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

GB 311.1-2012

Replacing GB 311.1-1997

**Insulation co-ordination -- Part 1: Definitions, principles and
rules**

绝缘配合 第1部分：定义、原则和规则

(English Translation)

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Table of Contents

Preface

1 Scope

2 Normative References

Normal and special conditions 3

Terms and definitions 4

5 9 Symbols and abbreviations

6 With the insulation

Withstand voltage test of claim 7

Air gap Annex A (normative) to ensure a predetermined impulse withstand voltage of
Annex B (normative) altitude correction factor

Foreword

All technical content in this section are mandatory, the rest are recommended.

GB 311 "Insulation coordination" is divided into four parts.

- Part 1. Definitions, principles and rules;
- Part 2. insulated high voltage transmission and distribution equipment using guidelines;
- Part 3. HVDC station with an insulating program;
- Part 4. Calculation conductive network is simulated and the insulation coordination.

This part is the first part of 1 GB 311.

This section drafted in accordance with the rules GB/T 1.1-2009 given.

This section modify using IEC 60071-1:2006 and IEC 60071-1Aml.2010 "Insulation coordination - Part 1. Definitions, principles and rules then".

This section is GB 311.1-1997. Revision "Insulation coordination Part 1 definitions, principles and rules" of.

This section compared with GB 311.1-1997, in addition to editorial changes Technical changes are as follows.

- an increase of related terms (see Chapter 4);
- shows the principle of determining the program and relevant voltage insulation coordination (see 6.2, FIG. 1);

- shows representative over-voltage waveform and parameters (see 6.3);
- to increase the insulation level Um 1100kV and 800kV power transmission apparatus (see Table 3);
- increased Appendix A. to ensure the withstand voltage air gap of a predetermined impact;
- Added Appendix B. altitude correction factor, the adoption of IEC 60071-2 formulas and curves.

This part of IEC 60071-1:2006 and 60071-1Aml IEC .2010 main differences are as follows.

- according to the provisions of GB/T 1.1-2009, the standard language and presentation format has been modified;
- deleted international standards foreword, preface adds this standard;
- IEC 60071-1 frequency range of 48Hz ~ 62Hz, 60Hz to take into account China's power grid does not apply, it will be set at a frequency range 45Hz ~ 55Hz, so as to conform to the GB/T 16927.1 (see 4.18.1);
- addition to the standard part of the standard rated withstand voltage value series (see 6.7, 6.8);
- standard insulation level adjustment (see Table 2, Table 3);
- increases the different types of power transmission equipment rated withstand voltage (see Table 4, Table 5 and Table 6).
- When standard impulse withstand voltage test apparatus for non-self-restoring insulation and Recovery insulating coexist, preferred GB/T 16927.1 the withstand voltage test procedure B (see 7.3).
- Added Appendix B. altitude correction factor, the adoption of IEC 60071-2 formulas and curves.

This portion of the main differences between the terms of the above-described according to IEC 60071-1 by a single vertical line has its outer margin position (I) it was marked.

This partial replacement GB 311.1-1997 "Insulation coordination Part 1. Definitions, principles and rules." this section was proposed by China Electrical Equipment Industrial Association.

This part of the National Standardization Technical Committee and the high voltage insulation test technique with (SAC/TC163) centralized.

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1 Scope

This section provides a relatively high voltage transmission equipment and facilities insulated three-phase AC system, and the vertical phase insulation rated Selection principle withstand voltage, the predetermined standard rated withstand voltage of these devices, and is given a series of standard rated withstand voltage, rated on principle withstand voltage should be selected from the series.

This section applies to the nominal voltage of more than 1kV three-phase AC system.

Select the rated withstand voltage should be associated with the highest voltage of the device. The association is only for the purpose of insulation fit. This section does not Including requirements for personnel safety.

This principle also applies to the insulating part with the transmission line, but the withstand voltage value can be a predetermined portion of the present standard rated withstand Different voltages.

Standards in the development of various devices, should be based on the requirements of this section, adapted to a predetermined rated withstand voltage of such equipment and test procedures.

NOTE: To clarify the rules given in this insulating fitted in GB/T 311.2 "Guidelines for the Use", the highest voltage device and especially standard rated withstand voltage the relationship between. If the same device sets a voltage corresponding to the highest standard rated withstand voltage, given a set of criteria to select the best rated withstand voltage the guidelines.

1.1 Scope

This section applies to the highest voltage device above 1kV three-phase AC power system used in the following power transmission indoors and outdoors equipment.

a) Transformer. power transformers, shunt reactors, current limiting reactors, Petersen coil

and the electromagnetic voltage transformer, current transformer;

b) high-voltage electrical categories. circuit breaker, disconnecting switch, a load switch, earth switch, fuse, prefabricated substation, closed switch to Preparation, enclosed switchgear, a combination of electrical appliances;

c) power capacitors, the coupling capacitor (capacitor voltage transformer comprising a), shunt capacitor, AC filter capacitor;

d) high-voltage power cable;

e) post insulators, wall bushing and the like.

1.2 NA range

a) mounted on the insulation with severe contamination or harmful gases, vapors, chemical equipment in case of deposits;

b) Relative humidity is high and condensation prone indoor applications device.

2 Normative references

The following documents for the application of this document is essential. For dated references, only applies to the version dated paper Pieces. For undated references, the latest edition (including any amendments) applies to this document.

GB/T 311.2 Insulation coordination Part 2. insulated high voltage transmission and distribution equipment using the guidelines (IEC 60071-2:1996, EQV) GB/T 2900.19-1994 technical Electrotechnical term high voltage test and insulation coordination (IEC 60071-1:1993, NEQ) GB/T 11022 common technical requirements voltage switchgear and control equipment standard (GB/T 11022-2011, IEC 62271-1.

2007, MOD)

GB 11032 no AC MOA (GB 11032-2010, IEC 60099-4:2006, MOD) GB/T 16927.1 High Voltage Test Techniques - Part 1. General test requirements (GB/T 16927.1-2011, IEC 60060-1.

2010, MOD)

Selection and dimensioning of GB/T high-voltage insulators for use under condition determining contamination 26218.1 Part 1. Definitions, general information, and Principles (GB/T 26218.1-2010, IEC/T S60815-1.2008, MOD) IEC 60060-1:2010 High Voltage Test Techniques - Part 1. General Definitions and test requirements (High-voltage test techniques-Part 1. General definitions and test requirements) Insulation coordination IEC 60071-2:2011 Ed.3.0 Part 2. Application guide (Insulation coordination-Part 2.