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

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NATIONAL FOREWORD

See Eesti standard EVS-EN IEC 60383-1:2023 sisaldab Euroopa standardi EN IEC 60383-1:2023 ingliskeelset teksti.	This Estonian standard EVS-EN IEC 60383-1:2023 consists of the English text of the European standard EN IEC 60383-1:2023.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
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Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 29.080.10, 29.240.20

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 60383-1

September 2023

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Supersedes EN 60383-1:1996;
EN 60383-1:1996/A11:1999

English Version

Insulators for overhead lines with a nominal voltage above 1 000 V - Part 1: Ceramic or glass insulator units for a.c. systems - Definitions, test methods and acceptance criteria (IEC 60383-1:2023)

Isolateurs pour lignes aériennes de tension nominale supérieure à 1 000 V - Partie 1: Éléments d'isolateurs en matière céramique ou en verre pour systèmes à courant alternatif - Définitions, méthodes d'essai et critères d'acceptation
(IEC 60383-1:2023)

Isolatoren für Freileitungen mit einer Nennspannung über 1 000 V - Teil 1: Keramik- oder Glas-Isolatoren für Wechselstromsysteme - Begriffe, Prüfverfahren und Annahmekriterien
(IEC 60383-1:2023)

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Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Ref. No. EN IEC 60383-1:2023 E

European foreword

The text of document 36/564/FDIS, future edition 5 of IEC 60383-1, prepared by IEC/TC 36 "Insulators" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60383-1:2023.

The following dates are fixed:

•	latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop) 2024-05-11
•	latest date by which the national standards conflicting with the document have to be withdrawn	(dow) 2026-08-11

This document supersedes EN 60383-1:1996 and all of its amendments and corrigenda (if any).

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IEC 60383-1

Edition 5.0 2023-07

INTERNATIONAL STANDARD

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IEC 60383-1:2023-07(en-fr)

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IEC 60383-1

Edition 5.0 2023-07

INTERNATIONAL STANDARD

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INSULATORS FOR OVERHEAD LINES WITH A NOMINAL VOLTAGE ABOVE 1 000 V –

Part 1: Ceramic or glass insulator units for AC systems – Definitions, test methods and acceptance criteria

FOREWORD

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IEC 60383 has been prepared by IEC technical committee 36: Insulators. It is an International Standard.

This fifth edition cancels and replaces the fourth edition published in 1993. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) The complete document has been revised and updated. The layout of the document has been changed in order to increase readability;
b) RIV test has been added (Clause 14);
c) Impulse puncture test in air has been added (15.2);
d) Residual strength test has been added (Clause 21);

e) Zinc sleeve test has been added (Clause 28);

f) Impact test has been added (Clause 30);

g) Annex C, coatings on ceramic and glass insulators has been added;

h) Annex D, impact test has been added.

The text of this International Standard is based on the following documents:

Draft	Report on voting
36/564/FDIS	36/571/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 60383 series, published under the general title *Insulators for overhead lines with a nominal voltage above 1 000 V*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

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

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INTRODUCTION

This part of IEC 60383 deals with four different types of insulators:

- Pin insulators
- Line post insulators
- String insulator units
- Insulators for overhead electric traction lines

Certain clauses of this document contain general requirements and other clauses contain specific tests relevant to each of the above-mentioned insulators.

INSULATORS FOR OVERHEAD LINES WITH A NOMINAL VOLTAGE ABOVE 1 000 V –

Part 1: Ceramic or glass insulator units for AC systems – Definitions, test methods and acceptance criteria

1 Scope

This part of IEC 60383 applies to insulators of ceramic material or glass for use on AC overhead power lines and overhead traction lines with a nominal voltage greater than 1 000 V and a frequency not greater than 100 Hz. It also applies to insulators for use on DC overhead electric traction lines.

This document applies to string insulator units, rigid overhead line insulators and to insulators of similar design when used in substations.

It does not apply to insulators forming parts of electrical apparatus or to parts used in their construction or to post insulators which are covered by IEC 60168, *Tests on indoor and outdoor post insulators of ceramic material or glass for systems with nominal voltages greater than 1 000 V*.

Tests on insulator strings and insulator sets (for example, wet switching impulse voltage) are dealt with in IEC 60383-2.

The object of this document is:

– to define the terms used
– to define insulator characteristics and to prescribe the conditions under which the specified values of these characteristics shall be verified
– to prescribe test methods
– to prescribe acceptance criteria.

This document does not include requirements dealing with the choice of insulators for specific operating conditions.

Specific requirements on the use of coatings on ceramic or glass insulators are described in the informative Annex C.

Numerical values for insulator characteristics are specified in IEC 60305, IEC 60433 and IEC 60720.

NOTE A guide for the choice of insulators under polluted conditions has been published, see IEC 60815-1 and -2.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

IEC 60060-1, *High-voltage test techniques – Part 1: General definitions and test requirements*

IEC 60120, *Ball and socket couplings of string insulator units – Dimensions*

IEC 60305, *Insulators for overhead lines with a nominal voltage above 1000 V – Ceramic or glass insulator units for AC systems – Characteristics of insulator units of the cap and pin type*

IEC 60372, *Locking devices for ball and socket couplings of string insulator units – Dimensions and tests*

IEC 60433, *Insulators for overhead lines with a nominal voltage above 1000 V – Ceramic insulators for AC systems – Characteristics of insulator units of the long rod type*

IEC 60437, *Radio interference test on high-voltage insulators*

IEC 60471, *Clevis and tongue couplings of string insulator units – Dimensions*

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

ISO 1459:1973, *Metallic coatings – Protection against corrosion by hot dip galvanizing – Guiding principles*

ISO 1460, *Metallic coatings – Hot dip galvanized coatings on ferrous metals – Determination of the mass per unit area – Gravimetric method*

ISO 1461, *Hot dip galvanized coatings on fabricated iron and steel articles – Specifications and test Methods*

ISO 1463, *Metal and oxide coatings – Measurement of coating thickness – Microscopical method*

ISO 2064, *Metallic and other non-organic coatings – Definitions and conventions concerning the measurement of thickness*

ISO 2178:2016, *Non-magnetic coatings on magnetic substrates – Measurement of coating thickness – Magnetic method*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
insulator string
one or more string insulator units coupled together and intended to give flexible support to conductors and stressed mainly in tension

3.2
rigid insulator
insulator intended to give rigid support to an overhead line conductor and to be stressed mainly by bending and compressive loads