SLOVENSKI STANDARD
SIST EN IEC 60071-1:2021

01-junij-2021

Nadomešča:
SIST EN 60071-1:2006
SIST EN 60071-1:2006/A1:2010

Koordinacija izolacije - 1. del: Definicije, načela in pravila

Insulation co-ordination - Part 1: Definitions, principles and rules

Ta slovenski standard je istoveten z: EN IEC 60071-1:2019

ICS:

01.040.29	Elektrotehnika (Slovarji)	Electrical engineering (Vocabularies)
29.080.01	Električna izolacija na splošno	Electrical insulation in general

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 60071-1

October 2019

ICS 29.080.30

Supersedes EN 60071-1:2006 and all of its amendments and corrigenda (if any)

English Version

Insulation co-ordination - Part 1: Definitions, principles and rules (IEC 60071-1:2019)

Coordination de l'isolement Partie 1: Définitions, principes et règles (IEC 60071-1:2019)

Isolationskoordination - Teil 1: Begriffe, Grundsätze und Anforderungen (IEC 60071-1:2019)

This European Standard was approved by CENELEC on 2019-09-12. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 99/199/CDV, future edition 9 of IEC 60071-1, prepared by IEC/TC 99 "Insulation co-ordination and system engineering of high voltage electrical power installations above 1,0 kV AC and 1,5 kV DC" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60071-1:2019.

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)	2020-06-12
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2022-09-12

This document supersedes EN 60071-1:2006 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 60071-1:2019 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60507	NOTE	Harmonized as EN 60507
IEC 60633	NOTE	Harmonized as EN IEC 60633

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60038	-	IEC standard voltages	EN 60038	-
IEC 60060-1	-	High-voltage test techniques - Part 1: General definitions and test requirements	EN 60060-1	-
IEC 60071-2	-	Insulation co-ordination - Part 2: Application guidelines	EN IEC 60071-2	-
IEC 60099-4	-	Surge arresters - Part 4: Metal-oxide surge arresters without gaps for a.c. systems	EN 60099-4	-

IEC 60071-1

Edition 9.0 2019-08

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

HORIZONTAL STANDARD
NORME HORIZONTALE

Insulation co-ordination – Part 1: Definitions, principles and rules

Coordination de l'isolement – Partie 1: Définitions, principes et règles

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INSULATION CO-ORDINATION –

Part 1: Definitions, principles and rules

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 60071-1 has been prepared by IEC technical committee 99: Insulation co-ordination and system engineering of high voltage electrical power installations above 1,0 kV AC and 1,5 kV DC.

This ninth edition cancels and replaces the eighth edition published in 2006 and Amendment 1:2010. This edition constitutes a technical revision.

It has the status of a horizontal standard in accordance with IEC Guide 108.

The main changes from the previous edition are as follows:

a) all references are updated to current IEC standards, and the bibliography is deleted;
b) some definitions are clarified in order to avoid overlapping and ensure clear understanding;
c) letter symbols are changed and corrected in order to keep the consistency with relevant IEC standards;
d) some titles are changed to clarify understanding (see Clauses A.2, A.3 and Annex B).

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

CDV	Report on voting
99/199/CDV	99/227/RVC

Full information on the voting for the approval of this International 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.

A list of all parts in the IEC 60071 series, published under the general title *Insulation co-ordination*, can be found on the IEC website.

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the stability 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.

IMPORTANT – The "colour inside" logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this publication using a colour printer.

INSULATION CO-ORDINATION –

Part 1: Definitions, principles and rules

1 Scope

This part of IEC 60071 applies to three-phase AC systems having a highest voltage for equipment above 1 kV. It specifies the procedure for the selection of the rated withstand voltages for the phase-to-earth, phase-to-phase and longitudinal insulation of the equipment and the installations of these systems. It also gives the lists of the standard withstand voltages from which the rated withstand voltages are selected.

This document describes that the selected withstand voltages are associated with the highest voltage for equipment. This association is for insulation co-ordination purposes only. The requirements for human safety are not covered by this document.

Although the principles of this document also apply to transmission line insulation, the values of their withstand voltages can be different from the standard rated withstand voltages.

The apparatus committees are responsible for specifying the rated withstand voltages and the test procedures suitable for the relevant equipment taking into consideration the recommendations of this document.

NOTE In IEC 60071-2, all rules for insulation co-ordination given in this document are justified in detail, in particular the association of the standard rated withstand voltages with the highest voltage for equipment. When more than one set of standard rated withstand voltages is associated with the same highest voltage for equipment, guidance is provided for the selection of the most suitable set.

This horizontal standard is primarily intended for use by technical committees in the preparation of standards in accordance with the principles laid down in IEC Guide 108.

One of the responsibilities of a technical committee is, wherever applicable, to make use of horizontal standards in the preparation of its publications. The contents of this horizontal standard will not apply unless specifically referred to or included in the relevant publications.

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 60038, *IEC standard voltages*

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

IEC 60071-2, *Insulation co-ordination – Part 2: Application guidelines*

IEC 60099-4, *Surge arresters – Part 4: Metal-oxide surge arresters without gaps for a.c. systems*

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
insulation co-ordination
selection of the dielectric strength of equipment in relation to the operating voltages and overvoltages which can appear on the system for which the equipment is intended, and taking into account the service environment and the characteristics of the available preventing and protective devices

Note 1 to entry: By "dielectric strength" of the equipment, is meant here its rated insulation level (3.36) or its standard insulation level (3.37).

[SOURCE: IEC 60050-614:2016, 614-03-08, modified – Note 1 to entry has been added]

3.2
external insulation
distances in atmospheric air, and the surfaces in contact with atmospheric air of solid insulation of the equipment which are subject to dielectric stresses and to the effects of atmospheric and other environmental conditions from the site, such as pollution, humidity, vermin, etc.

Note 1 to entry: External insulation is either weather protected or non-weather protected, designed to operate outside or inside closed shelters, respectively.

[SOURCE: IEC 60050-614:2016, 614-03-02, modified – Note 1 to entry has been added]

3.3
internal insulation
internal distances of the solid, liquid, or gaseous insulation of equipment which are protected from the effects of atmospheric and other external conditions

[SOURCE: IEC 60050-614:2016, 614-03-03]

3.4
self-restoring insulation
insulation which completely recovers its insulating properties within a short time interval after a disruptive discharge

Note 1 to entry: Insulation of this kind is generally, but not necessarily, external insulation.

Note 2 to entry: This definition applies only when the discharge is caused by the application of a test voltage during a dielectric test. However, discharges occurring in service may cause a self-restoring insulation to lose partially or completely its original insulating properties.

[SOURCE: IEC 60050-614:2016, 614-03-04]

3.5
non-self-restoring insulation
insulation which loses its insulating properties, or does not recover them completely, after a disruptive discharge