



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

GB/T 1001.1-2021

**Insulators for overhead lines with a nominal voltage above 1
000V - Part 1: Ceramic or glass insulator units for a. c. systems
- Definitions, test methods and acceptance criteria**

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Standardization Administration**

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foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for Standardization Work Part 1: Structure and Drafting Rules of Standardization Documents"

drafted:

This document is part 1 of GB/T 1001 "Overhead Line Insulators with a Nominal Voltage Above 1000V": GB/T 1001 has been issued

The following parts are distributed:

- Part 1: Definition, test methods and criteria for determination of porcelain or glass insulator components for AC systems;
- Part 2: Definition, test methods and acceptance criteria for insulator strings and insulator strings for AC systems:

This document replaces GB/T 1001:1-2003 "Overhead line insulators with nominal voltage higher than 1000V - Part 1: AC system

Porcelain or glass insulator components - Definitions, test methods and criteria for determination", compared with GB/T 1001:1-2003, except for structural adjustment and

In addition to editorial changes, the main technical changes are as follows:

- Added the term "specified failure load" (see 3:12);
- Delete the term "characteristics specified in 3:16" and adjust its content to "characteristics specified in 4:4" in Chapter 4 (see 4:4);
- Added "Type Test" in Chapter 6 (see 6:4);
- Deleted the chapter "Quality Assurance" (see Chapter 7 of the:2003 edition);
- Added column E3 of sample size in Table 2 of "Sampling Rules and Procedures for Sampling Tests" (see 7:2);

--- Modified the content of the chapter "Breakdown Resistance Test", (see Chapter 14, see Chapter 15 of the:2003 edition);

--- Added "16 Radio Interference Test" chapter (see Chapter 16);

--- Added "17 Visible corona voltage test" chapter (see Chapter 17);

--- In "18:1 General Requirements" of "18 Dimensional Inspection", the requirements for the height deviation of the disc suspension insulator structure are added (see 18:1);

--- Modified the content of chapter "19 Residual Mechanical Strength Test", and improved the quality index of the residual mechanical strength test judgment criteria

and requirements (see Chapter 19), and are listed as mechanically equivalent design items (see 6:1, see Chapter 18 of the:2003 edition);

--- Revised "Criteria for the determination of pin insulators" (see 21:3, see 20:3 of the:2003 edition);

--- Modified the "Test Procedure" of "Thermal Mechanical Properties Test", and modified the minimum temperature in the cooling and heating cycle from "-30 °C +/- 5 °C" to

"-40 degrees C +/- 5 degrees C", the minimum temperature difference is synchronously modified to 80K (see 22:1, see 21:1 of the:2003 edition);

--- Modified the diagram of thermomechanical performance test (see Figure 1, Figure 1 of the:2003 edition);

--- Modified the "Criteria for Operation Test" in the chapter "Checking of the Locking Device", that is, operating the locking pins of the connection marks 28 and 32

The test value has been changed from the note to the formal selection parameter, and the relevant parameters of the connection marks 36 and 40 have been added (see 24:6 and Table 3, see

23:5 of the:2003 edition);

--- Modified the content of the chapter "Temperature Cycling Test": The article titled "Porcelain Insulator String Elements, Pin Insulators and Line Post Insulators"

"Test procedures for insulators" is rewritten as "Test procedures for insulator string elements, pin insulators and line post insulators":

The content of the subsection has also been revised accordingly (see 25:1, see 24:1 of the:2003 edition);

--- Deleted "Test procedures for annealed glass insulator string elements, pin insulators and line post insulators" (see the:2003 edition of

24:2); and revised the judgment criteria (see 25:4, see 24:5 of the:2003 edition);

--- Modified the description of "Test Procedure" in the "Porosity Test" chapter (see 27:1, see 26:1 of the:2003 edition);

--- Revised the "Reference Table of Pin Insulator Test Items" and added the item "Radio Interference Test" (see Table 4);

--- Revised the "Line Post Insulator Test Item Reference Table" and added the "Radio Interference Test" item (see Table 5);

---Modified the "Insulator String Component Test Item Reference Table", and added "Radio Interference Test" and "Visible Corona Electricity Test" in the type test:

"Pressure Test" and "Breakdown Tolerance Test" items; "Radio Interference Test" and "Residual Mechanical Strength Test" are added to the sampling test

Item, the item "Breakdown Resistance Test" was revised (see Table 7);

--- Modified the "Constants for Type Tests" (see 38:1) in the chapter "Statistical Analysis Constants for Test Results of Insulator String Elements", and therefore in

In 6:1, the description of "Appendix C is not applicable to disc suspension insulator string elements with $SFL \geq 160kN$ " is added (see 6:1);

--- Added "Sampling test constants for disc suspension insulators with $SFL \geq 160kN$ " (see 38:2);

--- Modify the title of "Sampling Test Constant" to "Sampling Test for Long Rod Insulators and Disk Suspension Insulators with $SFL < 160kN$

constants" (see 38:3);

--- Modified the description of "Test of Insulators for Overhead Electric Traction Lines" (see Chapter 40);

--- Added Appendix D (normative) "Radio Interference Test Specified Parameters" as the basis for the determination of the new test (see Appendix D):

This document uses the redrafted method to modify the use of IEC 60383-1:1993 "Overhead Line Insulators with a Nominal Voltage Above 1000V"

Part 1: Definitions, test methods and criteria for determination of porcelain and glass insulator components for AC systems:

Compared with IEC 60383-1:1993, this document has many structural adjustments: Appendix A lists this document and IEC 60383-1:

1993 chapter numbering comparison list:

Compared with IEC 60383-1:1993, there are technical differences between this document and the clauses involved in these differences have been specified in the outer margin of the

document:

The vertical single line (|) at the white position is marked: A list of these technical differences and their reasons is given in Appendix B:

Please note that some content of this document may be patented: The issuing agency of this document assumes no responsibility for identifying patents:

Introduction

Overhead line insulators with nominal voltage higher than 1000V cover insulator elements and insulator strings and insulator string groups:

Types of porcelain or glass insulator components for AC systems cover single use pin insulators, line post insulators, overhead power

Insulators and insulator string elements for traction lines, insulator string elements can be used alone, or can be combined into insulator strings, insulator string groups

use:

Insulator strings and insulator string groups are composed of insulator string elements, and their definitions, test methods and acceptance criteria are different from those of insulator elements:

Therefore, GB/T 1001 "Overhead line insulators with nominal voltage higher than 1000V" consists of two parts:

--- Part 1: Definitions, test methods and criteria for determination of porcelain or glass insulator components for AC systems:

--- Part 2: Definition, test methods and acceptance criteria for insulator strings and insulator strings for AC systems:

This document is Part 1 of GB/T 1001, which discusses the definitions, test methods and Acceptance criteria:

--- Pin insulators;

---Line post insulator;

---Insulator string components;

--- Insulators for overhead electric traction lines:

Clauses 31, 33 and 36 give references to the tests applicable to insulators and the quantities to be tested:

There is no reference table for insulators for overhead electric traction lines discussed in Chapter 40, because insulators for overhead electric traction lines can be referred to