



SLOVENSKI STANDARD
oSIST prEN IEC 60079-18:2024
01-junij-2024

Eksplzivne 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: <input type="checkbox"/> Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: <input type="checkbox"/> EMC <input type="checkbox"/> ENVIRONMENT <input type="checkbox"/> QUALITY ASSURANCE <input type="checkbox"/> SAFETY	
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TITLE:

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

PROPOSED STABILITY DATE: 2028

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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EXPLOSIVE ATMOSPHERES –

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Part 18: Equipment protection by encapsulation “m”

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FOREWORD

106 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising
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134 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is
135 indispensable for the correct application of this publication.

136 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent
137 rights. IEC shall not be held responsible for identifying any or all such patent rights.

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

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

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

144 Users of this document are advised that interpretation sheets clarifying the interpretation of this
145 document can be published. Interpretation sheets are available from the IEC webstore and can
146 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:

Explanation of the significance of the changes	Clause	Type		
		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.

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

FDIS	Report on voting
/FDIS	/RVD

151 Full information on the voting for the approval of this standard can be found in the report on
152 voting indicated in the above table.

153 This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

154 A list of all the parts in the IEC 60079 series, published under the general title *Explosive*
155 *atmospheres*, can be found on the IEC website.

156 The committee has decided that the contents of this publication will remain unchanged until the
157 stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to
158 the specific publication. At this date, the publication will be

- 159 • reconfirmed,
- 160 • withdrawn,
- 161 • replaced by a revised edition, or
- 162 • amended.

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EXPLOSIVE ATMOSPHERES –

Part 18: Equipment protection by encapsulation “m”

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170 **1 Scope**

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

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

177 For Level of Protection “ma”, this document applies where the rated voltage does not exceed
178 1 kV AC_{RMS} or DC.

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

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

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

185 **2 Normative references**

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

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

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

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

193 IEC 60079-15, *Explosive atmospheres – Part 15: Equipment protection by Type of Protection*
194 *“n”*

195 IEC 60127 (all parts), *Miniature fuses*

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

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

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

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

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

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

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

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

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

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

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

215 ANSI/UL 796, *Printed-Wiring Boards*

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

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

218 **3 Terms and definitions**

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

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

- 223 • IEC Electropedia: available at <https://www.electropedia.org/>
- 224 • ISO Online browsing platform: available at <https://www.iso.org/obp>

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

226 **3.1** 227 **encapsulation “m”**

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

231 **3.2** 232 **free surface**

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

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

236 **3.3** 237 **switching contact**

238 mechanical contact, designed to make and break an electrical circuit