



NSAI
Standards

Irish Standard
I.S. EN 12845:2015+A1:2019

Fixed firefighting systems - Automatic sprinkler systems - Design, installation and maintenance

I.S. EN 12845:2015+A1:2019

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.

This document is based on:

EN 12845:2015+A1:2019

Published:

2019-12-18

This document was published under the authority of the NSAI and comes into effect on:

2020-01-06

ICS number:

13.220.20

NOTE: If blank see CEN/CENELEC cover page

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

National Foreword

I.S. EN 12845:2015+A1:2019 is the adopted Irish version of the European Document EN 12845:2015+A1:2019, Fixed firefighting systems - Automatic sprinkler systems - Design, installation and maintenance

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

For relationships with other publications refer to the NSAI web store.

Compliance with this document does not of itself confer immunity from legal obligations.

In line with international standards practice the decimal point is shown as a comma (,) throughout this document.

This page is intentionally left blank

EUROPEAN STANDARD

EN 12845:2015+A1

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2019

ICS 13.220.20

Supersedes EN 12845:2015

English Version

Fixed firefighting systems - Automatic sprinkler systems - Design, installation and maintenance

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 European Standard was approved by CEN on 20 December 2014 and includes Amendment 1 approved by CEN on 2 October 2019.

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.

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 CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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, Turkey and United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword.....	12
Introduction	13
1 Scope.....	15
2 Normative references.....	15
3 Terms and definitions	16
4 Contract planning and documentation.....	24
4.1 General.....	24
4.2 Initial considerations.....	24
4.3 Preliminary or estimating stage	24
4.4 Design stage	25
4.4.1 General.....	25
4.4.2 Summary schedule.....	25
4.4.3 Installation layout drawings	25
4.4.4 Water supply.....	28
5 Extent of sprinkler protection.....	31
5.1 Buildings and areas to be protected.....	31
5.1.1 General.....	31
5.1.2 Permitted exceptions within a building.....	31
5.1.3 Necessary exceptions.....	31
5.2 Storage in the open air	31
5.3 Fire resistant separation	31
5.4 Protection of concealed spaces	32
5.5 Height difference between the highest and lowest sprinklers.....	32
6 Classification of occupancies and fire hazards.....	32
6.1 General.....	32
6.2 Hazard classes	32
6.2.1 General.....	32
6.2.2 Light Hazard - LH	32
6.2.3 Ordinary Hazard - OH.....	32
6.2.4 High Hazard - HH	33
6.3 Storage	34
6.3.1 General.....	34
6.3.2 Storage Configuration.....	34
7 Hydraulic design criteria.....	37
7.1 LH, OH and HHP	37
7.2 High Hazard Storage - HHS.....	38
7.2.1 General.....	38
7.2.2 Ceiling or roof protection only	38
7.2.3 Intermediate level in-rack sprinklers	39
7.3 Pressure and flow requirements for pre-calculated systems.....	41
7.3.1 LH and OH systems	41
7.3.2 HHP and HHS systems without in-rack sprinklers.....	42
8 Water supplies	44

8.1	General	44
8.1.1	Duration	44
8.1.2	Continuity	44
8.1.3	Frost protection	44
8.2	Maximum water pressure	44
8.3	Connections for other services	45
8.4	Housing of equipment for water supplies	46
8.5	Test facility devices	46
8.5.1	General	46
8.5.2	At pump house	47
8.5.3	At control valve sets	47
8.6	Water supply test	47
8.6.1	General	47
8.6.2	Storage tank and pressure tank supplies	47
8.6.3	Town main, booster pump, elevated private reservoir and gravity tank supplies	48
9	Type of water supply	48
9.1	General	48
9.2	Town mains	48
9.3	Storage tanks	48
9.3.1	General	48
9.3.2	Water volume	49
9.3.3	Refill rates for full capacity tanks	50
9.3.4	Reduced capacity tanks	50
9.3.5	Effective capacity of tanks and dimensions of suction chambers	52
9.3.6	Strainers	53
9.4	Inexhaustible sources – settling and suction chambers	53
9.5	Pressure tanks	56
9.5.1	General	56
9.5.2	Housing	56
9.5.3	Minimum capacity (water)	56
9.5.4	Air pressure and contents	56
9.5.5	Charging with air and water	57
9.5.6	Control and safety equipment	57
9.6	Choice of water supply	57
9.6.1	Single water supplies	57
9.6.2	Superior single water supplies	58
9.6.3	Duplicate water supplies	58
9.6.4	Combined water supplies	58
9.7	Isolation of water supply	59
10	Pumps	59
10.1	General	59
10.2	Multiple pump arrangements	59
10.3	Compartments for pumpsets	60
10.3.1	General	60
10.3.2	Sprinkler protection	60
10.3.3	Temperature	60
10.3.4	Ventilation	60
10.4	Maximum temperature of water supply	60
10.5	Valves and accessories	60
10.6	Suction conditions	61
10.6.1	General	61
10.6.2	Suction pipe	61

EN 12845:2015+A1:2019 (E)

10.7	Performance characteristics.....	64
10.7.1	Pre-calculated systems - LH and OH.....	64
10.7.2	Pre-calculated systems - HHP and HHS with no in-rack sprinklers.....	65
10.7.3	Calculated systems.....	66
10.7.4	Pressure and water capacity of boosted town mains.....	67
10.7.5	Pressure switches.....	67
10.8	Electrically driven pumpsets.....	67
10.8.1	General.....	67
10.8.2	Electricity supply.....	67
10.8.3	Main switchboard.....	68
10.8.4	Installation between the main switchboard and the pump controller.....	68
10.8.5	Pump controller.....	69
10.8.6	Monitoring of pump operation.....	69
10.9	Diesel engine driven pumpsets.....	69
10.9.1	General.....	69
10.9.2	Engines.....	69
10.9.3	Cooling system.....	70
10.9.4	Air filtration.....	70
10.9.5	Exhaust system.....	70
10.9.6	Fuel, fuel tank and fuel feed pipes.....	70
10.9.7	Starting mechanism.....	71
10.9.8	Electric starter motor batteries.....	72
10.9.9	Battery chargers.....	72
10.9.10	Siting of batteries and chargers.....	72
10.9.11	Starter alarm indication.....	72
10.9.12	Tools and spare parts.....	73
10.9.13	Engine tests and exercising.....	73
11	Installation type and size.....	74
11.1	Wet pipe installations.....	74
11.1.1	General.....	74
11.1.2	Protection against freezing.....	74
11.1.3	Size of installations.....	74
11.2	Dry pipe installations.....	75
11.2.1	General.....	75
11.2.2	Size of installations.....	75
11.3	Alternate installations.....	75
11.3.1	General.....	75
11.3.2	Size of installations.....	76
11.4	Pre-action installations.....	76
11.4.1	General.....	76
11.4.2	Automatic detection system.....	76
11.4.3	Size of installations.....	77
11.5	Subsidiary dry pipe or alternate extension.....	77
11.5.1	General.....	77
11.5.2	Size of subsidiary extensions.....	77
11.6	Subsidiary water spray extension.....	77
12	Spacing and location of sprinklers.....	77
12.1	General.....	77
12.2	Maximum area of coverage per sprinkler.....	78
12.3	Minimum distance between sprinklers.....	80
12.4	Location of sprinklers in relation to building construction.....	80
12.5	Intermediate sprinklers in HH occupancies.....	86

12.5.1	General	86
12.5.2	Maximum vertical distance between sprinklers at intermediate levels	86
12.5.3	Horizontal position of sprinklers at intermediate levels.....	86
12.5.4	Numbers of rows of sprinklers at each level	88
12.5.5	HHS intermediate sprinklers in non-shelved racks.....	88
12.5.6	HHS intermediate sprinklers below solid or slatted shelves in racks (ST5 and ST6)	89
13	Pipe sizing and layout	90
13.1	General	90
13.2	Calculation of pressure losses in pipework	90
13.2.1	Pipe friction loss	90
13.2.2	Static pressure difference.....	91
13.2.3	Velocity.....	91
13.2.4	Pressure loss through fittings and valves.....	91
13.2.5	Accuracy of calculations.....	92
13.3	Pre-calculated systems.....	93
13.3.1	General	93
13.3.2	Location of Design Points.....	93
13.3.3	Light Hazard - LH	94
13.3.4	Ordinary Hazard - OH.....	96
13.3.5	High hazard - HHP and HHS (except intermediate level sprinklers).....	97
13.4	Fully calculated systems	106
13.4.1	Design density.....	106
13.4.2	Locations of the area of operation.....	107
13.4.3	Shape of the area of operation	107
13.4.4	Minimum sprinkler discharge pressure	110
13.4.5	Minimum pipe diameters	110
14	Sprinkler design characteristics and uses.....	111
14.1	General	111
14.2	Sprinkler types and application.....	111
14.2.1	General	111
14.2.2	Ceiling, flush, recessed and concealed pattern.....	112
14.2.3	Sidewall pattern	112
14.2.4	Flat spray pattern	112
14.3	Flow from sprinklers.....	112
14.4	Sprinkler temperature ratings	113
14.5	Sprinkler thermal sensitivity.....	114
14.5.1	General	114
14.5.2	Interaction with other measures.....	114
14.6	Sprinkler guards	114
14.7	Sprinkler water shields.....	114
14.8	Sprinkler rosettes.....	115
14.9	Corrosion protection of sprinklers	115
15	Valves.....	115
15.1	Control valve set.....	115
15.2	Stop valves.....	115
15.3	Ring main valves	115
15.4	Drain valves	115
15.5	Test valves.....	116
15.5.1	Alarm and pump start test valves.....	116
15.5.2	Remote test valves.....	117
15.6	Flushing connections.....	117
15.7	Pressure gauges	117

EN 12845:2015+A1:2019 (E)

15.7.1	General.....	117
15.7.2	Water supply connections.....	117
15.7.3	Control valve set.....	117
15.7.4	Removal.....	118
16	Alarms and alarm devices.....	118
16.1	Water flow alarms.....	118
16.1.1	General.....	118
16.1.2	Water motor and gong.....	118
16.1.3	Piping to water motor.....	118
16.2	Electrical water flow and pressure switches	118
16.2.1	General.....	118
16.2.2	Water flow alarm switches	118
16.2.3	Dry and pre-action systems.....	119
16.3	Fire brigade and remote central station alarm connection.....	119
17	Pipework.....	119
17.1	General.....	119
17.1.1	Underground piping.....	119
17.1.2	Above ground piping.....	119
17.1.3	Welding of steel pipe.....	119
17.1.4	Flexible pipes and joints	120
17.1.5	Concealment.....	120
17.1.6	Protection against fire and mechanical damage.....	120
17.1.7	Painting.....	120
17.1.8	Drainage	120
17.1.9	Copper pipe	121
17.2	Pipe supports.....	121
17.2.1	General.....	121
17.2.2	Spacing and location	121
17.2.3	Design.....	122
17.3	Pipework in concealed spaces.....	122
17.3.1	General.....	122
17.3.2	False ceilings above OH occupancies	122
17.3.3	All other cases	123
18	Signs, notices, and information.....	123
18.1	Block plan	123
18.2	Signs and notices	123
18.2.1	Location plate	123
18.2.2	Signs for stop valves.....	123
18.2.3	Control valve set.....	123
18.2.4	Water supply connections to other services	124
18.2.5	Suction and booster pumps.....	124
18.2.6	Electric switches and control panels.....	124
18.2.7	Testing and operating devices.....	125
19	Commissioning.....	125
19.1	Commissioning tests	125
19.1.1	Pipework.....	125
19.1.2	Equipment	125
19.1.3	Water supplies	126
19.2	Completion certificate and documents	126
20	Maintenance.....	126
20.1	General.....	126

20.1.1	Introduction.....	126
20.1.2	Programmed work.....	126
20.1.3	Precautions while carrying out work.....	126
20.1.4	Replacement sprinklers.....	126
20.2	User's programme of inspection and checking.....	127
20.2.1	General.....	127
20.2.2	Weekly routine.....	127
20.2.3	Monthly routine.....	128
20.3	Service, testing and maintenance schedule.....	128
20.3.1	General.....	128
20.3.2	Quarterly routine.....	128
20.3.3	Half-yearly routine.....	129
20.3.4	Yearly routine.....	130
20.3.5	3 Yearly routine.....	130
20.3.6	10 yearly routine.....	131
21	☞ Periodic system inspection.....	131
Annex A (normative) Classification of typical hazards.....		132
Annex B (normative) Methodology for categorizing stored goods.....		135
B.1	General.....	135
B.2	Material factor (M).....	135
B.2.1	General.....	135
B.2.2	Material Factor 1.....	135
B.2.3	Material factor 2.....	136
B.2.4	Material factor 3.....	136
B.2.5	Material factor 4.....	137
B.3	Storage configuration.....	137
B.3.1	Effect of storage configuration.....	137
B.3.2	Exposed plastic container with non-combustible content.....	138
B.3.3	Exposed plastic surface - unexpanded.....	138
B.3.4	Exposed plastic surface - expanded.....	138
B.3.5	Open structure.....	138
B.3.6	Solid block materials.....	139
B.3.7	Granular or powdered materials.....	139
B.3.8	No special configuration.....	139
Annex C (normative) Alphabetical listing of stored products and categories.....		140
Annex D (normative) Zoning of sprinkler installations.....		144
D.1	General.....	144
D.2	Zoning of installations.....	144
D.3	Requirements for zoned installations.....	144
D.3.1	Extent of zones.....	144
D.3.2	Zone subsidiary stop valves.....	144


EN 12845:2015+A1:2019 (E)

D.3.3	Flushing Valves	144
D.3.4	Monitoring	144
D.3.5	Zone test and drainage facilities.....	145
D.3.6	Installation control valve set	145
D.3.7	Installation monitoring and alarms	145
D.4	Block plan	145
Annex E (normative) Special requirements for high rise systems.....		147
E.1	General.....	147
E.2	Design criteria.....	147
E.2.1	Hazard group	147
E.2.2	Subdivision of high rise sprinkler systems.....	147
E.2.3	Standing water pressures at non-return and alarm valves	147
E.2.4	Calculation of distribution pipework for pre-calculated systems.....	147
E.2.5	Water pressures	147
E.3	Water supplies	148
E.3.1	Types of water supplies	148
E.3.2	Pressure and flow requirements for pre-calculated installations	148
E.3.3	Water supply characteristics for pre-calculated installations	148
E.3.4	Pump performance for pre-calculated installations	148
Annex F (normative) Additional measures to improve system reliability and availability		151
F.1	General.....	151
F.2	Subdivision into zones	151
F.3	Wet pipe installations.....	151
F.4	Sprinkler type and sensitivity	151
F.5	Control valve set.....	151
F.6	Water supplies	151
F.7	Additional measures for theatres	151
F.8	Additional precautions for maintenance	152
Annex G (normative) Protection of special hazards.....		153
G.1	General.....	153
G.2	Aerosols	153
G.3	Clothes in multiple garment hanging storage.....	153
G.3.1	General.....	153
G.3.2	Categorization	154
G.3.3	Sprinkler protection other than at ceiling.....	154
G.3.4	Sprinklers in operation.....	154

G.3.5	Ceiling sprinklers	154
G.3.6	Automatic shutdown	154
G.3.7	Control valve set.....	155
G.4	Flammable liquid storage.....	155
G.5	Idle pallets.....	157
G.6	Spirit based liquors in wooden barrels	158
G.7	Non-woven synthetic fabric	158
G.7.1	Free standing storage.....	158
G.7.2	Rack storage	159
G.8	Polypropylene or polyethylene storage bins.....	159
G.8.1	General	159
G.8.2	Classification	159
G.8.3	Palletized rack storage (ST4)	159
G.8.4	All other storage.....	159
G.8.5	Foam additive.....	160
Annex H	(normative) Sprinkler systems monitoring.....	161
H.1	General	161
H.2	Functions to be monitored.....	161
H.2.1	General	161
H.2.2	Stop valves controlling water flow to sprinklers	161
H.2.3	Other stop valves	161
H.2.4	Liquid levels.....	161
H.2.5	Pressures	161
H.2.6	Electrical power	162
H.2.7	Temperature	162
Annex I	(normative) Transmission of alarms	163
I.1	Functions to be monitored	163
I.2	Alarm levels.....	164
Annex J	(informative) Precautions and procedures when a system is not fully operational.....	165
J.1	Minimizing the effects.....	165
J.2	Planned shut-down	165
J.3	Unplanned shut-down.....	166
J.4	Action following sprinkler operation.....	166
J.4.1	General	166
J.4.2	Installations protecting cold storage warehouses (air circulation refrigeration)	166
Annex K	(informative) Twenty-five year inspection.....	167

EN 12845:2015+A1:2019 (E)

Annex L (informative) Special technology	168
Annex M (informative) Independent certification body	169
Annex N (normative) Control Mode Specific Application Sprinklers: CMSA	170
N.1 Introduction	170
N.1.1 General	170
N.1.2 Definitions	170
N.1.3 General	170
N.1.4 Sprinkler type and temperature rating	170
N.1.5 Water demand	171
N.2 Sprinkler location	171
N.2.1 Sprinkler spacing	171
N.2.2 Range pipe sizes	171
N.2.3 Minimum clear space below sprinklers	171
N.2.4 Excessive clearance	171
N.2.5 Distance of sprinklers below ceiling	171
N.2.6 Location of sprinklers in beam and girder, concrete T and panel construction	172
N.2.7 Obstructions to sprinkler distribution	172
N.3 Design	176
Annex O (informative) Example of P&ID	182
Annex P (normative) ESFR sprinkler protection	183
P.1 Introduction	183
P.2 Scope	183
P.3 Definitions	183
P.3.1 Sprinkler, ESFR pattern	183
P.3.2 Suppression mode	183
P.3.3 Classification of goods	183
P.3.4 Ceiling height	184
P.3.5 Laced tyre storage	184
P.3.6 Paper categories, based on weight	184
P.4 Contract arrangements	184
P.5 General	184
P.6 Occupancies and fire hazards	185
P.7 Racked, shelved and post pallet storage	185
P.7.1 Longitudinal and transverse flues	185
P.7.2 Shelving	186
P.7.3 In-rack sprinklers for ESFR systems	186

P.7.4	Design requirements	186
P.8	Building requirements	205
P.8.1	Roof or ceiling slope	205
P.8.2	Measures required to correct excessive roof or ceiling slope	205
P.8.3	Ceiling strength	206
P.8.4	Sky lights	206
P.8.5	Powered ventilation	206
P.8.6	Walkways and conveyors	208
P.8.7	Sprinkler protection beneath mezzanines	208
P.9	ESFR sprinkler installation design	208
P.9.1	Installation type	208
P.9.2	Sprinkler nominal k-factor	208
P.9.3	Temperature ratings thermal sensitivity and colour codings	208
P.9.4	ESFR sprinkler location relative to obstructions at or near the ceiling or roof	209
P.10	Pipe sizing	210
P.10.1	General	210
P.10.2	Minimum pipe sizes	210
P.10.3	Minimum ESFR sprinkler flow pressure	210
P.10.4	The number of sprinklers assumed to be operating	210
P.10.5	Shape of design sprinkler area	211
P.10.6	Sprinklers beneath obstructions	211
P.11	Sprinkler spacing and location	211
P.11.1	ESFR sprinkler area of coverage	211
P.11.2	Obstructions	211
P.11.3	Sprinkler positioning relative to roof and ceilings	212
P.11.4	Sprinkler orientation relative to the floor or pipework	212
P.11.5	Clear space below sprinklers	212
P.11.6	Sprinkler location relative to draught or smoke curtains	212
P.11.7	Positioning of ESFR sprinklers relative to draught or smoke curtains	212
P.11.8	ESFR sprinkler protection adjacent to areas protected by standard sprinklers	212
P.12	Water supplies	213
P.12.1	Pump drive and power arrangements	213
P.12.2	Pump selection	213
P.12.3	Duration	213
Annex Q	(informative)  Periodic system inspection	214
Bibliography	215

EN 12845:2015+A1:2019 (E)**European foreword**

This document (EN 12845:2015+A1:2019) 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 June 2020, and conflicting national standards shall be withdrawn at the latest by June 2020.

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 A1 EN 12845:2015 and EN 12845:2015/AC:2016 A1.

The start and finish of text introduced or altered by amendment is indicated in the text by tags AC AC and A1 A1.

It is included in a series of European Standards planned to cover:

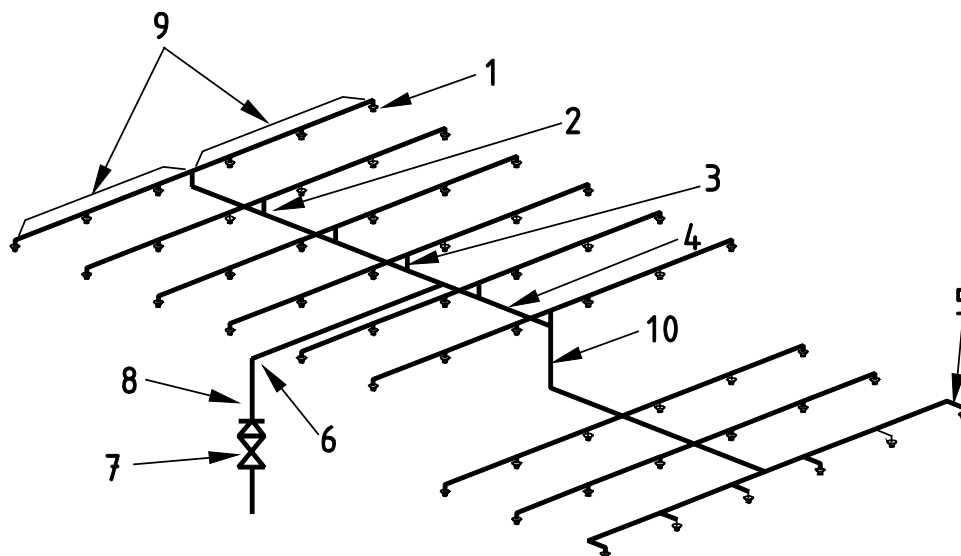
- automatic sprinkler systems (EN 12259);
- gas extinguishing systems (EN 12094);
- powder systems (EN 12416);
- explosion protection systems (ISO 6184);
- foam systems (EN 13565);
- gas systems (EN 12094);
- hydrant and hose reel systems (EN 671);
- smoke and heat control systems (EN 12101).

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, Turkey and the United Kingdom.

Introduction

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.

A sprinkler system consists of a water supply (or supplies) and one or more sprinkler installations; each installation consists of a set of installation main control valves and a pipe array fitted with sprinkler heads. The sprinkler heads are fitted at specified locations at the roof or ceiling, and where necessary between racks, below shelves, and in ovens or stoves. The main elements of a typical installation are shown in Figure 1.



Key

1	sprinkler head	6	main distribution pipe
2	riser	7	control valve set
3	design point	8	riser
4	distribution pipe spur	9	range pipes
5	arm pipe	10	drop

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 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.

It should not be assumed that the provision of a sprinkler system entirely obviates 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 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.

It is essential that sprinkler systems should be properly maintained to ensure operation when required. This routine is liable to be overlooked or given insufficient attention by supervisors. It is, however,

EN 12845:2015+A1:2019 (E)

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 emphasized.

When sprinkler systems are out of service extra attention should be paid to fire precautions and the appropriate authorities informed.

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. Similarly, competent technicians should be used in the installation and testing of the equipment (see Annex M).

1 Scope

This European Standard specifies requirements and gives recommendations for the design, installation and maintenance of fixed fire sprinkler systems in buildings and industrial plants, and particular requirements for sprinkler systems that are integral to measures for the protection of life.

This European Standard covers only the types of sprinkler specified in EN 12259-1 (see Annex L).

The requirements and recommendations of this European Standard are also applicable to any addition, extension, repair or other modification to a sprinkler system. They are not applicable to water spray or deluge systems.

It covers the classification of hazards, provision of water supplies, 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 sprinkler systems complying with this European Standard.

This European Standard does not cover water supplies to systems other than sprinklers. Its requirements can be used as guidance for other fixed firefighting extinguishing systems, provided that any specific requirements for other firefighting extinguishing supplies are taken into account.

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

This European Standard is intended only for fixed fire sprinkler systems in buildings and other premises on land. Although the general principles might well apply to other uses (e.g. maritime use). For these other uses additional considerations should be taken into account.

The requirements are not valid for automatic sprinkler systems on ships, in aircraft, on vehicles and mobile fire appliances or for below ground systems in the mining industry.

Sprinkler system design deviations might be allowed when such deviations have been shown to provide a level of protection at least equivalent to this European Standard, for example by means of full-scale fire testing where appropriate, and where the design criteria have been fully documented.

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.

EN 54 (all parts), *Fire detection and fire alarm systems*

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

EN 1254 (all parts), *Copper and copper alloys — Plumbing fittings*

EN 12259-1, *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 automatic sprinkler and water spray systems — Part 3: Dry alarm valve assemblies*

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
 - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-