



SLOVENSKI STANDARD SIST EN 14983:2024

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Preprečevanje eksplozij in zaščita v podzemnih rudnikih - Oprema in zaščitni sistemi za odvajanje jamskega plina

Explosion prevention and protection in underground mines - Equipment and protective systems for firedamp drainage

Explosionsschutz in untertägigen Bergwerken - Geräte und Schutzsysteme zur Absaugung von Grubengas

Prévention de l'explosion et protection contre l'explosion dans les mines souterraines - Appareils et systèmes de protection destinés au captage du grisou

Ta slovenski standard je istoveten z: EN 14983:2024

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Prévention de l'explosion et protection contre l'explosion dans les mines souterraines - Appareils et systèmes de protection destinés au captage du grisou

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This European Standard was approved by CEN on 5 August 2024.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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EN 14983:2024 (E)

European foreword

This document (EN 14983:2024) has been prepared by 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of an identical text or by endorsement, at the latest by April 2025, and conflicting national standards shall be withdrawn at the latest by October 2026.

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

This document supersedes EN 14983:2007.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

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

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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

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Introduction

Firedamp drainage is a technical process for selected gas removal, the purpose of which is to reduce the risks presented by inflammable gas and air mixtures. Firedamp drainage is therefore a measure for preventive explosion protection.

In the mining industry, firedamp is drained from the underground workings of gassy mines, from boreholes and abandoned mine workings to ensure that mine workers are not exposed to the risks associated with the occurrence of an explosive atmosphere at their place of work. In this case, the explosion risk results from unacceptable accumulations of firedamp occurring in the waste areas and cavities left in the in the rock strata after the coal has been extracted from the coal seam. In such cases, the need to drain these accumulations, and the complexity of the drainage system, depends on the amount of firedamp produced by the coal and the likelihood of it occurring in explosive quantities in the mine roadways and coal face. Examples of situations that might cause firedamp to move in dangerous concentrations from the waste area or cavities into the mine roadways: a breakdown of the mine ventilation system or a sudden reduction in the underground atmospheric pressure. National legislation in EU coal mining member countries requires workers to be withdrawn to a safe place if firedamp levels attain a specific nationally defined value in the general body of mine air. Firedamp drainage is therefore often used in gassy mines in an attempt to ensure that the concentration of firedamp in the general body of mine air is kept well below this critical level, even during abnormal situations such as those described above.

Once the accumulations of firedamp have been drained from the affected areas, it is usually discharged to the mine surface, but in some cases it is discharged into the mine return ventilation system. In systems where the firedamp is brought to the mine surface, it is discharged to the atmosphere through an earthed metallic discharge stack or pressurized and delivered to a utilization system, such as a gas-fired boiler.

In abandoned mines, firedamp drainage is used

- to prevent gas pressure building up and gas issuing at the surface in an uncontrolled manner, and
- to protect workers at an adjacent nearby mine, or
- to allow it to be utilized, for example by burning it in a gas-fired boiler to produce heat or to generate electricity.

EN 14983:2024 (E)

1 Scope

This document specifies the requirements for equipment and protective systems for firedamp drainage at mines. It also contains requirements for the construction and monitoring of this equipment and protective systems (see EN 1127-2:2014).

This document does not apply to firedamp utilization systems beyond the utilization shut-off device.

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.

EN 1127-2:2014, *Explosive atmospheres - Explosion prevention and protection - Part 2: Basic concepts and methodology for mining*

EN 13237:2024, *Potentially explosive atmospheres - Terms and definitions for equipment and protective systems intended for use in potentially explosive atmospheres*

EN 61508-1:2010, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 1: General requirements*

EN 61508-2:2010, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 2: Requirements for electrical/electronic/programmable electronic safety-related systems*

EN 61508-3:2010, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 3: Software requirements*

EN 61508-4:2010, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 4: Definitions and abbreviations*

EN 61508-5:2010, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 5: Examples of methods for the determination of safety integrity levels*

EN 61508-6:2010, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 6: Guidelines on the application of IEC 61508-2 and IEC 61508-3*

EN 61508-7:2010, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 7: Overview of techniques and measures*

EN ISO/IEC 80079-38:2016,¹ *Explosive atmospheres - Part 38: Equipment and components in explosive atmospheres in underground mines (ISO/IEC 80079-38:2016)*

ISO/IEC 80079-49:2024,² *Explosive atmospheres -Part 49: Flame arresters-Performance requirements, test methods and limits for use*

¹ Document impacted by A1:2018.

² FprEN ISO/IEC 80079-49:2023 is still at draft stage at the time of this publication.

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1127-2:2014 and EN 13237:2024 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

electrostatic leakage resistance

electrical resistance measured between an object and earth

3.2

active explosion isolation system

system which is designed to be activated by a detector and control and indicating equipment (CIE) which are inherent parts of the system and stop explosions from travelling through pipelines or limit destructive effects of the explosion

[SOURCE: EN 15089:2009, 3.7.1]

3.3

starting by-pass

temporary and specific by-passing of a safety device when starting the pressure generator of a firedamp drainage plant

3.4

design pressure

p_d

pressure at the top of each chamber of the pressure equipment chosen for the derivation of the calculation pressure of each component

[SOURCE: EN 764-1:2015+A1:2016, 3.2.33]

3.5

firedamp

any potentially explosive mixture of flammable gases naturally occurring in a mine

Note 1 to entry: As firedamp consists mainly of methane, the terms “firedamp” and “methane” are used frequently in mining practice as synonyms.

[SOURCE: EN 1127-2:2014, 3.1]

3.6

firedamp collector pipe

gas pipes connected directly to one or more boreholes or gas drainage points

3.7

firedamp mains pipe

gas pipes connected to more than one gas collector pipe

EN 14983:2024 (E)**3.8
extinguishing system**

system that is used to discharge suppressant agent to extinguish flame and keep it from propagating into the vent pipe

**3.9
technically leaktight**

made in such a way that no changes in gas composition occur

Note 1 to entry: Gas pipes, items of plant and equipment, including all detachable and non-detachable connections can be technically leaktight.

Note 2 to entry: The term “technically leaktight” means that diffusion through statically stressed seals can occur.

**3.10
 t_{90} -path**

distance between the monitoring position and the shut-off device

Note 1 to entry: This distance depends on the measured gas/air mixture, taking account of the velocity of flow, the response time (according to EN 60079-29-1:2016) of the measurement device, the tripping time and the closing time of the rapid shut-off device; the response time is the time taken to achieve 90 % of the final indication.

**3.11
flame arrester**

device fitted to the opening of an enclosure, or to the connecting pipe work of a system of enclosures, and whose intended function is to allow the flow but prevent the transmission of flame

[SOURCE: ISO/IEC 80079-49:2024, 3.1]

**3.12
flame arrester element**

portion of a flame arrester whose principal function is to prevent flame transmission

[SOURCE: ISO/IEC 80079-49:2024, 3.3]

**3.13
endurance burning**

stabilized burning for an unlimited time

[SOURCE: ISO/IEC 80079-49:2024, 3.6]

**3.14
endurance flame arrester**

flame arrester that prevents flame transmission during and after endurance burning

[SOURCE: ISO/IEC 80079-49:2024, 3.16]

**3.15
short time burning**

stabilized burning for a specified time

[SOURCE: ISO/IEC 80079-49:2024, 3.5]

3.16**short-time burning flame arrester**

flame arrester designed to prevent flameduring and after short-time burning

Note 1 to entry: In this case designed as end-of-line flame arrester (at the end of a pipe work), that means end-of-line deflagration flame arrester. Equipped with an integrated temperature sensor that emits a signal suitable for initiating countermeasures.

3.17**detonation**

explosion propagating at supersonic velocity and characterized by a shock wave

[SOURCE: ISO 8421-1:1987, 1.12]

3.18**detonation flame arrester****DET**

flame arrester designed to prevent the transmission of a detonation

[SOURCE: ISO/IEC 80079-49:2024, 3.15]

3.19**deflagration**

explosion propagating at subsonic velocity

[SOURCE: ISO 8421-1:1987, 1.11]

3.20**deflagration flame arrester****DEF**

flame arrester designed to prevent the transmission of a deflagration

Note 1 to entry: It can be an end-of-line flame arrester or an in-line flame arrester

[SOURCE: ISO/IEC 80079-49:2024, 3.14]

3.21**end-of-line flame arrester**

flame arrester that is fitted with one pipe connection only

[SOURCE: ISO/IEC 80079-49:2024, 3.21]

3.22**stabilized burning**

steady burning of a flame stabilized at, or close to, the flame arrester element

[SOURCE: ISO/IEC 80079-49:2024, 3.4]

3.23**housing**

portion of a flame arrester whose principal function is to provide a suitable enclosure for the flame arrester element and allow mechanical connections to other systems

[SOURCE: ISO/IEC 80079-49:2024, 3.2]