

ICS 29.080.10

CCS K 48



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

GB/T 20142-2006

**Composite line post insulators for a.c. overhead lines with a
nominal voltage greater than 1 000 V - Definitions, test methods
and acceptance criteria**

标称电压高于1000V的交流架空线路用线路柱式复合绝缘子-定义、试验方法及接
收准则

(English Translation)

Issued on: March 6, 2006

Implemented on: August 1, 2006

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China, Standardization
Administration of the People's Republic of China**

Table of Contents

Foreword

Introduction

1 Scope and purpose

2 Normative references

Foreword

This standard is modified to adopt IEC 61952:2002 "line column type composite for AC overhead lines with nominal voltage higher than 1000V.

Fate.

This standard was redrafted in accordance with IEC 61952:2002.

For the sake of comparison, a checklist of the provisions of this standard and the IEC 61952:2002 standard clauses is listed in the informative Appendix E.

Taking into account the actual situation in China, this standard has been modified when IEC 61952 is adopted. These technical differences are made with vertical single lines (|) identifies the margins in the terms they refer to.

A list of technical differences and their causes is given in Appendix D for reference.

For ease of use, the following editorial changes have been made to this standard.

- a) the words "this International Standard" are replaced by the words "this standard";
- b) Replace the comma "," as a decimal point with a decimal point ".";
- c) Remove the preface to international standards.

Appendix A, Appendix B, Appendix C, Appendix D and Appendix E of this standard are informative annexes.

This standard was proposed by the China Electrical Equipment Industry Association.

This standard is under the jurisdiction of the National Insulator Standardization Technical Committee (SAC/TC80).

This standard was drafted. Xi'an Electric Porcelain Research Institute, Shaanxi Electric Power Design Institute.

Introduction

The line-column composite insulator is composed of a solid cylindrical mandrel subjected to mechanical load and an elastic sheath covering the mandrel, mechanical the load is transferred to the mandrel through the end metal fitting. Despite these common features, the materials used and the structures used by different manufacturers it may still be different.

Some of the tests are grouped together as a "design test". This type of test only needs to be done once for the same type of insulator.

In addition to structures and materials that are not suitable for high voltage applications. Time-to-line column composite insulator and its components (core material, jacket material, boundary the mechanical and electrical properties of the surface have been considered in the specified design tests to ensure that they are ideal under normal operating conditions. life.

The mechanical test method under bending load used in this standard is based on the work of CIGRE. This method uses the concept of damage limits. damage the limit is the maximum stress that can be achieved before the insulator begins to damage. Appendix A gives the mechanical loads used in this standard and their tests.

explanation of.

Line-column composite insulators are often used to support structures, and the geometry of the lines varies. Provisions cover most geometries General testing of structural and load conditions is very difficult, so combined testing of complex loads in simulated support structures is not considered in this standard.

Inside. As a guideline, Appendix B explains how to calculate the bending moment generated by the combined load on the insulator. This bending moment can be converted into Equivalent bending load or stress for design.

This standard does not specify a compression load test. The mechanical load generated by the stress acting on the line-column composite insulator during operation is absolutely large.

Most are combined loads. These loads can cause the insulator to flex. The result of a compressive load acting on an existing deflected insulator is Much depends on the degree of deflection already present. Since it is impossible to specify the deflection before the bending load test, the pure compression load test does not significance.

This standard does not include the contamination test specified in GB/T 4585, because the test method for porcelain insulators specified in the standard is for composite insulators.

The applicability has not been confirmed. There is no correlation between this test and

operational experience for non-porous material insulators. Non-porous material insulator contamination test the test method is under consideration.

The tracking and erosion test in this standard is based on GB/T 19519-2004 "Composite of AC overhead line with nominal voltage higher than 1000V.

Insulators---Definitions, Test Methods and Acceptance Guidelines. Now we are studying and developing a composite insulator suitable for various types.

General standard for tracking, erosion and life testing. Therefore, before the publication of the general standard, the 1000h alternating test rule under severe environmental conditions is used.

It is intended as a temporary measure.

For the use of insulators under severe environmental conditions, additional integrated stress life tests (eg GB/T 19519-2004) may be considered.

"Composite Insulators for AC Overhead Lines with a Voltage Above 1000 V---Definition, Test Methods and Acceptance Criteria" in Appendix C 5000h life test). CIGRE and IEC are currently studying representative, reproducible and reproducible life tests and will publish Guidelines. During this time, it is recommended to be particularly careful when specifying the type and parameters of these tests.

This standard does not consider arc testing as a mandatory test. Because the structure of the transmission network is different from that of the tower, and the design of the arc protection device is different, the test parameters are various, and the values are different. The thermal effects of arcing should be considered in the design of metal accessories.

The use of a properly designed arc protection device can avoid severe damage to the metal fitting caused by the magnitude and duration of the short circuit current. however, this standard does not exclude the possibility of conducting an arc test by agreement between the supplier and the buyer. Details of the insulator arc test are given in IEC 61467.

This standard does not specify radio interference and corona testing, because these two properties are not simply the characteristics of the insulator.

This standard does not currently involve a line-column composite insulator using a hollow tube as a core rod. IEC 61462 gives a hollow tube composite the details of the rim test, many of which can be used for line-column composite insulators with hollow tubes as mandrels.

This standard does not address torsional loads because torsional loads are often negligible in structures using line-column composite insulators. Out Special use cases with high torsional loads are not considered in this standard.

AC overhead with nominal voltages above 1000 Line-column composite insulator for line

---Definition, test methods and acceptance criteria

1 Scope and purpose

This standard applies to line-column composite insulators consisting of a cylindrical insulated mandrel, jacket and end fittings. Mandrel bearing Load, made of resin-impregnated glass fiber, jacket made of elastic material (such as silicone rubber or ethylene-propylene rubber), end attachment permanently fixed on the core of the core.

The line-column composite insulators described in this standard are used to support bending, tensile and compressive loads when supporting line conductors.

Applicable to AC overhead lines with a nominal voltage higher than 1000V and a frequency not higher than 100Hz.

The purpose of this standard is to.

--- Define the terms used;

---Specify the test method;

---Specify the criteria for acceptance or non-conformity.

This standard does not include the requirement to use insulators under special operating conditions.

2 Normative references

The terms in the following documents become the terms of this standard by reference to this standard. All dated references, followed by all Modifications (not including errata content) or revisions do not apply to this standard, however, parties to agreements based on this standard are encouraged to study is it possible to use the latest version of these files? For undated references, the latest edition applies to this standard.

GB/T 531-1999 Rubber pocket hardness test method (idt ISO 7619:1986) GB/T 1001.1-2003 Aerial line insulators with nominal voltages up to 1000 s. Part 1 . Porcelain or glass for AC systems Glass insulator component definition, test method and criteria (IEC 60383-1:1993, MOD) GB/T 3505-2000 Product Geometry Specifications Surface Structure Contours Terms, definitions and parameters of surface structures (eqv ISO 4287:1997) GB/T 5169.16-2002 Electrical and electronic products - Fire hazard testing - Part 16. 50 s (IEC 60695-11-10:1999, IDT) GB/T 6062-2002 Product geometry specification (GPS) surface structure profile method contact (stylus) instrument nominal Sex (eqv ISO 3274:1996) GB/T 6553-2003 Test for assessing the tracking resistance and electrical corrosion resistance of electrical insulating materials used under severe environmental conditions Party (IEC 60587. 1984, IDT) GB/T 16422.1-1996 Test methods for exposure of light sources in the laboratory - Part 1 . General rules (eqv ISO 4892-1:1994) GB/T