

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Railway applications – Electric equipment for rolling stock –
Part 5: Electrotechnical components – Rules for HV fuses**

**Applications ferroviaires – Équipements électriques du matériel roulant –
Partie 5: Composants électrotechniques – Règles pour les fusibles
à haute tension**



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IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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CONTENTS

FOREWORD	4
1 Scope	6
2 Normative references	6
3 Terms, definitions and abbreviated terms	7
3.1 Components	7
3.2 Operational characteristics	8
3.3 Abbreviated terms	10
4 Classification	10
4.1 Breaking range	10
4.2 Utilisation category	11
5 Characteristics	11
6 Product information	12
6.1 Documentation	12
6.2 Marking	12
7 Normal service conditions	12
8 Constructional and performance requirements	12
8.1 Constructional requirements	12
8.1.1 General	12
8.1.2 Fuse-link	12
8.1.3 Fuse-base	13
8.1.4 Spring-loaded contacts	13
8.1.5 External terminals	13
8.2 Performance requirements	13
8.2.1 Operating conditions	13
8.2.2 Temperature limits	13
8.2.3 Dielectric properties	13
8.2.4 Rated voltage	13
8.2.5 Rated current of the fuse-link	14
8.2.6 Rated current of the fuse-base	14
8.2.7 Breaking capacity	14
8.2.8 Time-current characteristics	14
9 Tests	14
9.1 Kinds of tests	14
9.1.1 General	14
9.1.2 Type tests	15
9.1.3 Routine tests	15
9.1.4 Investigation tests	15
9.2 Tests for the verification of constructional requirements	15
9.2.1 General	15
9.2.2 Type tests	15
9.2.3 Routine tests	16
9.3 Type tests for the verification of performance requirements	16
9.3.1 Test sequence	16
9.3.2 General test conditions	17

9.3.3	Test sequence for the verification of general performance characteristics	18
9.3.4	Description of tests for the fuse-link.....	18
9.4	Routine tests for the verification of performance requirements	22
9.4.1	General	22
9.4.2	Resistance measurement	23
Annex A (normative)	Connection diagram for temperature rise tests	24
Annex B (informative)	Comparison between “a” and “g” fuse time current characteristics	25
Annex C (informative)	Diagram of the test circuit for breaking capacity tests.....	26
Annex D (informative)	Verification of breaking capacity.....	27
Bibliography		29
Figure A.1	– Connection diagram for temperature rise tests	24
Figure B.1	– Comparison between “a” and “g” fuse time current characteristics	25
Figure C.1	– Diagram of the test circuit for breaking capacity tests	26
Figure D.1	– Test circuit calibration.....	27
Figure D.2	– Breaking operation when the instant of arc initiation is after the peak value of the current.....	28
Figure D.3	– Breaking operation when the instant of arc initiation is prior to the peak value of the current.....	28
Table 1	– Conventional times for “g” fuse-links	11
Table 2	– Rated and test voltages for DC fuse-links supplied from the contact line	14
Table 3	– Sequence of tests for the highest rating of a homogeneous series	16
Table 4	– Sequence of tests for the lowest rating of a homogeneous series	17
Table 5	– Sequence of tests for the intermediate ratings of a homogeneous series.....	17
Table 6	– Tolerances on test values.....	18
Table 7	– Parameters for breaking capacity tests of DC fuse-links	20
Table 8	– Time constant of the test circuit.....	21

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**RAILWAY APPLICATIONS –
ELECTRIC EQUIPMENT FOR ROLLING STOCK –****Part 5: Electrotechnical components –
Rules for HV fuses****FOREWORD**

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International Standard IEC 60077-5 has been prepared by IEC technical committee 9: Electrical equipment and systems for railways.

This second edition cancels and replaces the first edition, issued in 2003. It constitutes a technical revision.

This edition includes the following main technical changes with regard to the previous edition:

- a) test method of test duty III for verification of breaking capacity is reviewed.

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

FDIS	Report on voting
9/2539/FDIS	9/2555/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.

This document should be read in conjunction with IEC 60077-1 and IEC 60077-2.

A list of all parts in the IEC 60077 series, published under the general title *Railway applications – Electric equipment for rolling stock*, 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

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

RAILWAY APPLICATIONS – ELECTRIC EQUIPMENT FOR ROLLING STOCK –

Part 5: Electrotechnical components – Rules for HV fuses

1 Scope

The purpose of this part of IEC 60077 is to give additional or amended rules for high voltage (HV) fuses as a supplement to those given by IEC 60077-2.

NOTE 1 In this document the term high voltage fuses is used in the context of the voltages used in the field of railway rolling stock.

The high voltage fuses concerned are those connected into power and/or auxiliary circuits. The nominal voltage of these circuits lies between 600 V DC and 3 000 V DC, according to IEC 60850. These fuses can also be used in auxiliary AC circuits up to a nominal voltage of 1 500 V.

NOTE 2 Certain of these rules, after agreement between the user and the manufacturer, are used for fuses installed on vehicles other than rail rolling stock such as mine locomotives, trolleybuses, etc.

This document together with IEC 60077-2 states specifically:

- a) the characteristics of the fuses;
- b) the service conditions with which the fuses comply with reference to:
 - operation and behaviour in normal service;
 - operation and behaviour in case of short circuit;
 - dielectric properties.
- c) the tests intended for confirming the compliance of the fuse with the characteristics under the service conditions and the methods adopted for these tests;
- d) the information marked on, or given with, the fuse.

This document does not cover parallel connection of fuses.

During preparation of this document, IEC 60269-1 and IEC 60282-1 have been considered and their requirements have been kept as far as possible.

This document makes reference to the general rules for electrotechnical components given in IEC 60077-2, but for general conditions reference is made directly to IEC 60077-1.

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 60077-1:2017, *Railway applications – Electric equipment for rolling stock – Part 1: General service conditions and general rules*

IEC 60077-2:2017, *Railway applications – Electric equipment for rolling stock – Part 2: Electrotechnical components – General rules*

IEC 60269-1:2006, *Low-voltage fuses – Part 1: General requirements*

IEC 60269-1:2006/AMD1:2009

IEC 60269-1:2006/AMD2:2014

IEC 60282-1:2009, *High-voltage fuses – Part 1: Current-limiting fuses*

IEC 60282-1:2009/AMD1:2014

IEC 61373, *Railway applications – Rolling stock equipment – Shock and vibration tests*

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

3 Terms, definitions and abbreviated terms

For the purposes of this document, the terms and definitions given in Clause 3 of IEC 60077-1:2017 and Clause 3 of IEC 60077-2:2017, and the following 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 Components

NOTE For terminologies of a fuse, see also Figure 1 in IEC 60282-1:2009/AMD1:2014.

3.1.1

fuse

device that, by the fusing of one or more of its specifically 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

Note 1 to entry: The fuse comprises all the parts that form the complete device.

[SOURCE: IEC 60050-441:1984/AMD1:2000, 441-18-01, modified – The second sentence has been changed to Note 1 to entry.]

3.1.2

fuse-link

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

[SOURCE: IEC 60050-441:1984/AMD1:2000, 441-18-09]

3.1.3

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

[SOURCE: IEC 60050-441:1984/AMD1:2000, 441-18-08]

3.1.4

fuse-base

fixed part of a fuse provided with contacts and terminals