

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**High-voltage fuses –  
Part 4: Additional testing requirements for high-voltage expulsion fuses utilizing  
polymeric insulators**

**Fusibles à haute tension –  
Partie 4: Exigences d'essai supplémentaires pour les fusibles à expulsion à  
haute tension utilisant des isolateurs polymériques**



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### Part 4: Additional testing requirements for high-voltage expulsion fuses utilizing polymeric insulators

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## HIGH-VOLTAGE FUSES –

**Part 4: Additional testing requirements for high-voltage  
expulsion fuses utilizing polymeric insulators**

## FOREWORD

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International Standard IEC 60282-4 has been prepared by subcommittee 32A: High-voltage fuses, of IEC technical committee 32: Fuses.

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

FDIS	Report on voting
32A/346/FDIS	32A/348/RVD

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

A list of all parts in the IEC 60282 series, published under the general title *High-voltage fuses*, 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 "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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## INTRODUCTION

High-voltage expulsion fuses are tested according to IEC 60282-2 which recognizes that fuse-bases may use polymer (non-ceramic) insulators. However, very little additional testing is specified for fuses using such insulators. In the case of polymer post insulators and suspension insulators, only artificial pollution tests are required in accordance with IEC 61592 and IEC 61109, respectively. However, for fuses that use insulators not covered by these International Standards, such as certain fuse-cutouts, the additional testing required is by agreement between manufacturer and user. Fuses that need such "additional testing" are expulsion fuses that utilize polymer insulators in which a single mounting bracket is used, either at the centre of an insulator or connected to two insulators (a "cutout fuse-base"). As the market for expulsion fuses using polymer insulators has grown, manufacturers have introduced many tests in addition to artificial pollution tests, covering other aspects of a fuse's performance. This document formalises such testing and provides standardisation and consistency. It should be noted that the document focusses on product testing as opposed to material testing. In addition to drawing on test procedures covered by IEC 62217:2012, *Polymeric HV insulators for indoor and outdoor use – General definitions, test methods and acceptance criteria*, material from IEEE Std C37.41™:2016 (primarily 18.1.2 *Long-term deformation/creep testing*) is also used, with the permission of IEEE.

## HIGH-VOLTAGE FUSES –

### Part 4: Additional testing requirements for high-voltage expulsion fuses utilizing polymeric insulators

#### 1 Scope

This part of IEC 60282 applies to expulsion fuses complying with IEC 60282-2 and specifies additional testing requirements for fuses employing a cutout fuse-base that utilizes polymeric insulators.

#### 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 60060-1:2010, *High-voltage test techniques – Part 1: General definitions and test requirements*

IEC 60282-2:2008, *High-voltage fuses – Part 2: Expulsion fuses*

ISO 4287, *Geometrical Product Specifications (GPS) – Surface Texture: Profile method – Terms, definitions and surface texture parameters*

ISO 4892-2, *Plastics – Methods of exposure to laboratory light sources – Part 2: Xenon-arc lamps*

ISO 868, *Plastics and ebonite – Determination of indentation hardness by means of a durometer (Shore hardness)*

#### 3 Terms and definitions

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

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

##### 3.1

##### **polymeric insulator**

insulator whose insulating body consists of at least one organic based material

Note 1 to entry: Polymeric insulators are also known as non-ceramic insulators.

Note 2 to entry: Coupling devices may be attached to the ends of the insulating body.

[SOURCE: IEC 60050-471:2007, 471-01-13]