

SLOVENSKI STANDARD

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Nadomešča:

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Vgrajeni gasilni sistemi - Sistemi za gašenje s kondenziranim aerosolom - 2. del: Načrtovanje, vgradnja in vzdrževanje

Fixed firefighting systems - Condensed aerosol extinguishing systems - Part 2: Design,
installation and maintenance

Ortsfeste Brandbekämpfungsanlagen - Löschanlagen für kondensierte Aerosole - Teil 2:
Planung, Installation und Instandhaltung

Installations fixes de lutte contre l'incendie - Systèmes d'extinction à aérosol - Partie 2:
Calcul, installation et maintenance

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13.220.10 Gašenje požara Fire-fighting

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Fixed firefighting systems - Condensed aerosol extinguishing systems - Part 2: Design, installation and maintenance

Installations fixes de lutte contre l'incendie - Systèmes d'extinction à aérosol - Partie 2 : Calcul, installation et maintenance

Ortsfeste Brandbekämpfungsanlagen - Löschanlagen für kondensierte Aerosole - Teil 2: Planung, Installation und Instandhaltung

This European Standard was approved by CEN on 6 January 2019.

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European foreword

This document (EN 15276-2:2019) has been prepared by Technical Committee CEN/TC 191 "Fixed firefighting systems", the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by September 2019, and conflicting national standards shall be withdrawn at the latest by September 2019.

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 CEN/TR 15276-2:2009.

In comparison with the previous edition CEN/TR 15276-2:2009, the following technical modifications have been made:

- the Technical Report CEN/TR 15276-2:2009 has been revised and published as a standard;
- Normative references have been updated;
- Clause 3 "Terms and definitions" has been revised;
- Clause 4 "Use and limitations" has been revised;
- Clause 5 "Safety" has been revised;
- Clause 6 "System design" has been revised;
- 7.5.4 "System isolate switch" has been revised;
- Clause 8 "Detection, alarm and control systems" has been revised;
- Clause 9 "Commissioning and acceptance" has been revised;
- Clause 10 "Inspection" has been revised;
- Annex B "Toxicity Tests" has been added;
- the standard has been editorially revised.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

It has been assumed in the preparation of this document that the execution of its provisions is entrusted to appropriately qualified and experienced people in the specification, design, installation, testing, inspection, operation and maintenance of systems and equipment, for whose guidance it has been prepared, and who can be expected to exercise a duty of care to avoid unnecessary release of extinguishant.

Firefighting systems covered in this document are designed to provide a supply of fixed condensed aerosol extinguishing medium to extinguish fire.

The requirements of this document are made in the light of the best technical data known at the time of writing but, since a wide field is covered, it has been impracticable to consider every possible factor or circumstance that might affect implementation of the requirements.

It is important that the fire protection of a building or plant is considered as a whole. Aerosol extinguishant systems form only a part of the available facilities, but it should not be assumed that their adoption necessarily removes the need to consider supplementary measures, such as the provision of portable fire extinguishers or other mobile appliances for first aid or emergency use, or to deal with special hazards.

Small scale fire tests, comparable with the test methods mentioned in this standard, indicate that aerosol extinguishants can be recognized as effective media for the extinction of certain Class A fires (solid surface burning fires) and Class B and Class C fires according to EN 2, but it should not be forgotten, in the planning of comprehensive schemes, that there can be hazards for which these mediums are not suitable, or that in certain circumstances or situations there can be dangers in their use requiring special precautions.

Advice on these matters can be obtained from the appropriate manufacturer of the aerosol generators or the extinguishing system. Information can also be sought from the appropriate fire authority, the health and safety authorities and insurers. In addition, reference should be made as necessary to other standards and statutory regulations.

It is essential that firefighting equipment, the enclosure and the protected occupancy is carefully maintained and managed to ensure instant readiness when required and effectiveness of the protection.

Condensed aerosol can contain traces of toxic substances like those produced by a fire, and will obscure vision like smoke from fire.

1 Scope

This document specifies requirements and methods for the design, installation and maintenance of condensed aerosol extinguishing systems and the characteristics of the extinguishing media and types of fire for which it is a suitable extinguishing medium.

This document covers the use of condensed aerosol extinguishing systems for total flooding applications.

This document is not applicable to explosion suppression applications.

This document does not cover all legislative requirements. In certain countries specific national regulations apply and take precedence over this document. Users of this document are advised to inform themselves of the applicability or non-applicability for this document by their national responsible authorities.

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.

CEN/TS 54-14, Fire detection and fire alarm systems — Part 14: Guidelines for planning, design, installation, commissioning, use and maintenance

EN 15004-1:2019, *Fixed firefighting systems — Gas extinguishing systems — Part 1: Design, installation and maintenance (ISO 14520-1:2015, modified)*

EN 15276-1:2019, *Fixed firefighting systems — Condensed aerosol extinguishing systems — Part 1: Requirements and test methods for components*

EN 12094-1:2003, *Fixed firefighting systems — Components for gas extinguishing systems — Part 1: Requirements and test methods for electrical automatic control and delay devices*

EN 12094-2, *Fixed firefighting systems — Components for gas extinguishing systems — Part 2: Requirements and test methods for non-electrical automatic control and delay devices*

EN 12094-3, *Fixed firefighting systems — Components for gas extinguishing systems — Part 3: Requirements and test methods for manual triggering and stop devices*

EN 12094-12, *Fixed firefighting systems — Components for gas extinguishing systems — Part 12: Requirements and test methods for pneumatic alarm devices*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15276-1 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

activation mechanism

automatic or manual activation leading to the physical discharge of extinguishant

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3.2

automatic

performing a function without the necessity of intentional human intervention

3.3

automatic switch**manual switch**

means of converting the system from automatic to manual activation

3.4

clearance

3.4.1

electrical clearance

unobstructed air distance between the aerosol generator components and unenclosed or uninsulated live electrical components not at ground potential

3.4.2

thermal clearance

air distance between a condensed aerosol generator and any structure or components sensitive to the temperature developed by the generator

3.5

competent person

designated person, suitably trained, qualified by knowledge and practical experience and with the necessary instructions to enable the required tests and examinations to be carried out

3.6

condensed aerosol

extinguishing medium consisting of finely divided solid particles and gaseous matter, these being generated by a combustion process of a solid aerosol forming compound

3.7

condensed aerosol generator

non-pressurized device which, when activated, generates an aerosol and includes the mounting brackets

3.8

control device

device which is able to control the sequence of events leading to the activation

3.9

coolant

heat absorbing medium or process

3.10

design application density

extinguishing density multiplied by the safety factor, required for system design purposes

Note 1 to entry: The design application density is expressed in grams per cubic metre.

Note 2 to entry: Extinguishing density and design application density have been introduced as an alternative to extinguishing concentration and design concentration respectively as concentration of the actual aerosol cannot be measured or even assessed in some cases (the discharged medium, apart from the condensed aerosol, can contain products of the thermal decomposition of a chemical coolant).

3.11**design quantity**

mass of solid aerosol-forming composition necessary to achieve the design application density in the maximum protected volume of a specific risk

Note 1 to entry: The design quantity is expressed in grams.

3.12**discharge time**

time from the generator activation to the end of its discharge

3.13**emergency hold device**

device that prevents the electrical actuation of aerosol generators

3.14**extinguishing density**

effective minimum mass of discharged extinguishant per unit of enclosure volume required to extinguish fire involving specific fuel under defined experimental conditions

Note 1 to entry: Measured in g/m^3 .

Note 2 to entry: Based upon the test using one or more specific aerosol generator(s) and excluding the safety factor and including the efficiency of the generators

3.15**family of condensed generators**

range of generators designed with the same solid compound, the same kind of cooling device, discharge outlet, ignition device, layout and internal or external architecture with varying mass of solid compound

3.16**holding time**

period of time during which an extinguishant is required to maintain at least the extinguishing density to maintain even distribution throughout protected volume

3.17**hot work**

grinding, welding, thermal or oxygen cutting or heating and other related heat-producing or spark-producing operations

3.18**ignition device**

any device which is intended to ignite the solid aerosol-forming compound

3.19**inspection**

visual check to give reasonable assurance that the extinguishing system is fully charged and operable

Note 1 to entry: This is done by seeing that the system is in place, that it has not been activated or tampered with, and that there is no obvious physical damage or condition to prevent operation.

3.20**location drawing**

layout diagram of protected volume clearly indicating the as-installed location of all aerosol generators, controls, maintenance isolate switch or emergency hold devices and associated components of the systems

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EN 15276-2:2019 (E)**3.21****maintenance**

combination of all technical, administrative and managerial actions during the life cycle of an item intended to retain it in, or restore it to, a state in which it can perform the required function

Note 1 to entry: Technical maintenance actions include observation and analyses of the item state (e.g. inspection, monitoring, testing, diagnosis, prognosis, etc.) and active maintenance actions (e.g. repair, refurbishment).

3.22**manual**

requiring intentional intervention to accomplish a function

3.23**monitoring**

supervision of the operating integrity of an electrical, mechanical, pneumatic or hydraulic control feature of a system

3.24**normally unoccupied area**

area not normally occupied by people but which may be entered occasionally for brief periods

3.25**protected volume**

volume enclosed by the building elements around the protected enclosure, minus the volume of any permanent impermeable building element within the enclosure

3.26**release**

physical discharge or emission of an aerosol as a consequence of the generator actuation

3.27**safety factor**

multiplier of the extinguishing density to determine the aerosol design application density

3.28**solid aerosol-forming compound**

mixture of oxidant, combustible component and technical admixtures producing fire extinguishing aerosol upon activation

3.29**supplier**

entity that is responsible for the product and is able to ensure that its quality is ensured

3.30**system isolate switch**

key operated or dual mode switch manual device that prevents the electrical actuation of aerosol generators

Note 1 to entry: The actuation of this device provides an indication of system isolation.

Note 2 to entry: The intent is to prevent the discharge of agent into the hazard area when the system isolation switch device is activated.

3.31**thermal activation device**

device, which automatically operates at a rated temperature and is arranged for the activation of the solid aerosol-forming compound

3.32**total flooding system**

firefighting system arranged to discharge extinguishant into an enclosed space to achieve the appropriate design application density

3.33**unoccupiable area**

area that cannot be occupied due to dimensional or other physical constraints

Note 1 to entry: Examples of unoccupiable areas are shallow voids and cabinets.

3.34**user**

legal person, whom the system is designed for, and who is responsible for operation and to ensure the consistency of performance as described by the supplier and to follow the legal regulations

4 Use and limitations**4.1 General**

The design, installation, service and maintenance of aerosol generators shall be performed by those competent persons in fire extinguishing system technology.

The hazards against which these aerosol generators offer protection, and any limitations on their use, shall be contained in the system manufacturer's design manual.

The total flooding use of aerosol generators is primarily for protection against hazards that are within an enclosure that will permit to establish and maintain the appropriate design application density of condensed aerosol for the required period of time to ensure an effective extinguishment.

Fire test protocols for class A fires covered by this standard have preburn times of 120 s for wood fuels and 210 s for polymeric fuels. Aerosol generators systems are therefore appropriate for surface burning fires where early detection and actuation is achieved.

Effects of agent particulate residue on sensitive equipment and other objects shall be considered when using condensed aerosol extinguishing agents in spaces containing that type of equipment.

4.2 Extinguishants**4.2.1 General**

The extinguishants referred to in this document are electrically non-conductive media.

The extinguishants and specialized system parameters are each covered individually in EN 15276-1 for specific extinguishants which shall be used in conjunction with this document.

The extinguishants referred to in EN 15276-1 shall not be used on fires involving the following:

- a) chemicals containing their own supply of oxygen, such as cellulose nitrate;
- b) mixtures containing oxidizing materials, such as sodium chlorate or sodium nitrate;
- c) chemicals capable of undergoing autothermal decomposition, such as some organic peroxides;