the interface is tightly adhered after heating and shrinking, playing the role of sealing, leak-proof and moisture-proof.

3.10

Void filler

Gel material which is used with heat-shrinkable parts to fill in the recessed part of the covered object before shrinking.

4 Product model and representation

4.1 Code (in Chinese Pinyin letters and Arabic numerals)

4.1.1 By series

Indoor terminal series: N

Outdoor terminal series: W

4.1.2 By process characteristics

Heat-shrinkable: RS

4.1.3 By the types of matching cables

Extruded insulated power cable: Omitted

Paper-insulated power cable: Z

4.1.4 By the design order

First design: 1

b) The conductor-connected metal fittings used in the terminal shall be correctly marked with the following relevant contents:

- Craftsmanship

- Tools and necessary accessories;

- Treatment of contact surface:

- The model, number and any other marks of the connected metal fittings:

- A detailed description of the type test approval.

c) The terminal under test shall correctly mark the following relevant contents:

- Manufacturer name:

- Model and name of terminal, date of manufacture or date code:

- The minimum and maximum cross-sectional area of the cable, the material and shape of the cable conductor

- The minimum and maximum outer diameter of the cable's outer sheath;

- Rated voltage:

- Installation instructions (number and date).

5.6.2 Installation and connection

a) Unless otherwise specified, the cross-sectional area of the extruded insulated cable used for the test shall be either of 120 mm^2, 150 mm^2, or 185 mm^2; the cross-sectional area of paper-insulated cable is either of 120 mm^2, 150 mm^2, 185 mm^2, or 240 mm^2;

b) The terminal shall use the material grade and quantity provided by the manufacturer; installed according to the method specified in the manufacturer's instructions.

c) The terminal shall be dry and clean; neither the cable nor the terminal shall be subjected to any treatment methods which may change the electrical or thermal or mechanical properties of the combined samples under the test.

Note: Contact with chemicals (such as transformer oil) may affect the performance of cable terminations and shall be avoided.

d) The main details of the test installation, especially the support device, shall be recorded.

cable with the same structure in other aspects in the metal shield.

8.6 To achieve the approval of different types of extruded insulated cable's insulation shields and the extension of approval from round conductors to shaped conductors, the test shall be carried out in accordance with the provisions of Table 8. The number of test samples shall be half of the series 1 in Figure 1.

8.7 Tests conducted on three-core cable terminals shall be considered to be applicable to single-core cable terminals of the same design; however, it is not applicable if reversed.

8.8 After approval of the terminal of the specified U_0, it will be extended to terminals with the same design principles lower than the recognized value.

8.9 The test arrangement and the number of samples are described in detail in Figure 1.

9 Inspection rules

9.1 All components and materials of the product can only be exit-factory after being checked qualified by the technical inspection department of the manufacturer, meanwhile it shall be attached with the corresponding quality inspection certificate.

9.2 The type test of the product shall be carried out in accordance with the requirements of 5.1 ~ 5.3, Tables 3 and 4 in 5.6. The number of samples and the evaluation method of the test results shall be as specified in Figure 1, Table 3, Table 4, Chapter 7.

9.3 During normal production, the sampling test of the product shall be conducted in accordance with the requirements of 5.2, Tables 5 and 6 of 5.6 every 3 ~ 5 years. The number of samples and the evaluation method of the test results shall be in accordance with series 1 in Figure 1, Table 5, Table 6 as well as the provisions in Chapter 7. When the user makes a request, after the agreement between the two parties, the test shall also be conducted according to the sampling test.

9.4 Heat-shrinkable parts shall be subjected to routine tests in accordance with A.1, A.3, A.7.

10 Signs, packaging, transportation, storage

10.1 The main materials and components for the terminal shall be marked with the designation, name, factory name and production date; it shall be

Appendix E

(Informative)

Key points of heat-shrinkable terminal's installation process

This Appendix is the main matters that shall be paid attention to when installing the heat-shrinkable terminal. For the specific installation operation process, please refer to the product installation manual provided by the manufacturer.

E.1 Installation tools

E.1.1 Heating tool

It is recommended to use propane gas blowtorch or high-power industrial hair dryer as the shrinking heating tool for heat-shrinkable parts. When conditions are not available, it is also allowed to use butane gas, liquefied gas or gasoline blowtorch as heating tool.

E.1.2 Conductor connection tool

When the conductor connection adopts the crimping method, it is recommended to use the hexagonal or semicircular confining pressure (also called ring pressure) mold. The size of the mold shall meet the requirements of GB/T 14315. If a point pressure (also called pit pressure) mold is used, it requires a stricter filling and shielding (uniform electric field) measures.

E.1.3 Insulation stripping tool

When stripping the insulation of extruded insulated cables, it is recommended to use corresponding special stripping tools, to ensure that the conductor is not damaged.

E.1.4 Common tools required for installing cable terminals, such as hand saws, electrician's knives, wire cutters, etc., must be complete and clean.

E.2 Installation process

E.2.1 Stripping cable

E.2.1.1 The cable ends are stripped and cut in the order specified in the product installation instructions. Every process of stripping and cutting the cable must ensure that the inner layer portion to be retained is not damaged.

E.2.1.2 Special care shall be taken when stripping off the outer semi-conductive layer of the insulation of the extruded cable. There shall be no knife marks and traces of the semi-conductive layer on the bare insulation surface. If it is a non-strippable semi-conductive layer, it is allowed to cut off part of the insulation (thickness is not more than 0.5 mm) during the stripping process. However, the insulation surface shall be handled properly, to make it smooth and round. After stripping, the end surface of the semiconducting layer shall be perpendicular to the axis of the cable and flat. Special care must not be taken to avoid damaging

This is an excerpt of the PDF (Some pages are marked off intentionally)

------ The End ------