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**GB/T 20111.5-2020**

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**Electrical insulation systems--Procedures for thermal  
evaluation - Part 5: Applications with a designed life of 5 000 h  
or less**

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## Foreword

GB/T 20111 "Regulations for Thermal Evaluation of Electrical Insulation Systems" is divided into the following parts.

---Part 1.General requirements for low pressure;

---Part 2.Special requirements for general model applications for random winding;

---Part 3.Special requirements for encapsulated coil models, random winding electrical insulation system (EIS);

---Part 4.Guidelines for the selection of test methods for evaluation and classification of electrical insulation systems;

---Part 5.Applications with a design life of 5000h and below.

This part is Part 5 of GB/T 20111.

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

This part uses the redrafting method to modify and adopt IEC 61857-31.2017 "Thermal Evaluation Regulations for Electrical Insulation System Part 31.Design

Applications with a life expectancy of 5000h and below".

The technical differences between this part and IEC 61857-31.2017 and the reasons are as follows.

---Regarding normative reference documents, this section has made adjustments with technical differences to adapt to my country's technical conditions and adjustments.

The situation is collectively reflected in Chapter 2 "Normative Reference Documents", and the specific adjustments are as follows.

- \* Replace IEC 61857-1 (see Chapter 3, Chapter 4, 7.1) with GB/T 20111.1 equivalent to the international standard;
  - \* Replace IEC 61857-21 (see 6.1) with GB/T 20111.2 which is equivalent to adopting international standards;
  - \* Replace IEC 61857-22 (see 6.1) with GB/T 20111.3 which is equivalent to adopting international standards;
  - \* Replace IEC /T R61857-2 (see Chapter 4, Chapter 5, 6.1, 6.3) with GB/T 20111.4 modified to adopt international standards;
  - \* Replace IEC 60505 (see Chapter 1, 6.1, 6.3) with GB/T 20112, which is equivalent to the international standard;
- The scope of application of this part has been added to the scope of Chapter 1;
- Amend the title of Chapter 5 "Test Products" to "Test Products and Test Equipment" (see Chapter 5);
- In 6.3, add "The high temperature point should be 10K higher than the low temperature point" in order to select the temperature corresponding to the high temperature point and the low temperature point (see 6.3).

This part was proposed by China Electrical Equipment Industry Association.

This part is under the jurisdiction of the National Standardization Technical Committee for Evaluation of Electrical Insulation Materials and Insulation Systems (SAC/TC301).

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## Introduction

GB/T 20111.1 specifies the general requirements and methods for assessing and grading

electrical insulation systems (EIS).

GB/T 20111.4 specifies guidelines for the selection of test methods for the evaluation and classification of electrical insulation systems (EIS).

This section specifies the test procedures for thermal evaluation of electrical insulation systems (EIS) with a design life of 5000h and below.

According to the application of the terminal product, a certain test procedure specified in this section can be selected.

For electrical insulation systems (EIS) with a design life of more than 5000h, thermal evaluation can be performed according to GB/T 20111.2.

Thermal assessment procedures for electrical insulation systems-Part 5.

Applications with a design life of 5000h and below

## 1 Scope

This part of GB/T 20111 specifies the thermal evaluation test procedure for electrical insulation systems (EIS) with a design life of 5000h and below

sequence. The test procedure follows the procedure specified in GB/T 20112, and the corresponding test procedure is selected according to the design life range.

This section applies to the thermal evaluation of electrical insulation systems with a design life of 5000h and below.

## 2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article

Pieces. For undated references, the latest version (including all amendments) applies to this document.

GB/T 20111.1 Thermal Assessment Regulations for Electrical Insulation Systems Part 1.General Requirements Low Voltage (GB/T 20111.1-2015,

IEC 61857-1:2008, IDT)

GB/T 20111.2 Thermal Assessment Regulations for Electrical Insulation Systems Part 2.Special Requirements for General Models Application of Random Winding

(GB/T 20111.2-2016, IEC 61857-21:2009, IDT)

GB/T 20111.3 Thermal Evaluation Regulations for Electrical Insulation Systems Part 3.Special Requirements for Encapsulated Coil Models

Air Insulation System (EIS) (GB/T 20111.3-2016, IEC 61857-22.2008, IDT)

GB/T 20111.4 Thermal Evaluation Regulations for Electrical Insulation Systems Part  
4.Evaluation and Classification of Test Methods for Electrical Insulation Systems

Guidelines (GB/T 20111.4-2017, IEC /T R61857-2.2015, MOD)

GB/T 20112 Evaluation and identification of electrical insulation systems (GB/T  
20112-2015, IEC 60505.2011, IDT)

### 3 Terms and definitions

The following terms and definitions defined in GB/T 20111.1 apply to this document.

#### 3.1

Design life

Regardless of whether the work cycle is continuous or intermittent, the expected use time proposed or decided by the end user, manufacturer, etc.

#### 3.2

Heat resistance

The highest design temperature corresponding to the design life.

#### 3.3

Average life span

The average life span.

### 4 Evaluation of Electrical Insulation System (EIS)

Procedure A (see Chapter 6) is suitable for evaluating electrical insulation systems (EIS) with a design life of 1500h and below, at least higher than the maximum design

Under the condition of a temperature of 10K, a single temperature point heat aging is performed on a group of samples. The average life span of the tested sample should be at least 1500h.

Procedure B (see Chapter 6) is applicable to the evaluation of electrical insulation systems (EIS) with a design life of 5000h and below.

Under the condition of a temperature of 10K, a single temperature point heat aging is performed on a group of samples. To meet the design life of EIS, the aging time of program A

Can be extended to 5000h. The average life of this group of evaluation samples should reach at least 1500h.