



**NSAI**  
Standards

Irish Standard  
I.S. EN 12101-2:2017

## Smoke and heat control systems - Part 2: Natural smoke and heat exhaust ventilators

**I.S. EN 12101-2:2017**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

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## National Foreword

I.S. EN 12101-2:2017 is the adopted Irish version of the European Document EN 12101-2:2017, Smoke and heat control systems - Part 2: Natural smoke and heat exhaust ventilators

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## Smoke and heat control systems - Part 2: Natural smoke and heat exhaust ventilators

Systèmes pour le contrôle des fumées et de la chaleur -  
Partie 2 : Dispositifs d'évacuation naturelle de fumées  
et de chaleur

Rauch- und Wärmefreihaltung - Teil 2: Natürliche  
Rauch- und Wärmeabzugsgeräte

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## Contents

Page

European foreword.....	5
Introduction .....	6
1 Scope.....	7
2 Normative references.....	7
3 Terms, definitions, symbols and abbreviations.....	7
3.1 Terms and definitions .....	7
3.2 Symbols and abbreviations .....	11
4 Requirements.....	13
4.1 Nominal activation conditions/sensitivity.....	13
4.1.1 Initiation device.....	13
4.1.2 Opening mechanism.....	14
4.1.3 Inputs and outputs.....	14
4.2 Response delay (response time) .....	14
4.2.1 Reliability.....	14
4.2.2 Opening under (snow/wind) load .....	14
4.2.3 Low ambient temperature.....	15
4.2.4 Opening under heat.....	15
4.3 Operational reliability.....	15
4.4 Effectiveness of smoke/hot gas extraction (aerodynamic free area) .....	15
4.5 Performance parameters under fire conditions.....	15
4.5.1 Resistance to heat.....	15
4.5.2 Mechanical stability .....	16
4.5.3 Reaction to fire.....	16
4.6 Performance under environmental conditions .....	16
4.6.1 Opening under load.....	16
4.6.2 Low ambient temperature.....	16
4.6.3 Stability under wind load.....	16
4.6.4 Resistance to wind-induced vibration.....	16
4.6.5 Resistance to heat .....	16
4.7 Durability .....	17
4.7.1 Response delay (response time) .....	17
4.7.2 Operational reliability.....	17
4.7.3 Performance parameters under fire conditions.....	17
5 Testing, assessment and sampling methods .....	17
6 Assessment and verification of constancy of performance - AVCP .....	19
6.1 General.....	19
6.2 Type Testing.....	19
6.2.1 General.....	19
6.2.2 Test samples, testing and compliance criteria .....	20
6.2.3 Test sequence .....	21
6.2.4 Test reports.....	22
6.2.5 Cascading determination of the product type results .....	22
6.3 Factory production control .....	23
6.3.1 General.....	23

6.3.2	Requirements.....	23
6.3.3	NSHEV specific requirements.....	25
6.3.4	Initial inspection of factory and FPC.....	26
6.3.5	Continuous surveillance of FPC.....	26
6.3.6	Procedure for modifications.....	27
6.3.7	Pre-production prototypes.....	27
7	Marking, labelling and packaging.....	28
Annex A	(normative) Classification.....	29
A.1	Nominal activation condition/sensitivity.....	29
A.2	Response delay.....	29
A.3	Operational Reliability.....	29
A.4	Effectiveness of smoke/hot gas extraction (aerodynamic free area).....	29
A.5	Performance parameters under fire conditions.....	29
A.6	Performance under environmental conditions.....	30
A.7	Durability.....	31
A.7.1	Response delay (response time).....	31
A.7.2	Operational reliability.....	31
A.7.3	Performance parameters under fire conditions.....	31
Annex B	(normative) Effectiveness of smoke/hot gas extraction (aerodynamic free area).....	32
B.1	Determination of the aerodynamic free area.....	32
B.2	Simple assessment procedure.....	32
B.2.1	General.....	32
B.2.2	Roof mounted NSHEV.....	32
B.2.3	Wall mounted NSHEV.....	32
B.3	Experimental procedure.....	33
B.3.1	General.....	33
B.3.2	Test apparatus.....	33
B.3.3	Test specimen.....	34
B.3.4	Test procedure.....	35
B.3.5	Evaluation of test results.....	36
B.3.6	Calculation of the coefficient of discharge for a family of NSHEV.....	37
B.4	Test to check the aerodynamic test installations.....	38
B.4.1	General.....	38
B.4.2	Reference test without side wind.....	39
B.4.3	Reference tests with side wind.....	39
B.4.4	Evaluation of test results.....	39
Annex C	(normative) Test method for operational reliability and response time.....	54
C.1	Objective of test.....	54
C.2	Test conditions.....	54
C.3	Test apparatus.....	54
C.4	Test specimen.....	54
C.5	Test procedure.....	54
Annex D	(normative) Test method for opening under load.....	56
D.1	Objective of test.....	56
D.2	Test conditions.....	56
D.3	Test apparatus.....	56
D.4	Test specimen.....	57
D.5	Test procedure.....	57
Annex E	(normative) Test method for low ambient temperature.....	58
E.1	Objective of test.....	58

## EN 12101-2:2017 (E)

E.2	Test apparatus.....	58
E.3	Test specimen.....	58
E.4	Test procedure.....	58
<b>Annex F (normative) Test method for stability under wind load.....</b>		<b>59</b>
F.1	Objective of test.....	59
F.2	Test conditions.....	59
F.3	Test apparatus.....	59
F.4	Test specimen.....	59
F.5	Test procedure.....	60
F.5.1	Wind load.....	60
F.5.2	Vibration.....	60
<b>Annex G (normative) Test method for resistance to heat.....</b>		<b>61</b>
G.1	Objective of the test.....	61
G.2	Test apparatus.....	61
G.2.1	Test furnace.....	61
G.2.2	Temperature measurement.....	61
G.2.3	NSHEV mount.....	61
G.3	Test specimen.....	62
G.3.1	General.....	62
G.3.2	NSHEV mounted to a glazed partition construction.....	62
G.3.3	Roof mounted NSHEV as part of a continuous rooflight.....	62
G.3.4	Wall mounted NSHEV.....	63
G.3.5	Roof mounted NSHEV.....	63
G.4	Test procedure.....	64
<b>Annex H (normative) Mounting and fixing conditions for the SBI or small flame tests.....</b>		<b>72</b>
H.1	General.....	72
H.2	Class E.....	73
H.2.1	General.....	73
H.2.2	Small flame test in accordance to EN ISO 11925-2.....	73
H.3	Class A2 to class D.....	73
H.3.1	General.....	73
H.3.2	Single Burning Item test (SBI).....	74
H.4	Heat of combustion test.....	74
<b>Annex I (normative) Handling changes affecting declared performances for NSHEV.....</b>		<b>75</b>
I.1	General.....	75
I.2	Effectiveness of smoke/hot gas extraction.....	75
I.3	Reliability.....	75
I.4	Opening under load.....	76
I.5	Opening at low ambient temperatures.....	76
I.6	Wind load.....	77
I.7	Resistance to heat.....	77
<b>Annex J (informative) Installation and maintenance information.....</b>		<b>78</b>
J.1	Installation information.....	78
J.2	Maintenance information.....	78
<b>Bibliography.....</b>		<b>88</b>



## European foreword

This document (EN 12101-2:2017) 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 2017, and conflicting national standards shall be withdrawn at the latest by December 2018.

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

This document supersedes EN 12101-2:2003.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this standard.

This European Standard is one of the parts of the European Standard EN 12101 covering smoke and heat control systems.

This European Standard has the general title *Smoke and heat control systems* and currently consists of the following parts:

- *Part 1: Specification for smoke barriers;*
- *Part 2: Natural smoke and heat exhaust ventilators* [the present document];
- *Part 3: Specification for powered smoke and heat exhaust ventilators;*
- *Part 4: Installed SHEVS systems for smoke and heat ventilation* [Technical Report CEN/TR 12101-4];
- *Part 5: Guidelines on functional recommendations and calculation methods for smoke and heat exhaust ventilation systems* [Technical Report CEN/TR 12101-5];
- *Part 6: Specification for pressure differential systems – Kits;*
- *Part 7: Smoke control sections;*
- *Part 8: Smoke control dampers;*
- *Part 10: Power supplies.*

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**

In a fire situation, smoke and heat exhaust ventilation systems create and maintain a smoke free layer above the floor by removing smoke. They also serve simultaneously to exhaust hot gases released by a fire in the developing stages. The use of such systems to create smoke-free areas beneath a buoyant layer has become widespread. Their value in assisting in the evacuation of people from buildings and other construction works, reducing fire damage and financial loss by preventing smoke damage, facilitating access for firefighting by improving visibility, reducing roof temperatures and retarding the lateral spread of fire is firmly established. For these benefits to be obtained it is essential that natural smoke and heat exhaust ventilators (referred to in this standard as NSHEV) operate fully and reliably whenever called upon to do so during their installed life. A smoke and heat exhaust ventilation system (referred to in this standard as a SHEVS) is a system of safety equipment intended to perform a positive role in a fire emergency.

## 1 Scope

This European Standard applies to natural smoke and heat exhaust ventilators (NSHEV) operating as part of smoke and heat exhaust systems (SHEVS), placed on the market. This standard specifies requirements and gives test methods for natural smoke and heat exhaust ventilators which are intended to be installed in smoke and heat control systems in buildings.

## 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 54-5:2017, *Fire detection and fire alarm systems - Part 5: Heat detectors - Point detectors*

EN 54-7, *Fire detection and fire alarm systems - Part 7: Smoke detectors - Point detectors using scattered light, transmitted light or ionization*

EN 1363-1, *Fire resistance tests - Part 1: General Requirements*

EN 12101-10, *Smoke and heat control systems - Part 10: Power supplies*

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

EN 13823, *Reaction to fire tests for building products — Building products excluding floorings exposed to the thermal attack by a single burning item*

EN 60584-1, *Thermocouples — Part 1: EMF specifications and tolerances (IEC 60584-1)*

EN ISO 1182, *Reaction to fire tests for products - Non-combustibility test (ISO 1182)*

EN ISO 1716, *Reaction to fire tests for products - Determination of the gross heat of combustion (calorific value) (ISO 1716)*

EN ISO 11925-2, *Reaction to fire tests - Ignitability of products subjected to direct impingement of flame - Part 2: Single-flame source test (ISO 11925-2)*

## 3 Terms, definitions, symbols and abbreviations

### 3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

#### 3.1.1

##### **aerodynamic free area**

geometric area multiplied by the coefficient of discharge

#### 3.1.2

##### **ambient**

word used to describe properties of the surroundings

**EN 12101-2:2017 (E)****3.1.3****automatic activation**

initiation of operation without direct human intervention

**3.1.4****aspect ratio**

ratio of length to width

**3.1.5****automatic natural smoke and heat exhaust ventilator**

natural smoke and heat exhaust ventilator (NSHEV) which is designed to open automatically after the outbreak of fire if called upon to do so

Note 1 to entry: Automatic natural smoke and heat exhaust ventilator (NSHEV) can also be fitted with a manual control or release device.

**3.1.6****comfort position**

position of a NSHEV defined by the manufacturer for the purpose of comfort ventilation

**3.1.7****coefficient of discharge**

$c_v$

ratio of actual flow rate, measured under specified conditions, to the theoretical flow rate through the NSHEV, as defined in Annex B

Note 1 to entry: The coefficient takes into account any obstructions in the NSHEV such as controls, louvres and vanes and the effect of external side wind.

**3.1.8****dual purpose NSHEV**

NSHEV which has provision to allow its use for comfort (i.e. day to day) ventilation

**3.1.9****fire open position**

configuration of the NSHEV specified by its designer to be achieved and sustained while venting smoke and heat

**3.1.10****gas container**

vessel containing gas in a compressed form, the energy of which, when the gas is released from the vessel, will open the NSHEV

**3.1.11****geometric area**

$A_v$

area of the opening through a NSHEV, measured in the plane defined by the surface of the construction works, where it contacts the structure of the NSHEV

Note 1 to entry: No reduction is made for controls, louvres or other obstructions.

Note 2 to entry: Specific configurations are given in Figures B.1 and B.4.

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