SLOVENSKI STANDARD
oSIST prEN IEC 60079-18:2024

01-junij-2024

Eksplozivne atmosfere - 18. del: Zaščita opreme z zalivanjem z zalivno maso "m"

Explosive atmospheres - Part 18: Equipment protection by encapsulation "m"

Explosionsgefährdete Bereiche - Teil 18: Geräteschutz durch Vergusskapselung „m“

Atmosphères explosives - Partie 18: Protection du matériel par encapsulage "m"

Ta slovenski standard je istoveten z: **prEN IEC 60079-18:2024**

ICS:

29.260.20	Električni aparati za eksplozivna ozračja	Electrical apparatus for explosive atmospheres

oSIST prEN IEC 60079-18:2024 **en,fr,de**

31/1763/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 60079-18 ED5**	
DATE OF CIRCULATION: **2024-04-05**	CLOSING DATE FOR VOTING: **2024-06-28**
SUPERSEDES DOCUMENTS: **31/1675/CD, 31/1698B/CC**	

IEC TC 31 : EQUIPMENT FOR EXPLOSIVE ATMOSPHERES

SECRETARIAT: United Kingdom	SECRETARY: Mr Tom Stack
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.

FUNCTIONS CONCERNED:

☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY

☒ SUBMITTED FOR CENELEC PARALLEL VOTING	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

Attention IEC-CENELEC parallel voting

The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting.

The CENELEC members are invited to vote through the CENELEC online voting system.

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Recipients of this document are invited to submit, with their comments, notification of any relevant “In Some Countries” clauses to be included should this proposal proceed. Recipients are reminded that the CDV stage is the final stage for submitting ISC clauses. (SEE AC/22/2007 OR NEW GUIDANCE DOC).

TITLE:

Explosive atmospheres - Part 18: Equipment protection by encapsulation "m"

PROPOSED STABILITY DATE: 2028

NOTE FROM TC/SC OFFICERS:

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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EXPLOSIVE ATMOSPHERES –

Part 18: Equipment protection by encapsulation “m”

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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Standard IEC 60079-18 has been prepared by IEC technical committee 31: Equipment for explosive atmospheres.

This fifth edition cancels and replaces the fourth edition of IEC 60079-18 (2014) including amendment 1 (2017), and constitutes a technical revision.

This International Standard is to be used in conjunction with IEC 60079-0, *Explosive atmospheres – Part 0: Equipment-General requirements*.

Users of this document are advised that interpretation sheets clarifying the interpretation of this document can be published. Interpretation sheets are available from the IEC webstore and can be found in the “history” tab of the page for each document.

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

		Type		
Explanation of the significance of the changes	**Clause**	**Minor and editorial changes**	**Extension**	**Major technical changes**
Restructure of Clause 6	6	X		
Deletion of the additional protective measures as they are given in 60079-0	7.1	X		
For the Level of Protection “mc” faults need to be considered regarding the separation distances	7.2.1			C1
The NOTE was changed to an EXAMPLE for clarification of track failures	7.2.1	X		
Intermediate failure conditions for components are not considered	7.2.1	X		
Additional enclosure changed to “arc chamber” housing	7.5.1, 7.5.2, 7.5.3	X		
Additional requirements for “ma” equipment deleted	Former 7.6.2	X		
NOTE 2 added for protection of bare live parts	7.7	X		
Requirement regarding the thermal coupling moved from 7.9.3 to 7.9.1 as this is applicable for all temperature monitoring devices	7.9.1	X		
Acceptance criteria for the Dielectric strength test aligned with the TC31 Good Working Practice	8.2.4.2	X		

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Explanation of the Types of Significant Changes:

A) Definitions

1. Minor and editorial changes:

- Clarification
- Decrease of technical requirements
- Minor technical change
- Editorial corrections

These are changes which modify requirements in an editorial or a minor technical way. They include changes of the wording to clarify technical requirements without any technical change, or a reduction in level of existing requirement.

2. Extension:

- Addition of technical options

These are changes which add new or modify existing technical requirements, in a way that new options are given, but without increasing requirements for equipment that was fully compliant with the previous standard. Therefore, these will not have to be considered for products in conformity with the preceding edition.

3. Major technical changes:

- addition of technical requirements
- increase of technical requirements

These are changes to technical requirements (addition, increase of the level or removal) made in a way that a product in conformity with the preceding edition will not always be able to fulfil the requirements given in the later edition. These changes have to be considered for products in conformity with the preceding edition. For these changes additional information is provided in item B) below.

Note These changes represent current technological knowledge. However, these changes should not normally have an influence on equipment already placed on the market.

B) Information about the background of 'Major technical changes'

C1 It is recognized that the new requirements were, in many cases, already applied. The change is to ensure that they are uniformly and consistently applied.

The text of this standard is based on the following documents:

FDIS	Report on voting
/FDIS	/RVD

Full information on the voting for the approval of this 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 the parts in the IEC 60079 series, published under the general title *Explosive atmospheres*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website 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.

EXPLOSIVE ATMOSPHERES –

Part 18: Equipment protection by encapsulation “m”

1 Scope

This part of IEC 60079 gives the specific requirements for the construction, testing and marking of electrical Ex Equipment, parts of electrical Ex Equipment and Ex Components with the Type of Protection encapsulation “m” intended for use in explosive gas atmospheres or explosive dust atmospheres.

For Levels of Protection “mb” and “mc”, this document applies where the rated voltage does not exceed 11 kV AC_{RMS} or DC.

For Level of Protection “ma”, this document applies where the rated voltage does not exceed 1 kV AC_{RMS} or DC.

NOTE In this document, encapsulated Ex Equipment is often referred to as “m” equipment.

This document does not take account of any risk due to an emission of flammable or toxic gas from the dust.

This document supplements and modifies the general requirements of IEC 60079-0. Where a requirement of this document conflicts with a requirement of IEC 60079-0, the requirement of this document takes precedence.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60079-0, *Explosive atmospheres – Part 0: Equipment – General requirements*

IEC 60079-7, *Explosive atmospheres – Part 7: Equipment protection by increased safety “e”*

IEC 60079-11, *Explosive atmospheres – Part 11: Equipment protection by intrinsic safety “i”*

IEC 60079-15, *Explosive atmospheres – Part 15: Equipment protection by Type of Protection "n"*

IEC 60127 (all parts), *Miniature fuses*

IEC 60243-1, *Electrical strength of insulating materials – Test methods – Part 1: Tests at power frequencies*

IEC 60691, *Thermal-links – Requirements and application guide*

IEC 60730-2-9, *Automatic electrical controls for household and similar use – Part 2-9: Particular requirements for temperature sensing controls*

IEC 60738-1, *Thermistors – Directly heated positive temperature coefficient – Part 1: Generic specification*

IEC 61140, *Protection against electric shock – Common aspects for installation and equipment*

IEC 61558-1, *Safety of power transformers, power supplies, reactors and similar products – Part 1: General requirements and tests*

IEC 61558-2-6, *Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V – Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers*

IEC 62326-4-1, *Printed boards – Part 4: Rigid multilayer printed boards with interlayer connections – Sectional specification – Section 1: Capability detail specification – Performance levels A, B and C*

ANSI/UL 248 *(all parts)*, *Standard for low-voltage fuses*

ANSI/UL 746A, Polymeric Materials – Short Term Property Evaluations“

ANSI/UL 746B, *Standard for polymeric materials – Long term property evaluations*

ANSI/UL 796, *Printed-Wiring Boards*

IPC-A-600, *Acceptability of Printed Boards*

IPC-6012, *Qualification and Performance Specification for Rigid Printed Boards*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60079-0 and the following apply.

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

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

NOTE Additional definitions applicable to explosive atmospheres can be found in IEC 60050-426.

3.1
encapsulation “m”
Type of Protection whereby parts that are capable of igniting an explosive atmosphere by either sparking or heating are fully enclosed in such a way as to avoid ignition of a dust layer or explosive atmosphere under operating or installation conditions

3.2
free surface
compound surface exposed to the explosive atmospheres and/or dust layers

NOTE 1 to entry: Unless a compound surface is in contact with and covered by a non-metallic or metallic enclosure, the compound surface is a free surface.

3.3
switching contact
mechanical contact, designed to make and break an electrical circuit