



BSI Standards Publication

Explosive atmospheres

Part 37: Non-electrical equipment for explosive atmospheres — Non electrical type of protection constructional safety “c”, control of ignition source “b”, liquid immersion “k” (ISO 80079-37:2016)

National foreword

This British Standard is the UK implementation of EN ISO 80079-37:2016. It supersedes BS EN 13463-5:2011, BS EN 13463-6:2005 and BS EN 13463-8:2003, which are withdrawn.

The UK participation in its preparation was entrusted to Technical Committee EXL/23, Explosion and fire precautions in industrial and chemical plant.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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English Version

**Explosive atmospheres - Part 37: Non-electrical equipment
for explosive atmospheres - Non-electrical type of
protection constructional safety "c", control of ignition
sources "b", liquid immersion "k" (ISO 80079-37:2016)**

Atmosphères explosives - Partie 37: Appareils non
électriques destinés à être utilisés en atmosphères
explosives - Mode de protection non électrique par
sécurité de construction "c", par contrôle de la source
d'inflammation "b", par immersion dans un liquide "k"
(ISO 80079-37:2016)

Explosionsgefährdete Bereiche - Teil 37: Nicht-
elektrische Geräte für den Einsatz in
explosionsgefährdeten Bereichen - Schutz durch
konstruktive Sicherheit 'c', Zündquellenüberwachung
'b', Flüssigkeitskapselung 'k' (ISO 80079-37:2016)

This European Standard was approved by CEN on 8 February 2016.

CEN 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 CEN member.

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

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European Foreword

This document (EN ISO 80079-37:2016) has been prepared by Technical Committee ISO/TMBG "Technical Management Board - groups" in collaboration with Technical Committee CEN/TC 305 "Potentially explosive atmospheres - Explosion prevention and protection" the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2016, and conflicting national standards shall be withdrawn at the latest by October 2016.

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

The significant changes with respect to EN 13463-5:2011, EN 13463-6:2005 and EN 13463-8:2003 are included in Annex ZB "*Significant changes between this European Standard and EN 13463-5:2011, EN 13463-6:2005 and EN 13463-8:2003*".

This document supersedes EN 13463-5:2011, EN 13463-6:2005, EN 13463-8:2003.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of 2014/34/EU.

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

Extensions to the marking scheme described in the Directive are found in the ATEX Guidelines published by the European Commission. These are particularly useful for equipment that conforms to more than one category.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 80079-37:2016 has been approved by CEN as EN ISO 80079-37:2016 without any modification.

Annex ZA
(informative)

Relationship between this European Standard and the Essential Requirements of EU Directive 2014/34/EU

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive 2014/34/EU.

Once this standard is cited in the Official Journal of the European Union under that Directive and has been implemented as a national standard in at least one Member State, compliance with the clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding Essential Requirements of that Directive and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and Directive 94/9/EC

| Clause(s)/sub-clause(s) of this EN | Essential Requirements (ERs) of 2014/34 EU | Qualifying remarks/Notes |
|------------------------------------|--|---|
| 4 | 1.1.1 1.1.3 | |
| 5.1 | 1.3.4 1.4.1 | See also 80079-36 Clause has some limited relevance to ESR 1.2.4 |
| 5.2 | 1.1.1 | |
| 5.3.1 | 1.3.1 | See also 80079-36 |
| 5.3.2 | 1.2.3 | See also 80079-36 |
| 5.4 | 1.3.1 | See also 80079-36 |
| 5.6.1 | 1.0.6a 1.1.3 | Not much additional information |
| 5.6.2 | 1.3.4 | See also 80079-36 |
| 5.6.3 | 1.3.1 | See also 80079-36 |
| 5.7.1 | 1.0.6a 1.0.6c 1.2.1 | |
| 5.7.2 | 1.3.1 | See also 80079-36 |
| 5.7.3 | 1.1.3 | |
| 5.8.1 | 1.1.3 1.3.1 1.3.4 | See also 80079-36 Limited information in respect of 1.1.3 |
| 5.8.2.1 | 1.3.1 | See also 80079-36 |
| 5.8.2.2 | 1.3.1 | See also 80079-36 |

| Clause(s)/sub-clause(s) of this EN | Essential Requirements (ERs) of 2014/34 EU | Qualifying remarks/Notes |
|------------------------------------|--|---|
| | 1.3.2 | |
| 5.8.2.3 | 1.3.4 | See also 80079-36 |
| 5.8.2.4 | 1.3.4 | See also 80079-36 |
| 5.8.5.1 | 1.3.4 | See also 80079-36 |
| 5.9.3 | 1.3.4 | See also 80079-36 |
| 6.1 | 1.3.1 | See also 80079-36 |
| 6.2 | 1.0.6a 1.1.3 1.2.1 1.3.4 1.4.1 | See also 80079-36 Clause has some limited relevance to ESR 1.2.4 |
| 6.3 | 1.0.6a 1.2.1 | |
| 6.4 | 1.0.6a 1.2.1 | |
| 6.5 | 1.0.6a 1.2.1 | |
| 7.1 | 1.0.6a 1.2.1 1.3.2 1.3.4 1.4.1 | See also 80079-36 Clause has some limited relevance to ESR 1.2.4 |
| 7.2 | 1.0.6a 1.2.1 | |
| 7.3 | 1.0.6a 1.1.3 1.2.1 | |
| 7.3.3 | 1.3.1 | |
| 7.3.4 | 1.2.3 1.3.2 | See also 80079-36 |

WARNING — Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

Annex ZB
(informative)

**Significant changes between this European Standard and EN 13463-5:2011,
EN 13463-6:2005 and EN 13463-8:2003**

This European Standard supersedes EN 13463-5:2011, EN 13463-6:2005 and EN 13463-8:2003.

**Table ZB.1 — Significant changes between this European Standard and EN 13463-5:2011,
EN 13463-6:2005 and EN 13463-8:2003**

| Clauses of this European Standard | | Type | | |
|--|----------|--------------------------|-----------|-----------------------------------|
| | | Minor and formal changes | Extension | Substantial change regarding ESRs |
| Introduction of new definitions and slight redefinitions concerning ignition sources to improve ignition hazard assessment (EN 13463-5, EN 13463-6, EN 13463-8 Clause 3) | Clause 3 | X | X | |
| Differentiation in requirements for ingress prevention for dust and liquids (EN 13463-5, Clause 4.3.4) | 5.2.2 | X | | |
| Changing note to normative text (EN 13463-5, Clause 4.4.3) | 5.3.3 | X | X | |
| Note 2 deleted and moved to 5.6 (EN 13463-5, Clause 4.6) | 5.5 | X | | |
| Additional requirement listed (2 nd clause) (from EN 13463-5, Clause 4.6) | 5.6 | X | X | |
| Additional measure listed (EN 13463-5, Clause 5.3) | 5.6.3 | X | X | |
| Changing of wording regarding information for instructions (EN 13463-5, Clause 6.1) | 5.7.1 | X | | |
| Changing of wording regarding information for instructions (EN 13463-5, Clause 6.2) | 5.7.2 | X | | |
| Additional requirement regarding electrostatic requirements (EN 13463-5, note in 7.2.2) New note | 5.8.2.2 | X | | |
| Changing of wording (EN 13463-5, Clause 7.6.5) | 5.8.2.5 | X | | |
| Changing to clarify dependency of requirements (EN 13463-5, Clause 7.3.2) | 5.10 | X | | |
| Differentiation to clarify dependency of | 5.11.1 | X | X | |

| Clauses of this European Standard | | Type | | |
|---|-----------|--------------------------|-----------|-----------------------------------|
| | | Minor and formal changes | Extension | Substantial change regarding ESRs |
| requirements (EN 13463-5, Clause 8.1) | | | | |
| Additional requirement (EN 13463-5, Clause 10.3) | 5.13.3 | X | | |
| Editorial modification for clarification (EN 13463-6, Clause 6.1) | Clause 6 | X | X | |
| Editorial modification for clarification (EN 13463-8, Clause 5.1) | 7.1 | X | | |
| Editorial modification for clarification (EN 13463-8, Clause 7.2) | 7.3.2 | X | | |
| Additional example (EN 13463-8, Clause 7.4) | 7.3.4 | X | | |
| Editorial modification for clarification (EN 13463-8, Clause 7.8) | 7.3.6 | X | | |
| Introduction of new definitions for marking | Clause 10 | X | X | |

NOTE 1 The technical changes referred include the significant technical changes from the EN revised but is not an exhaustive list of all modifications from the previous version.

Explanations:

A) Definitions

Minor and editorial changes

- clarification
- decrease of technical requirements
- minor technical change
- editorial corrections

Changes in a standard classified as ‘Minor and editorial changes’ refer to changes regarding the previous standard, which modify requirements in an editorial or a minor technical way. Also changes of the wording to clarify technical requirements without any technical change are classified as ‘Minor and editorial changes’.

A reduction in level of existing requirement is also classified as ‘Minor and editorial changes’

Extension

- addition of technical options

Changes in a standard classified as ‘extension’ refers to changes regarding the previous standard, 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 ‘extensions’ 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

Changes in a standard classified as 'Major technical change' refer to changes regarding the previous standard, which add new or increase the level of existing technical requirements, in a way that a product in conformity with the preceding standard will not always be able to fulfil the requirements given in the standard. 'Major technical changes' have to be considered for products in conformity with the preceding edition. For every change classified as 'Major Technical Change' additional information is provided in clause B) of the Annex ZB.

NOTE 2 These changes represent current technological knowledge¹. 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'

None

¹ see also ATEX Guide 10.3 and Annex ZA.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

EXPLOSIVE ATMOSPHERES –

Part 37: Non-electrical equipment for explosive atmospheres – Non electrical type of protection constructional safety “c”, control of ignition source “b”, liquid immersion “k”

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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International Standard ISO 80079-37 has been prepared by IEC sub-committee 31M: Non-electrical equipment and protective systems for explosive atmospheres, of IEC 31: Equipment for explosive atmospheres.

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

| FDIS | Report on voting |
|--------------|------------------|
| 31M/104/FDIS | 31M/110/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. In ISO, the standard has been approved by 15 P members out of 20 having cast a vote.

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

"A list of all parts in the IEC 60079 series, under the general title *Explosive atmospheres*, as well as the International Standard 80079 series, 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 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.

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EXPLOSIVE ATMOSPHERES –

Part 37: Non-electrical equipment for explosive atmospheres – Non electrical type of protection constructional safety “c”, control of ignition source “b”, liquid immersion “k”

1 Scope

This part of ISO/IEC 80079 specifies the requirements for the design and construction of non-electrical equipment, intended for use in explosive atmospheres, protected by the types of protection constructional safety “c”, control of ignition source “b” and liquid immersion “k”.

This part of ISO/IEC 80079 supplements and modifies the requirements in ISO 80079-36. Where a requirement of this standard conflicts with the requirement of ISO 80079-36 the requirement of this standard takes precedence.

Types of Protection “c”, “k” and “b” are not applicable for Group I, EPL Ma without additional protective precautions.

The types of ignition protection described in the standard can be used either on their own or in combination with each other to meet the requirements for equipment of Group I, Group II, and Group III depending on the ignition hazard assessment in ISO 80079-36.

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 TS 60079-32-1, *Explosive atmospheres – Part 32-1: Electrostatic hazards, Guidance*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

ISO 281, *Rolling bearings – Dynamic load ratings and rating life*

ISO 1813, *Belt drives – V-ribbed belts, joined V-belts and V-belts including wide section belts and hexagonal belts – Electrical conductivity of antistatic belts: Characteristics and methods of test*

ISO 9563, *Belt drives – Electrical conductivity of antistatic endless synchronous belts – Characteristics and test method*

ISO 4413, *Hydraulic fluid power – General rules and safety requirements for systems and their components*

ISO 4414, *Pneumatic fluid power – General rules and safety requirements for systems and their components*

ISO 19353, *Safety of machinery – Fire prevention and protection*