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

**GB/T 22578.1-2017**

Replacing GB/T 22578.1-2008

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**Electrical insulation systems (EIS) -- Thermal evaluation of  
combined liquid and solid components -- Part 1: General  
requirements**

**(English Translation)**

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### Foreword

GB/T 22578 "thermal insulation of liquid and solid electrical insulation system (EIS)" is divided into the following sections.

--- Part 1. General requirements;

--- Part 2. Simplify the test;

This section GB/T 22578 Part 1.

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

This Part replaces GB/T 22578.1-2008 "Electrical Insulation System (EIS) thermal and liquid components of the thermal rating Part 1. General Requirements ", and GB/T 22578.1-2008 compared to the main technical changes are as follows.

--- Added "IEC 60216-5, IEC 61620, ISO 287, ISO 1924 (all parts), ASTM D971" and other five normative reference materials;

--- Removed "GB/T 6541 and GB/T 20113" 2 normative references (see Chapter 2, 2008 edition Chapter 2);

--- Modify "Figure 1" (see Figure 1, 2008 edition of Figure 1);

--- Modify the "nitrogen system" clause (see 4.2.5, 2008 version 4.2.5);

--- Modify the "conductor assembly" clause (see 5.3.2, 2008 edition 5.3.2);

--- Modify the "Prepare Articles" clause (see 6.2.1, 2008 Edition 6.2);

- Modify the "aging cycle" (see Table 1, 2008 edition of Table 1);
- Modified "recommended liquid aging temperature" (see 6.4.2, 2008 edition 6.4.2);
- Modify the "End Test" project (see 6.5, 2008 version 6.5);
- Amendment "Table A.1" (see Appendix A, 2008 edition of Appendix A).

This section uses the translation method is equivalent to using IEC/T S62332-1:2011 "Electrical Insulation System (EIS) thermal and liquid components of the thermal rating Part 1. General requirements. " the documents of our country that are consistent with the corresponding international documents that are normative references in this section are as follows.

Test methods for electrical strength of insulating materials - Part 1. Test at power frequency (IEC 60243-1.:2006);

2013, IDT);

--- GB/T 1409-2006 Measurement of electrical insulation materials in the power frequency, audio, high frequency (including the wavelength of rice) Capacitance and dielectric Recommended method of mass loss factor (IEC 60250:1969, MOD);

--- GB 2536-2011 electric fluid transformer and switch unused mineral insulating oil (IEC 60296:2003, MOD);

--- GB/T 5654-2007 liquid insulation materials relative permittivity, dielectric loss factor and DC resistivity measurements (IEC 60247:2004, IDT);

(GB/T 7252-2001 Guideline for analysis and judgment of dissolved gases in transformer oil (IEC 60599:1999, NEQ);

--- GB/T 11026.3-2017 Thermal insulation of electrical insulating materials - Part 3. Specification for calculation of heat resistance characteristic parameters (IEC 60216-3:2006, MOD);

--- GB/T 11026.7-2014 Electrical insulating materials heat resistance Part 7 of the insulating material to determine the relative heat index (RTE) (IEC 60216-5:2008, IDT);

--- GB/T 12914-2008 paper and board Determination of tensile strength (ISO 1924-1:1992, ISO 1924-2:1994, MOD);

--- GB/T 20628.2-2006 Cellulose paper for electrical use - Part 2. Test methods (IEC 60554-2:2001, MOD);

Insulating liquids - Determination of dielectric dissipation factor for conductance and capacitance - Test method (IEC 61620).

1998, IDT);

Determination of tensile strength of paper and board - Constant speed drawing method (100 mm/min) (ISO 1924-3).

2005, MOD);

--- GB/T 29305-2012 Measurement of viscosity average degree of polymerization of new and aged cellulosic electrical insulating materials.

2004 A1.2007, IDT);

--- JB/T 60763-2.1992 laminated cardboard specification Part 2. Test methods (IEC 60763.2:1992, IDT).

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 part of the drafting unit. Machinery Industry Beijing Institute of Electrical Technology and Economy, Guangdong Ruizhi Power Technology Co., Ltd., Jiangsu Zhongtian Bole Transformer Co., Ltd., Haihong Electric Co., Ltd., Shanghai Electric Institute of Science and Technology, Guodian Science and Technology Research Institute, Guilin Electric Scientific Research Hospital Co., Ltd., DuPont China Group Co., Ltd. Shanghai Branch.

## 1 Scope

GB/T 22578 provisions of this part of the thermal insulation electrical insulation system double-temperature test procedures.

This section applies to the voltage level has no thermal stress as the main aging factor of the solid and liquid components of the electrical insulation system.

## 2 Normative references

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

GB/T 11021-2014 Electrical insulation heat resistance and representation (IEC 60085:2007, IDT) Thermal insulating properties of electrical insulating materials - Part 2. Selection of test criteria IEC 60216-2.

2005, IDT)

Thermal insulation procedures for electrical insulation systems - Part 1. General requirements Low voltage (IEC 61857-1).

2008, IDT)

IEC 60156 Insulating liquid test method of frequency breakdown voltage measurement (Insulating liquids-Determination of the breakdown voltage at power frequency-Test method) IEC 60216-3 Electrical insulating materials - Heat resistance - Part 3. Procedures for calculating heat resistance characteristics parameters (Electrical insulating materials-Thermal endurance properties-Part 3: Instructions for calculating thermal endurance characteristics IEC 60216-5 Electrical Insulating Materials Heat Resistance Part 5. Determination of Relative Heat Resistance Index (RTE) [Electrical insulating materials-Thermal endurance properties-Part 5. Determination of relative thermal endurance index (RTE) of an insulating material] IEC 60243-1 Insulating material electrical strength test methods Part 1. Under the test frequency (Electrical strength of insulating materials-Test methods-Part 1: Tests at power frequencies) IEC 60247 insulating oil measurement relative permittivity, dielectric dissipation factor and DC resistance [Insulating liquids-Measurement of relative permittivity, dielectric dissipation factor ( $\tan \delta$ ) and d.c. resistivity] IEC 60250 Recommended method of measuring electrical insulation in power frequency, audio, RF and dielectric dissipation factor Recommended methods for the determination of the permittivity and dielectric dissipation factor of electrical insulating materials at power, audio and radio frequencies including microwave lengths) IEC 60296 electrical oil transformers and switchgear unused mineral insulating oil (Fluids for electrotechnical applications-Unused mineral insulating oils for transformers and switchgear) IEC 60422 electrical equipment in the mineral insulating oil regulation and maintenance guidelines (Mineral insulating oils in electrical equipment-Supervision and maintenance guide IEC 60450 Measurement of viscosity-average degree of polymerization of new and aged cellulosic electrical insulating materials (Measurement of the average