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

GB/Z 23756.1-2009

**Evaluation of electrical endurance of electrical insulation
systems -- Part 1: General considerations and evaluation
procedures based on normal distributions**

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(English Translation)

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Foreword

GB/Z23756 "electrical insulation system evaluation of electrical resistance" is divided into two parts.

--- Part 1. Assessment procedures and general principles based on normal distribution;

--- Part 2. Evaluation procedures based on the distribution of extreme values.

This part is GB/Z23756 part 1.

This section identical with IEC/T R60727-1. 1982 (first edition) "Electrical insulation system Evaluation of the electrical resistance Part 1. In normal points Cloth-based assessment procedures and general principles "(in English).

This section is technically consistent with IEC/T R60727-1. 1982 (first edition), only the following editorial changes.

a) Remove the preface and introduction of IEC/T R60727-1. 1982, adding a preface to the national standard;

b) In accordance with GB/T 1.1, an increase of the second chapter normative references, the original international standards of the first chapter 3, 4, 5, 6 and so on extended to 4, 5, 6, 7

c) In the normative references in chapter 2, the international standard has been replaced by the national standard that has been converted.

Appendix A of this section is informative appendix.

This part is proposed by China Electrical Equipment Industry Association.

This part of the National Electrical Insulation Materials and Insulation Evaluation Committee Standardization Technical Committee (SAC/TC301) centralized.

This section is responsible for drafting unit. Harbin Institute of Electrical and Harbin Motor Co., Ltd. limited liability company.

Participated in the drafting of this section. Dongfang Electric Dongfang Electric Co., Ltd., Shanghai Electric Power Station Equipment Co., Ltd. Shanghai Generator Factory, Hill East

Jinan Power Equipment Factory, Beijing North Heavy Turbine Co., Ltd., Tianjin Alstom Hydropower Equipment Co., Ltd.

1 Purpose and scope

GB/Z23756 of this part of the insulation system evaluation of the electrical test principle and procedure of the guidance document, but also for the development of resistance method and experiment proposed.

In this section, background information on the electrical resistance test of the insulation system is presented. It is recommended that in the case of electricity as the main aging factor Under the test procedures, but also recommended the normal aging of the data on the statistical processing methods.

This appendix is an informative annex, covering the other statistical distribution of the electrical insulation test data.

2 Normative references

The following documents contain provisions which, through reference in this part of GB/Z23756, become the provisions of this section. Any reference to the date of the citation all subsequent amendments (not including errata content) or revisions do not apply to this section, however, encouraged to be reached under this section the parties to the agreement study whether to use the latest version of these documents. For undated references, the latest version applies to this section.

GB/T 7354 partial discharge measurement (GB/T 7354-2003, IEC 60270.:2000, IDT) GB/T 21223 Aging Test Data Statistical Analysis Guide established based on the average of the normal distribution of test results based on the method (GB/T 21223-2007, IEC 60493-1. 1974, IDT) GB/T 20112 Assessment and Identification of Electrical Insulation Structures (GB/T 20112-2006, IEC 60505.:1999, IDT) the first general principle

3 Aging

3.1

The role of electrical stress Electrical stress applied to the insulation system, whether alone or in combination with other factors, will have the effect of aging, electrical stress on the insulation the aging of the system is mainly reflected in the following aspects.

--- When the local electric field strength greater than the insulation system or the insulation system around the liquid or gas insulation breakdown strength, it will have a partial discharge effect;

--- Marking effect;

--- Dendritic discharge effect;

--- Electric erosion effect;

--- Relative to the above-mentioned effects, there may be a relatively high tangential field strength at the two adjacent interfaces of the insulating material, for example, Different dielectric coefficient, will also have an effect.

3.2

The role of the environment Humidity affects electrical aging in many ways. It can change the surface conductivity and volume conductivity values and uniformity, change the electric field Distribution, change Insulation degradation due to discharge, surface tracking tendency and leakage current.

Under humid conditions, the chemicals produced by the discharge combine with the electrodes, insulation and moisture to cause subsequent discharges Change.

Partial discharge process temperature is quite complex. Chemical stability, partial discharge corrosion and humidity mutual control GB/Z23756.1-2009/IEC/TR60727-1. 1982