SLOVENSKI STANDARD
oSIST prEN 12845-1:2026

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Vgrajene naprave za gašenje - Avtomatski sprinklerski sistemi - 1. del: Projektiranje, vgradnja in vzdrževanje

Fixed firefighting systems - Automatic sprinkler systems - Part 1: Design, installation and maintenance

Ortsfeste Brandbekämpfungsanlagen - Automatische Sprinkleranlagen - Planung, Installation und Instandhaltung

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Installations fixes de lutte contre l'incendie - Systèmes d'extinction automatique du type sprinkleur - Conception, installation et maintenance

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ICS:

13.220.10	Gašenje požara	Fire-fighting
13.220.20	Požarna zaščita	Fire protection

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EUROPEAN STANDARD

NORME EUROPÉENNE

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prEN 12845

October 2026

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Installations fixes de lutte contre l'incendie - Systèmes d'extinction automatique du type sprinkleur - Conception, installation et maintenance

Ortsfeste Brandbekämpfungsanlagen - Automatische Sprinkleranlagen - Planung, Installation und Instandhaltung

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 191.

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European foreword

This document (prEN 12845-1:2026) has been prepared by Technical Committee CEN/TC 191 “Fixed firefighting systems”, the secretariat of which is held by BSI.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 12845:2015+A1:2019+A2:2026.

This document is included in a series of European standards:

— CEN/TS 14816, *Fixed firefighting systems - Water spray systems - Design, installation and maintenance*;

— EN 671 (all parts), *Fixed firefighting systems - Hose systems*;

— EN 12094 (all parts), *Fixed firefighting systems - Components for gas extinguishing systems*;

— EN 12101 (all parts), *Smoke and heat control systems*;

— EN 12259 (all parts), *Fixed firefighting systems - Components for sprinkler and water spray systems*;

— EN 12416 (all parts), *Fixed firefighting systems - Powder systems*;

— EN 13565 (all parts), *Fixed firefighting systems - Foam systems*;

— EN 14972 (all parts), *Fixed firefighting systems - Water mist systems*;

— EN 12845-2, *Fixed firefighting systems - Automatic sprinkler systems - Part 2: Design and installation of ESFR and CMSA sprinkler systems;*

— EN 12845-3, *Fixed firefighting systems — Automatic sprinkler systems — Part 3: Guidance for earthquake bracing*.

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The built environment continuously evolves. So do the fire protection challenges faced. This edition of EN 12845 is a substantial revision. The objectives of the revision were to:

— provide the European market and users of EN 12845 with more up to date technologies; and

— preserve the excellent levels of performance (availability, reliability, and maintainability) of automatic fire sprinkler systems.

The expert group responsible for drafting EN 12845 draw their expertise and knowledge from global fire protection practices. Research and emerging best practice from around the world have been utilised in this update.

The bibliography of this document identifies some of the sources of knowledge and research drawn upon in the preparation of this document, and other sources of useful information in the sector. This list is not intended to be exhaustive.

EN 12845-1:2025 includes the following significant technical changes with respect to EN 12845:2015:

— the sequence of clauses has been revised to reflect the flow of work in the design and installation of a sprinkler system;

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— a new approach to hazard classification has been introduced to reduce the number of classifications, give more guidance for common hazards and to assist designers to determine the correct hazard classification and more closely align with other recognized standards;

— there are subdivisions of hazard classification to accommodate variables such as ceiling height;

— new names have been introduced for the hazard classifications along with new storage configurations;

— additional design options have been added for many hazard classifications to offer more flexibility and to introduce new technology;

— the design criteria for storage protection have been updated;

— new design criteria for sprinkler systems under high ceilings have been added;

— new design criteria to take account of the effect of combustible construction on sprinkler system performance have been added;

— some previous annexes have been incorporated in the body of the standard;

— ESFR and CMSA solutions were separated into EN 12845-2;

— pre-calculated systems were consolidated into an annex;

— furthermore, considering the changes in fire risk profiles introduced by the extensive use of plastics in many industrial manufacturing processes, in the building construction components as well as in the packaging of goods, this revision has introduced special considerations to reflect these challenges in the sprinkler protection design.

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Introduction

This document covers the classification of hazards, provision of the water supply, components to be used, installation and testing of the system, maintenance, and the extension of existing systems, and identifies construction details of buildings which are the minimum necessary for satisfactory performance of automatic sprinkler systems.

This document does not cover 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.

CMDA design approaches are covered in this document, while design approaches for ESFR and CMSA designs are in EN 12845-2, which is to be used in conjunction with EN 12845-1. EN 12845-3 gives guidance for earthquake bracing, where applicable.

Sprinkler systems according to this document provide protection of life and property, and mitigate business interruption.

An automatic sprinkler system is designed to detect a fire and extinguish it with water in its early stages or hold the fire in check so that extinguishment can be completed by other means. An automatic sprinkler system consists of a water supply and one or more sprinkler installations; each installation consists of a set of installation main alarm valves and a pipe array fitted with sprinklers. The sprinklers are fitted at specified locations at the ceiling, and where necessary between racks, below shelves and inside casing or equipment e.g. ovens or stoves. The main elements of a typical installation are shown in Figure 1.

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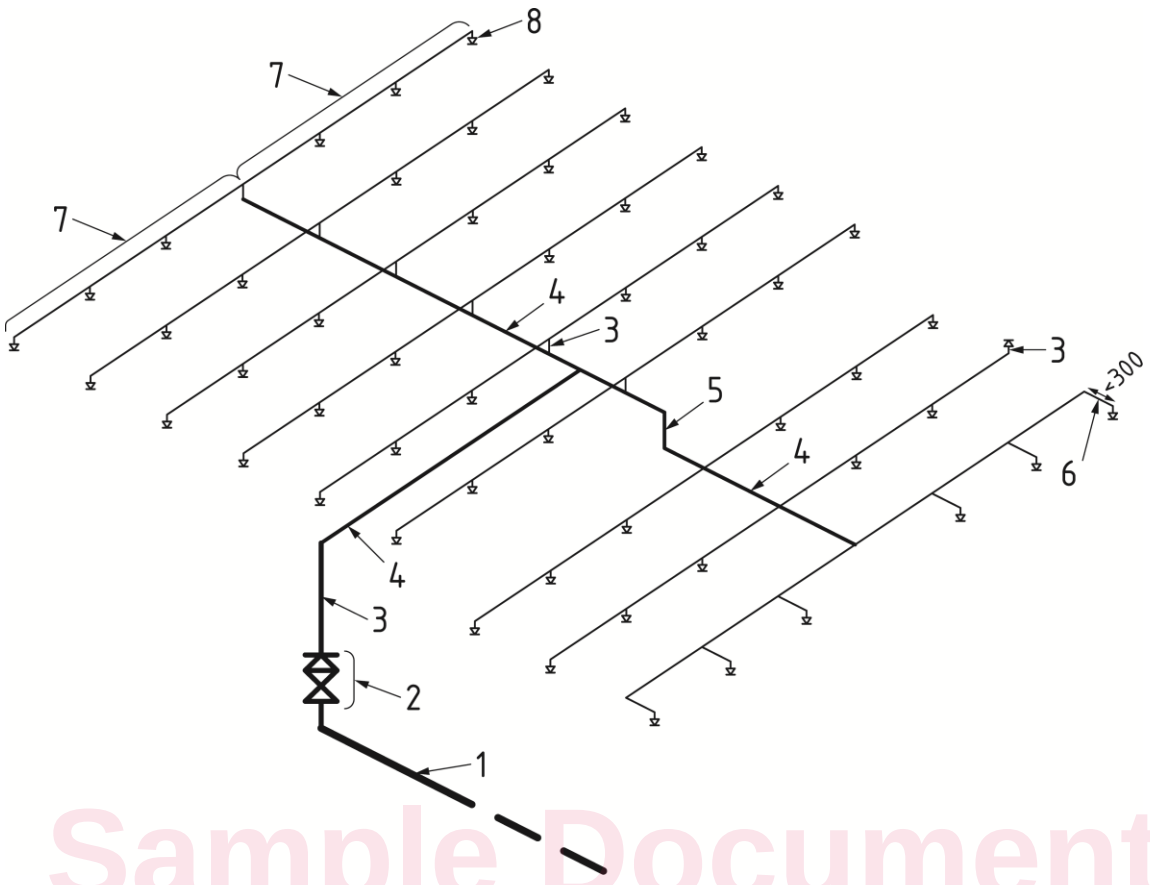

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Key

1 trunk main (see 3.2.123)
2 alarm valve set (see 3.2.28)
3 riser (see 3.2.80)
4 distribution pipe (see 3.2.31)
5 drop (see 3.2.33)
6 arm pipe (see 3.2.18)
7 range pipe (see 3.2.79)
8 sprinkler (see 3.2.81)

Figure 1 — Main elements of a sprinkler installation

The sprinklers operate at predetermined temperatures to discharge water over the affected part of the area below. The flow of water through the alarm valve initiates a fire alarm. The sprinkler operating temperature is generally selected to suit ambient temperature conditions.

Only sprinklers in the vicinity of the fire, i.e. those which become sufficiently heated, operate. The sprinkler system is intended to extend throughout the premises with only limited exceptions.

In some applications additional measures to improve automatic sprinkler system reliability and availability may be specified, such as where the automatic sprinkler system is part of the measures designed to maintain safe conditions during evacuation.

It should not be assumed that the provision of an automatic sprinkler system eliminates the need for other means of fighting fires and it is important to consider the fire precautions in the premises as a whole.

Structural fire resistance, escape routes, fire detection and fire alarm systems, particular hazards needing other fire protection methods, provision of hose reels and fire hydrants and portable fire extinguishers, etc., safe working and goods handling methods, management supervision and good housekeeping all need consideration.

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Automatic sprinkler systems should be properly maintained to ensure they operate when required. This routine is liable to be overlooked or given insufficient attention by supervisors. It is, however, neglected at peril to the lives of occupants of the premises and at the risk of crippling financial loss. The importance of proper maintenance cannot be too highly emphasised.

This document is intended for use by those concerned with specifying, purchasing, designing, installing, testing, inspecting, approving, operating and maintaining automatic sprinkler systems, in order that such a system will function as intended throughout its life.

It is a basic assumption that this standard is for the use of companies employing personnel competent in the field of application with which it deals. Only trained and experienced personnel should undertake the design, installation and maintenance of sprinkler systems (see 3.2.146). Similarly, competent technicians should be used in the installation and testing of the equipment.

CMDA (control mode density area) sprinkler protection to this standard typically utilises sprinklers in accordance with EN 12259-1 operating in control mode, i.e. which have the capability of controlling (limiting the heat release rate) fires in residential, commercial, industrial or storage applications. CMDA sprinkler protection tends to be used to good effect in a wide variety of built environment scenarios. Designs are typically specified in terms of a minimum application rate of water “density” (mm/min) to be applied over a specified area of operation “area”. ESFR (early suppression fast response) sprinkler protection in accordance with EN 12845-2 utilises sprinklers in accordance with EN 12259-13 operating in suppression mode, i.e. which have the capability of markedly suppressing (reducing the heat release rate of) fires typically within storage risks. ESFR sprinkler protection tends to be used in high hazard storage scenarios to provide effective ceiling-only sprinkler protection (although ESFR protection schemes utilising in-rack sprinklers do also exist). Designs are typically specified in terms of numbers of sprinklers operating and required sprinkler pressures.

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CMSA (Control Mode Specific Application) sprinkler protection in accordance with EN 12845-2 utilises sprinklers operating in control mode, i.e. which have the capability of controlling (limiting the heat release rate) fires within storage risks. CMSA sprinkler protection tends to be used in a variety of especially challenging high hazard storage scenarios, where alternative approaches are not considered suitable. Designs are typically specified in terms of numbers of sprinklers operating and required sprinkler pressures.

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1 Scope

This document specifies requirements for the design, installation and maintenance of new automatic sprinkler systems as well as any addition, extension or other modification of existing automatic sprinkler systems.

NOTE For ESFR and CMSA solutions, some design and installation requirements are specified in EN 12845-2.

2 Normative references

The following documents are referenced 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, *Guidelines for planning, design, installation, commissioning, use and maintenance*

CEN/TS 14816:2008, *Fixed firefighting systems — Water spray systems — Design, installation and maintenance*

EAD 330232-00-0601, *Mechanical fasteners for use in concrete*

EN 54-2, *Fire detection and fire alarm systems — Part 2: Control and indicating equipment*

EN 54-4, *Fire detection and fire alarm systems — Part 4: Power supply equipment*

EN 54-21, *Fire detection and fire alarm systems — Part 21: Alarm transmission and fault warning routing equipment*

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EN 837-1:1998, *Pressure gauges — Part 1: Bourdon tube pressure gauges — Dimensions, metrology, requirements and testing*

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EN 837-2, *Pressure gauges — Part 2: Selection and installation recommendations for pressure gauges*

EN 1057, *Copper and copper alloys — Seamless, round copper tubes for water and gas in sanitary and heating applications*

EN 1092 (all parts), *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated*

EN 1254-1, *Copper and copper alloys - Plumbing fittings - Part 1: Capillary fittings for soldering or brazing to copper tubes*

EN 1254-5, *Copper and copper alloys - Plumbing fittings - Part 5: Capillary fittings with short ends for brazing to copper tubes*

EN 1568 (all parts), *Fire extinguishing media — Foam concentrates*

EN 10216-1, *Seamless steel tubes for pressure purposes — Technical delivery conditions — Part 1: Non-alloy steel tubes with specified room temperature properties*

EN 10216-2, *Seamless steel tubes for pressure purposes - Technical delivery conditions - Part 2: Non-alloy and alloy steel tubes with specified elevated temperature properties*

EN 10217-1, *Welded steel tubes for pressure purposes — Technical delivery conditions — Part 1: Electric welded and submerged arc welded non-alloy steel tubes with specified room temperature properties*

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EN 10217-2, *Welded steel tubes for pressure purposes - Technical delivery conditions - Part 2: Electric welded non-alloy and alloy steel tubes with specified elevated temperature properties*

EN 10255, *Non-alloy steel tubes suitable for welding and threading — Technical delivery conditions*

EN 10312, *Welded stainless steel tubes for the conveyance of aqueous liquids including water for human consumption — Technical delivery conditions*

EN 12259-1:1999,[1] *Fixed firefighting systems — Components for sprinkler and water spray systems — Part 1: Sprinklers*

EN 12259-2, *Fixed firefighting systems — Components for sprinkler and water spray systems — Part 2: Wet alarm valve assemblies*

EN 12259-3, *Fixed firefighting systems — Components for sprinkler and water spray systems — Part 3: Dry alarm valve assemblies*

EN 12259-4, *Fixed firefighting systems — Components for sprinkler and water spray systems — Part 4: Water motor alarms*

EN 12259-5, *Fixed firefighting systems — Components for sprinkler and water spray systems — Part 5: Water flow detectors*

EN 12259-12, *Fixed firefighting systems — Components for sprinkler and water spray systems — Part 12: Pumps*

EN 12259-13, *Fixed firefighting systems — Components for sprinkler and water spray systems — Part 13: ESFR sprinklers*

EN 12259-14, *Fixed firefighting systems — Components for sprinkler and water spray systems — Part 14: Sprinklers for residential applications*

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EN 12845-2, *Fixed firefighting systems — Automatic sprinkler systems — Part 2: Design and installation of ESFR and CMSA sprinkler systems*

EN 13501–1, *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests*

EN 13501–2, *Fire classification of construction products and building elements — Part 2: Classification using data from fire resistance tests, excluding ventilation services*

EN 13501–3,[2] *Fire classification of construction products and building elements — Part 3: Classification using data from fire resistance tests on products and elements used in building service installations: fire resisting ducts and fire dampers*

EN 17451, *Fixed firefighting systems — Automatic sprinkler systems — Design, assembly, installation and commissioning of pump sets*

EN 60332-1-2:2004/A12:2020, *Tests on electric and optical fibre cables under fire conditions - Part 1-2: Test for vertical flame propagation for a single insulated wire or cable - Procedure for 1 kW pre-mixed flame*

EN 60332-2-2:2004, *Tests on electric and optical fibre cables under fire conditions - Part 2-2: Test for vertical flame propagation for a single small insulated wire or cable - Procedure for diffusion flame*

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[1] Impacted by EN 12259-1:1999/A1:2001, EN 12259-1:1999/A2:2004 and EN 12259-1:1999/A3:2006

[2] Impacted by EN 13501-3:2005+A1:2009

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