
Irish Standard
I.S. EN 60079-31:2014

# Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

**I.S. EN 60079-31:2014**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

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| *This document is based on:* | *Published:* |
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| EN 60079-31:2014 | 2014-07-11 |

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| | NOTE: If blank see CEN/CENELEC cover page |

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Údarás um Chaighdeáin Náisiúnta na hÉireann

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN 60079-31

July 2014

ICS 29.260.20

Supersedes EN 60079-31:2009

English Version

# Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t" (IEC 60079-31:2013)

Atmosphères explosives - Partie 31: Protection contre l'inflammation de poussières par enveloppe "t" relative au matériel
(CEI 60079-31:2013)

Explosionsgefährdete Bereiche - Teil 31: Geräte-Staubexplosionsschutz durch Gehäuse "t"
(IEC 60079-31:2013)

This European Standard was approved by CENELEC on 2014-01-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

## Foreword

The text of document 31/1079/FDIS, future edition 2 of IEC 60079-31, prepared by IEC/TC 31 "Equipment for explosive atmospheres" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60079-31:2014.

The following dates are fixed:

| | | |
|---|---|---|
| • latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement | (dop) | 2015-01-01 |
| • latest date by which the national standards conflicting with the document have to be withdrawn | (dow) | 2017-01-01 |

This document supersedes EN 60079-31:2009.

The State of the Art is included in Annex ZY “Significant changes between this European Standard and EN 60079-31:2009”.

For the significant changes with respect to EN 60079-31:2009, see Annex ZY.

This standard is to be read in conjunction with EN 60079-0.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive.

For the relationship with EU Directive see informative Annex ZZ, which is an integral part of this document.

## Endorsement notice

The text of the International Standard IEC 60079-31:2013 was approved by CENELEC as a European Standard without any modification.

# Annex ZA
(normative)

## Normative references to international publications with their corresponding European publications

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.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu

| Publication | Year | Title | EN/HD | Year |
|---|---|---|---|---|
| IEC 60079-0 | - | Explosive atmospheres - Part 0: Equipment - General requirements | EN 60079-0 | - |
| IEC 60127 | Series | Miniature fuses | EN 60127 | Series |
| IEC 60691 | - | Thermal-links - Requirements and application guide | EN 60691 | - |
| ISO 965-1 | - | ISO general-purpose metric screw threads - Tolerances - Part 1: Principles and basic data | - | - |

## Annex ZZ
(informative)

## Coverage of Essential Requirements of EU Directives

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and within its scope the standard covers only the following essential requirements out of those given in Annex II of the EU Directive 94/9/EC:

- ER 1.0.1, ER 1.0.2 (partly), ER 1.0.4, ER 1.0.5 (partly)
- ER 1.1
- ER 1.2.1 (partly), ER 1.2.2 (partly)
- ER 1.2.4
- ER 1.2.7
- ER 1.2.8 (partly)
- ER 1.3.1
- ER 1.6.4
- ER 2.1
- ER 2.2
- ER 2.3

Compliance with this standard provides one means of conformity with the specified essential requirements of the Directive concerned.

WARNING: Other requirements and other EU Directives may be applicable to the products falling within the scope of this standard.

# Annex ZY
(informative)

## Significant changes between this European Standard and EN 60079-31:2009

This European Standard supersedes EN 60079-31:2009.

The significant changes with respect to EN 60079-31:2009 are as listed below.

| | | Type | | |
|---|---|---|---|---|
| **Changes** | **Clause** | **Minor and editorial changes** | **Extension** | **Major technical changes** |
| Document has been restructured from the first edition | Numerous | X | | |
| The marked maximum surface temperature shall be measured on the external surfaces of the enclosure and the surfaces of the internal components for equipment with types of protection “ta” | 4.3.2 | | | C1 |
| Additional protection for arcing and sparking parts for “ta” | 4.3.6 | | | C2 |
| Limiting the internal pressure test to enclosures where the seal is not physically constrained from moving. | 4.4.2 | | X | |
| Requirements for tapered threaded joints without an additional seal or gasket added. | 5.1.2 | | X | |
| Requirements for cable gland aligned for all levels and Groups the only difference is now the required IP protection | 5.2 | X | | |
| Requirements for plain entries added | 5.3.1 | | X | |
| 5 threads for parallel threads only required when no seal is used | 5.3.2 | | X | |
| Test for internal enclosure for level “ta” added. | 6.1.1.2 | | | C 3 |
| Eliminating of the “fault” table and reduction of the dust layer depth for the thermal test for type of protection “ta”. | 6.1.2 | | X | |

NOTE The technical changes referred to include the significance of technical changes in the revised EN standard, but they do not form an exhaustive list of all modifications from the previous version. More guidance may be found by referring to the Redline Version of the standard.

**Explanations:**

**A) Definitions**

**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.

**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.

**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 Clause 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 – A requirement was added for "ta" to require the temperature marking to be based on the highest of either the temperature produced by the internal components or the external surface temperature.

C2 – Requirements were added for "ta" equipment that contains a normally arcing part to require a supplementary internal enclosure around the arcing part.

C3 – Requires an impact test on the supplementary enclosure for "ta" equipment.

IEC 60079-31

Edition 2.0 2013-11

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

## Explosive atmospheres –
## Part 31: Equipment dust ignition protection by enclosure "t"

**Atmosphères explosives –**
**Partie 31: Protection contre l'inflammation de poussières par enveloppe "t" relative au matériel**

IEC 60079-31:2013

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La Commission Electrotechnique Internationale (CEI) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

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IEC 60079-31

Edition 2.0 2013-11

# INTERNATIONAL STANDARD

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## Explosive atmospheres –
## Part 31: Equipment dust ignition protection by enclosure "t"

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

# EXPLOSIVE ATMOSPHERES –

## Part 31: Equipment dust ignition protection by enclosure "t"

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

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

This second edition cancels and replaces the first edition published in 2008. This edition constitutes a technical revision.

The significance of changes between IEC 60079-31, Edition 2.0 (2012) and IEC 60079-31, Edition 1.0 (2008) (including Corrigendum) is as listed below:

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C2 – Requirements were added for "ta" equipment that contains a normally arcing part to require a supplementary internal enclosure around the arcing part.

C3 – Requires an impact test on the supplementary enclosure for "ta" equipment.

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

| FDIS | Report on voting |
|---|---|
| 31/1079/FDIS | 31/1094/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.

This International Standard is to be used in conjunction with IEC 60079-0.

A list of all parts of the IEC 60079 series, 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 maintenance result 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.

# EXPLOSIVE ATMOSPHERES –

# Part 31: Equipment dust ignition protection by enclosure "t"

## 1 Scope

This part of IEC 60079 is applicable to electrical equipment protected by enclosure and surface temperature limitation for use in explosive dust atmospheres. It specifies requirements for design, construction and testing of electrical equipment and Ex Components.

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

This standard does not apply to dusts of explosives, which do not require atmospheric oxygen for combustion, or to pyrophoric substances.

This standard does not apply to electrical equipment or Ex Components intended for use in underground parts of mines as well as those parts of surface installations of such mines endangered by firedamp and/or combustible dust.

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

Consideration of additional protective measures is required where the application of electrical equipment is in atmospheres, which can contain combustible dust as well as explosive gas, whether simultaneously or separately.

Where the electrical equipment has to meet other environmental conditions, for example, protection against ingress of water and resistance to corrosion, additional measures can be necessary. The measures used should not adversely affect the integrity of the enclosure.

## 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 60127 (all parts), *Miniature fuses*

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

ISO 965-1, *ISO general-purpose metric screw threads – Tolerances – Part 1: Principles and basic data*

## 3 Terms and definitions

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

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