



SLOVENSKI STANDARD

SIST EN 61211:2006

01-januar-2006

Keramični ali stekleni izolatorji za nadzemne vode z nazivno napetostjo nad 1.000 V – Preskušanje na impulzne preboje v zraku (IEC 61211:2004)

Insulators of ceramic material or glass for overhead lines with a nominal voltage greater than 1 000 V - Impulse puncture testing in air

Isolatoren aus keramischem Werkstoff oder Glas für Freileitungen mit einer Nennspannung über 1 kV - Stoßspannungs-Durchschlagsprüfungen unter Luftatmosphäre

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Isolateurs en matière céramique ou en verre destinés aux lignes aériennes de tension nominale supérieure à 1 000 V - Essais de perforation par chocs dans l'air

Ta slovenski standard je istoveten z: EN 61211:2005

ICS:

29.080.10	Izolatorji	Insulators
29.240.20	Daljinovodi	Power transmission and distribution lines

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en

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EUROPEAN STANDARD

EN 61211

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2005

ICS 29.080.10

English version

**Insulators of ceramic material or glass for overhead lines
with a nominal voltage greater than 1 000 V –
Impulse puncture testing in air
(IEC 61211:2004)**

Isolateurs en matière céramique
ou en verre destinés aux lignes aériennes
de tension nominale supérieure à 1 000 V –
Essais de perforation par chocs dans l'air
(CEI 61211:2004)

Isolatoren aus keramischem Werkstoff
oder Glas für Freileitungen mit einer
Nennspannung über 1 kV –
Stoßspannungs-Durchschlagsprüfungen
unter Luftatmosphäre
(IEC 61211:2004)

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This European Standard was approved by CENELEC on 2005-03-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 36B/239/FDIS, future edition 2 of IEC 61211, prepared by SC 36B, Insulators for overhead lines, of IEC TC 36, Insulators, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61211 on 2005-03-01.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2005-12-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2008-03-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61211:2004 was approved by CENELEC as a European Standard without any modification.

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Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE Where an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-471	- ¹⁾	International Electrotechnical Vocabulary (IEV) Chapter 471: Insulators	-	-
IEC 60060-1	- ¹⁾	High-voltage test techniques Part 1: General definitions and test requirements	HD 588.1 S1	1991 ²⁾
IEC 60060-2	- ¹⁾	Part 2: Measuring systems	EN 60060-2 + A11	1994 ²⁾ 1998
IEC 60305	- ¹⁾	Insulators for overhead lines with a nominal voltage above 1 kV - Ceramic or glass insulator units for a.c. systems - Characteristics of insulator units of the cap and pin type	EN 60305	1996 ²⁾
IEC 60383-1	- ¹⁾	Insulators for overhead lines with a nominal voltage above 1 kV Part 1: Ceramic or glass insulator units for a.c. systems - Definitions, test methods and acceptance criteria	EN 60383-1	1996 ²⁾
IEC 61083-1	- ¹⁾	Instruments and software used for measurement in high-voltage impulse tests Part 1: Requirements for instruments	EN 61083-1	2001 ²⁾

1) Undated reference.

2) Valid edition at date of issue.

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NORME
INTERNATIONALE
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STANDARD

CEI
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**Isolateurs en matière céramique ou en verre
destinés aux lignes aériennes de tension
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Essais de perforation par chocs dans l'air**

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Impulse puncture testing in air**

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International Electrotechnical Commission, 3, rue de Varembe, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

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For price, see current catalogue

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**INSULATORS OF CERAMIC MATERIAL OR GLASS
FOR OVERHEAD LINES WITH A NOMINAL VOLTAGE
GREATER THAN 1 000 V –
IMPULSE PUNCTURE TESTING IN AIR**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 61211 has been prepared by subcommittee 36B: Insulators for overhead lines, of IEC technical committee 36: Insulators.

This second edition cancels and replaces the first edition which was issued as a technical report in 1994. It constitutes a technical revision and now has the status of an International Standard.

The main changes from the previous edition are related to using per unit values in the specification of test voltage, defining measurement uncertainty and improvements in the test procedure. In addition, minor clarifying changes have been made in the test assembly and in requirements for test voltage measuring systems. Unnecessary annexes have been deleted and replaced by a bibliography.

The text of this standard is based on the following documents:

FDIS	Report on voting
36B/239/FDIS	36B/242/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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INTRODUCTION

The text of this International Standard is based on the work of Maintenance Team 13 of IEC SC 36B and CIGRE Task Force 33.07.01 and on two ELECTRA reports. Reference is made to these two reports in the text by [1] and [2]¹.

A power frequency puncture test on insulators in oil is specified in IEC 60383-1(1993) as a sample test. An impulse voltage puncture test on insulators in air is required and applied in more and more countries and by a growing number of utilities. The applied test procedures differed from each other considerably. The first edition of IEC 61211(1994) gave a common specification for an impulse over-voltage test as an alternative. That edition specified the test method and acceptance criteria, and also gave guidance for performing the test and for measuring the test voltage.

CIGRE WG 33.03 has followed up the edition 1 since its publication in 1994. Information has been gathered on the usage of the technical report and on the development of test and measurement techniques for impulse voltage puncture withstand tests on insulators in air. In time, interest in this impulse puncture test on insulators in air has considerably increased.

Based on follow-up by CIGRE WG 33.03, IEC subcommittee 36B (Insulators for overhead lines) decided to revise IEC 61211 with the aim to convert it into a standard.

In this standard, the changes vis-à-vis the technical report are not dramatic. The main changes are related to using per unit values in the specification of test voltage, defining measurement uncertainty and improvements in the test procedure. In addition, minor clarifying changes have been made in the test assembly and in requirements for test voltage measuring systems. Unnecessary annexes have been deleted and replaced by a bibliography.

In reference to the original motivation for the technical report and to gathered experience, the importance of the peak voltage criterion in specifying the test voltage magnitude is stressed for achieving reproducibility of the test. The steepness criterion cannot be adopted, because with this the test voltage strongly depends on source impedance of the test circuit and on impulse front linearity.

Further to peak value, the test procedure has to be specified in detail for reproducibility of the test. Polarity of the impulse related to the pin, starting polarity, possible polarity reversals and time interval between consecutive impulses may affect the severity of the test, and hence have to be specified.

It is clear that measurement of these short impulse voltages needs special attention to achieve an acceptable accuracy. IEC 60060 does not fully cover this topic. Consequently, special requirements and guidance for measurements are given in Annex B.

This international standard assumes that the manufacturer specifies the impulse puncture withstand voltage as a characteristic of the insulator unit. This voltage is defined as peak value of the measured voltage across the insulator in the actual test. Until such time as the relevant product standards give specified values for the impulse puncture withstand voltage, this standard gives recommended test voltage values for different types of insulator units on the basis of per unit (p.u.) values.

¹ References in square brackets refer to the bibliography.