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Edition 4.2 2014-06
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INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Low-voltage fuses –
Part 1: General requirements

Fusibles basse tension –
Partie 1: Exigences générales

IEC 60269-1:2006-11+AMD1:2009-04+AMD2:2014-06 CSV(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LOW-VOLTAGE FUSES –

Part 1: General requirements

FOREWORD

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IEC 60269-1 edition 4.2 contains the fourth edition (2006-11) [documents 32B/483/FDIS and 32B/490/RVD], its amendment 1 (2009-04) [documents 32B/534/FDIS and 32B/540/RVD] and its amendment 2 (2014-06) [documents 32B/626/FDIS and 32B/628/RVD].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendments 1 and 2. Additions and deletions are displayed in red, with deletions being struck through. A separate Final version with all changes accepted is available in this publication.

International Standard IEC 60269-1 has been prepared by subcommittee 32B: Low-voltage fuses, of IEC technical committee 32: Fuses.

IEC 60269 consists of the following parts, under the general title *Low-voltage fuses*:

Part 1: General requirements

~~NOTE This part includes IEC 60269-1 (third edition, 1998) and parts of IEC 60269-2 (second edition, 1986) and IEC 60269-3 (second edition, 1987).~~

Part 2: Supplementary requirements for fuses for use by authorized persons (fuses mainly for industrial application) – Examples of standardized systems of fuses A to I

~~NOTE This part includes parts of IEC 60269-2 (second edition, 1986) and all of IEC 60269-2-1 (fourth edition, 2004).~~

Part 3: Supplementary requirements for fuses for use by unskilled persons (fuses mainly for household or similar application) – Examples of standardized systems of fuses A to F

~~NOTE This part includes parts of IEC 60269-3 (second edition, 1987) and all of IEC 60269-3-1 (second edition, 2004).~~

Part 4: Supplementary requirements for fuse-links for the protection of semiconductor devices

~~NOTE This part includes IEC 60269-4 (third edition, 1986) and IEC 60269-4-1 (first edition, 2002).~~

Part 5: Guidance for the application of low-voltage fuses

~~NOTE Currently IEC/TR 61818 (2003).~~

Part 6: Supplementary requirements for fuse-links for the protection of solar photovoltaic energy systems

For reasons of convenience, when a part of this publication has come from other publications, a remark to this effect has been inserted in the text.

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.

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INTRODUCTION

A reorganization of the different parts of the IEC 60269 series has been carried out, in order to simplify its use, especially by the laboratories which test the fuses.

IEC 60269-1, IEC 60269-2, IEC 60269-3 and IEC 60269-3-1 have been integrated into either the new part 1 or the new parts 2 or 3, according to the subjects considered, so that the clauses which deal exclusively with “fuses for authorized persons” are separated from the clauses dealing with “fuses for unauthorized persons”.

As far as IEC 60269-4 and IEC 60269-4-1 are concerned, they have been integrated into the new part 4 which deals with the fuse-links used for semiconductor protection.

LOW-VOLTAGE FUSES –

Part 1: General requirements

1 General

1.1 Scope and object

This part of IEC 60269 is applicable to fuses incorporating enclosed current-limiting fuse-links with rated breaking capacities of not less than 6 kA, intended for protecting power-frequency a.c. circuits of nominal voltages not exceeding 1 000 V or d.c. circuits of nominal voltages not exceeding 1 500 V.

Subsequent parts of this standard, referred to herein, cover supplementary requirements for such fuses intended for specific conditions of use or applications.

Fuse-links intended to be included in fuse-switch combinations according to IEC 60947-3 should also comply with the following requirements.

NOTE 1 For "a" fuse-links, details of performance (see 2.2.4) on d.c. circuits should be subject to agreement between user and manufacturer.

NOTE 2 Modifications of, and supplements to, this standard required for certain types of fuses for particular applications – for example, certain fuses for rolling stock, or fuses for high-frequency circuits – will be covered, if necessary, by separate standards.

NOTE 3 This standard does not apply to miniature fuses, these being covered by IEC 60127.

The object of this standard is to establish the characteristics of fuses or parts of fuses (fuse-base, fuse-carrier, fuse-link) in such a way that they can be replaced by other fuses or parts of fuses having the same characteristics provided that they are interchangeable as far as their dimensions are concerned. For this purpose, this standard refers in particular to

– the following characteristics of fuses:
  - their rated values;
  - their insulation;
  - their temperature rise in normal service;
  - their power dissipation and acceptable power dissipation;
  - their time/current characteristics;
  - their breaking capacity;
  - their cut-off current characteristics and their I^2t characteristics.
– type test for verification of the characteristics of fuses;
– the marking of fuses.

1.2 Normative references

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.

IEC 60038:1983, *IEC standard voltages*

IEC 60050(441):1984, *International Electrotechnical Vocabulary (IEV) – Chapter 441: Switchgear, controlgear and fuses*
Amendment 1 (2000)

IEC 60228:2004, *Conductors of insulated cables*

IEC 60269-2, *Low-voltage fuses – Part 2: Supplementary requirements for fuses for use by authorized persons (fuses mainly for industrial application) – Examples of standardized systems of fuses A to I)*

IEC 60269-3, *Low-voltage fuses – Part 3: Supplementary requirements for fuses for use by unskilled persons (fuses mainly for household or similar application) – Examples of standardized systems of fuses A to F*

IEC 60269-4, *Low-voltage fuses – Part 4: Supplementary requirements for fuse-links for the protection of semiconductor devices*

IEC 60269-5, *Low-voltage fuses – Part 5: Guidance for the application of low-voltage fuses*

IEC 60269-6, *Low-voltage fuses – Part 6: Supplementary requirements for fuse-links for the protection of solar photovoltaic energy systems*

IEC 60364-3:1993, *Electrical installations of buildings – Part 3: Assessment of general characteristics*

IEC 60364-5-52:2001, *Electrical installations of buildings – Part 5-52: Selection and erection of electrical equipment – Wiring system*

IEC 60529:1989, *Degrees of protection provided by enclosures (Code IP)*

IEC 60584-1:1995, *Thermocouples – Part 1: Reference tables*

IEC 60617, *Graphical symbols for diagrams*

IEC 60664-1:2002, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC ~~60695-2-1/0:1994~~ 60695-2-10, *Fire hazard testing – Part 2-10: ~~Test methods – Section 1/sheet 0: Glow-wire test methods – General~~ Glowing/hot-wire based test methods – Glow-wire apparatus and common test procedure*

IEC ~~60695-2-1/1:1994~~ 60695-2-11:2000, *Fire hazard testing – Part 2-11: ~~Test methods – Section 1/sheet 1: Glow-wire end-product test and guidance~~ Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products*

IEC ~~60695-2-1/2:1994~~ 60695-2-12:2000, *Fire hazard testing – Part 2-12: ~~Test methods – Section 1/sheet 2: Glow-wire flammability test on materials~~ Glowing/hot-wire based test methods – Glow-wire flammability index (GWFI) test method for materials*

IEC ~~60695-2-1/3:1994~~ 60695-2-13:2000, *Fire hazard testing – Part 2-13: ~~Test methods – Section 1/sheet 3: Glow-wire ignitability test on materials~~ Glowing/hot-wire based test methods – Glow-wire ignition temperature (GWIT) test method for materials*

ISO 3:1973, *Preferred numbers – Series of preferred numbers*

ISO 478:1974, *Paper – Untrimmed stock sizes for the ISO-A series – ISO primary range*

ISO 593:1974, *Paper – Untrimmed stock size for the ISO-A series – ISO supplementary range*

ISO 4046:1978, *Paper, board, pulp and related terms – Vocabulary – Bilingual edition*

2 Terms and definitions

NOTE For general definitions concerning fuses, see also IEC 60050-441.

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

2.1 Fuses and their component parts

2.1.1
fuse
device that by the fusing of one or more of its specially designed and proportioned components opens the circuit in which it is inserted by breaking the current when this exceeds a given value for a sufficient time. The fuse comprises all the parts that form the complete device

[IEV 441-18-01]

2.1.2
fuse-holder
combination of the fuse-base with its fuse-carrier

NOTE Where, in this standard, the term "fuse-holder" is used, it covers fuse-bases and/or fuse-carriers, if no clearer distinction is necessary.

[IEV 441-18-14]

2.1.2.1
fuse-base (fuse-mount)
fixed part of a fuse provided with contacts and terminals

[IEV 441-18-02]

NOTE Where applicable, covers are considered as part of the fuse-base.

2.1.2.2
fuse-carrier
movable part of a fuse designed to carry a fuse-link

[IEV 441-18-13]

2.1.3
fuse-link
part of a fuse including the fuse-element(s), intended to be replaced after the fuse has operated

[IEV 441-18-09]

2.1.4
fuse-contact
two or more conductive parts designed to ensure circuit continuity between a fuse-link and the corresponding fuse-holder

2.1.5
fuse-element
part of the fuse-link designed to melt under the action of current exceeding some definite value for a definite period of time

[IEV 441-18-08]