Irish Standard
I.S. EN 16925:2018&LC:2018&AC:2020

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

I.S. EN 16925:2018&LC:2018&AC:2020

Incorporating amendments/corrigenda/National Annexes issued since publication:

EN 16925:2018/AC:2020

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: *Published:*

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

2020-05-18

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 16925:2018&LC:2018&AC:2020 is the adopted Irish version of the European Document EN 16925:2018, Fixed firefighting systems - Automatic residential 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

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 16925:2018/AC

April 2020

ICS 13.220.20

English version

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

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

Ortsfeste Brandbekämpfungsanlagen - Automatische Sprinkleranlagen für Wohnbereiche - Planung, Installation und Instandhaltung

This corrigendum becomes effective on 29 April 2020 for incorporation in the official English version of the EN.

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

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

Ref. No.:EN 16925:2018/AC:2020 E

1 Modification to Table 6 — Sidewall sprinkler distances and maximum depth of an obstruction located perpendicular to the direction of throw

Replace Table 6 with the following: "

Distance from sidewall sprinkler to side of obstruction (A)	Maximum allowable distance of deflector above bottom of obstruction (B)
Less than 450 mm	0
450 mm to less than 900 mm	25 mm
900 mm to less than 1 200 mm	75 mm
1 200 mm to less than 1 350 mm	125 mm
1 350 mm to less than 1 800 mm	175 mm
1 800 mm to less than 1 950 mm	225 mm
1 950 mm to less than 2 100 mm	275 mm
2 100 mm to less than 2 250 mm	350 mm

".

2 Modification to Table 7 — Position of sidewall sprinklers to avoid obstacles to discharge

Replace Table 7 with the following: "

Distance from sidewall sprinkler to side of obstruction (A)	Maximum allowable distance of deflector above bottom of obstruction (B)
Less than 2,4 m	Not allowed
2,4 m to less than 3 m	25 mm
3 m to less than 3,3 m	50 mm
3,3 m to less than 3,6 m	75 mm
3,6 m to less than 3,9 m	100 mm
3,9 m to less than 4,2 m	150 mm
4,2 m to less than 4,5 m	175 mm
4,5 m to less than 4,8 m	225 mm
4,8 m to less than 5,1 m	275 mm
5,1 m or greater	350 mm

".

Correction Notice

Reference: EN 16925:2018

Title: 00191238

Work Item: Fixed firefighting systems - Automatic residential sprinkler systems - Design, installation and maintenance

Brussels, 2018-12-19

please include the following minor editorial correction(s) in the document related to:

the following language version(s) :
- ☒ English
- ☐ French
- ☐ German

for the following procedure :
- ☐ PQ/UQ
- ☐ Enquiry
- ☐ 2nd Enquiry
- ☐ Parallel Enquiry
- ☐ 2nd Parallel Enquiry
- ☐ Formal Vote
- ☐ 2nd Formal Vote
- ☐ Parallel Formal Vote
- ☐ 2nd Parallel Formal Vote
- ☐ UAP
- ☐ TC Approval
- ☐ 2nd TC Approval
- ☒ Publication
- ☐ Parallel Publication

It has been brought to our attention that this document, issued on 2018-12-12, requires modification.

In 11.5.2, replace twice "Tables 9 and 10" *with* "Tables 6 and 7".

Please find enclosed the updated English version.

We apologise for any inconvenience this may cause.

Rue de la Science, 23 • 1040 Bruxelles
Tel : +32 2 550 08 11 • Fax : +32 2 550 08 19

This page is intentionally left BLANK.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 16925

December 2018

ICS 13.220.20

English Version

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

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

Ortsfeste Brandbekämpfungsanlagen - Automatische Sprinkleranlagen für Wohnbereiche - Planung, Installation und Instandhaltung

This European Standard was approved by CEN on 24 September 2018.

This European Standard was corrected and reissued by the CEN-CENELEC Management Centre on 19 December 2018.

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

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

Ref. No. EN 16925:2018 E

Contents

Page

European foreword ... 5

Introduction ... 6

1 Scope ... 7

2 Normative references ... 7

3 Terms and definitions ... 8

4 Contract planning and documentation ... 11
4.1 General ... 11
4.2 Preliminary stage ... 11
4.3 Consultation ... 12
4.4 Design stage ... 13

5 Extent of residential sprinkler protection ... 17
5.1 Buildings and areas to be protected ... 17
5.2 Permitted exceptions ... 17
5.3 Design Criteria - limited areas within the building that are not residential occupancies. 19
5.4 Fire resistant separation ... 19

6 Hydraulic design and pipe layout ... 20
6.1 Hydraulic design criteria ... 20
6.2 Locations of the area of operation — Hydraulic demand ... 20
6.3 Hydraulic Calculations ... 20
6.4 Pipe layout ... 21
6.5 Flexible Sprinkler Hose ... 21

7 Water supplies ... 22
7.1 Water supply ... 22
7.2 Backflow prevention ... 22
7.3 Maximum water pressure ... 22
7.4 Housing of equipment for water supplies ... 22
7.5 Test facility devices ... 22

8 Type of water supply ... 23
8.1 General ... 23
8.2 Water main ... 23
8.3 Storage tanks ... 24
8.4 Pressure tanks ... 26

9 Residential Sprinkler System Pumps ... 26
9.1 General – All types of residential sprinkler systems ... 26
9.2 Compartments for pump sets ... 27
9.3 Temperature requirements ... 27
9.4 Valves and accessories ... 27
9.5 Suction conditions ... 27
9.6 Performance characteristics ... 29
9.7 Electrically driven pump set – All types of residential sprinkler systems ... 31

10 Installation type and size ... 32
10.1 Wet pipe installations ... 32
10.2 Dry pipe installations ... 37
10.3 Pre-action installations ... 37

11 Spacing and location of sprinklers 37
11.1 General 37
11.2 Spacing of residential sprinklers 38
11.3 Distance of residential sprinklers from walls 39
11.4 Deflector position of residential sprinklers 39
11.5 Obstructions in relation to residential sprinklers 39
11.6 Small compartments 46

12 Sprinkler design characteristics and uses 46
12.1 General 46
12.2 Sprinkler types and application 46
12.3 Sprinkler nominal operating temperatures 46
12.4 Sprinkler rosettes and cover plates 47

13 Valves and gauges 48
13.1 Control valve set 48
13.2 Stop valves 48
13.3 Drain requirements 48
13.4 Test valves 48
13.5 Pressure gauges 48

14 Alarms and alarm devices 49
14.1 System monitoring and alarm transmission 49
14.2 Water flow A alarm 49
14.3 Alarm connection 49

15 Pipework 50
15.1 Pipe system 50
15.2 Pipe supports 51

16 Signs, notices and information 52
16.1 Block plan 52
16.2 Signs and notices 53

17 Commissioning tests 54
17.1 General 54
17.2 All pipework 54
17.3 Dry pipework 54
17.4 Completion certificate and documents 54

18 Inspection, testing and maintenance 55
18.1 General 55
18.2 Spare sprinklers 55
18.3 Precautions while carrying out work 55
18.4 Annual inspection 55
18.5 Long-term inspections 57

Annex A (normative) Sprinkler system zoning 58

A.1 General 58

A.2 Guidance for zoned installations 58

Annex B (normative) Sprinkler system monitoring 59

B.1 Type 1 systems 59

B.2 Type 2 and 3 systems 59

B.3 Functions to be monitored 59

Annex C (normative) Transmission of alarms 61

C.1 Type 1 systems 61
C.2 Type 2 and Type 3 systems 61
Annex D (normative) Hydraulic calculations 63
D.1 Static pressure 63
D.2 Flow from a sprinkler 63
D.3 Pipe friction loss 63
D.4 Pressure loss through fittings and valves 64
D.5 Velocity 66
D.6 Accuracy of calculations 66
Annex E (normative) Long term inspection and testing of pipework and sprinklers 67
Annex F (informative) Special circumstances 68
Annex G (informative) Typical water supply arrangements 69
Annex H (informative) Precautions and procedures when a system is not fully operational 72
H.1 Minimizing the fire safety risk when a sprinkler system is shut down 72
H.2 Planned shut-down 72
H.3 Unplanned shut-down 72
H.4 Action following sprinkler operation 73
Annex I (informative) Hydraulic test 74
Annex J (informative) New technology 76
Bibliography 77

European foreword

This document (EN 16925:2018) 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 2019, and conflicting national standards shall be withdrawn at the latest by September 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.

Annexes A to E are normative. Annexes F to J are informative.

This standard is part of a series of standards which includes the following:

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

— EN 12845, *Fixed firefighting systems – Automatic sprinkler systems*;

— prEN 14972 (all parts), *Fixed firefighting systems – Water mist systems*;

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

— EN 15004 (all parts), *Fixed firefighting systems – Gas extinguishing systems*;

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

— ISO 6184 (all parts), *Fixed firefighting systems – Explosion protection systems*;

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

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

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

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

Sprinkler systems have demonstrated their value in protecting life and property in industrial and commercial applications for over 100 years. The recognition that the largest number of deaths from fire occur in the home has led to the introduction of sprinkler systems specifically designed for residential occupancies.

A correctly designed and installed residential sprinkler system can detect and control a fire at an early stage of development and activate a fire alarm. Operation of the system rapidly reduces the rate of production of heat and smoke, allowing more time for occupants to escape to safety or be rescued.

Sprinklers operate at predetermined temperatures to discharge water over the area below. Only the sprinklers near the fire, which are individually heated above their operating temperature, will operate. The flow of water initiates a fire alarm signal to draw attention to the operation of the system. The operating temperature is generally selected to suit ambient temperature conditions.

It is essential that residential sprinkler systems are properly maintained and regularly tested to ensure correct operation in case of fire.

It should not be assumed that the provision of a residential sprinkler system eliminates the need for other means of detecting and fighting fires and it is important to consider the fire precautions in the occupancy as a whole. Structural fire resistance, escape routes, smoke alarms, fire alarm systems, provision of portable extinguishers, training and information all need consideration.

It is assumed that the building design and construction will be in accordance with local building codes and national requirements. If the residential sprinkler system is to be used to compensate for other fire protection measures, such as walls or doors, building authorities may require the installation of a system with additional measures to enhance performance and/or reliability.

Only a competent person should undertake the design, installation, inspection, testing and maintenance of residential sprinkler systems. This standard does not necessarily cover all local or national legislative requirements, which may take precedence over this standard.

1 Scope

This document specifies requirements and gives recommendations for the design, installation, water supplies and backflow prevention, commissioning, maintenance and testing of fixed residential fire sprinkler systems in buildings for residential occupancies.

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

This document identifies construction details of buildings which are the minimum necessary for satisfactory performance of residential sprinkler systems complying with this standard.

This document applies to any addition, extension, repair or other modification to the residential sprinkler system.

This document does not cover situations such as arson where fires of a malicious intent may be started in multiple locations simultaneously.

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 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 10205, *Cold reduced tinmill products — Blackplate*

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

EN 10217-1, *Welded steel tubes for pressure purposes — Technical delivery conditions — Part 1: Non-alloy steel tubes with specified room temperature properties*

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

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

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

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

EN 12845, *Fixed firefighting systems — Automatic sprinkler systems — Design, installation and maintenance*

EN 1717, *Protection against pollution of potable water in water installations and general requirements of devices to prevent pollution by backflow*

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