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Standards

Irish Standard
I.S. EN 12101-8:2011

Smoke and heat control systems - Part 8: Smoke control dampers

I.S. EN 12101-8:2011

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<i>This document replaces:</i>	<i>This document is based on:</i> EN 12101-8:2011	<i>Published:</i> 12 May, 2011
This document was published under the authority of the NSAI and comes into effect on: 12 May, 2011		ICS number: 13.220.99
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ICS

English Version

Smoke and heat control systems - Part 8: Smoke control dampers

Systèmes pour le contrôle des fumées et de la chaleur -
Partie 8: Volets de désenfumage

Rauch- und Wärmefreihaltung - Teil 8:
Entrauchungsklappen

This European Standard was approved by CEN on 17 March 2011.

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Foreword

This document (EN 12101-8:2011) 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of an identical text or by endorsement, at the latest by November 2011, and conflicting national standards shall be withdrawn at the latest by November 2011.

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 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 document.

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

- Part 1: Specification for smoke barriers,
- Part 2: Specification for natural smoke and heat exhaust ventilators,
- Part 3: Specification for powered smoke and heat exhaust ventilators,
- Part 4: Installed SHEVS systems for smoke and heat ventilation (Technical Report (TR)),
- Part 5: Guidelines on functional recommendations and calculation methods for smoke and heat exhaust ventilation systems (TR),
- Part 6: Specification for pressure differential systems – Kits,
- Part 7: Smoke duct sections,
- Part 8: Smoke control dampers (this standard),
- Part 9: Control panels,
- Part 10: Power supplies.

According to the CEN/CENELEC Internal Regulations, the national standards organizations 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

This European Standard contains the basic performance and requirements for smoke control dampers that are to be used in conjunction with pressure differential systems and smoke and heat control systems. They can also be used to pressurise when gas extinguishing systems are used.

Particular reference is required to EN 1366-10, which defines the furnace testing associated with these products and EN 13501-4, which provides details on their fire resistance classification.

In addition to the prevention of transmission of smoke and combustion products from a fire zone, smoke control dampers are utilised to contain the spillage of otherwise harmful and toxic extinguishing gases from the affected area, and for the control of pressurising and excess air relief within pressurisation systems.

Smoke control systems are designed to fulfil the following basic functions. These are:

- a) the extraction of smoke from a single fire compartment to the outside of the building,
- b) the extraction of smoke from fire compartments of a building, using a SHEVS connected to one or more fire compartments. The smoke control system duct may or may not pass through other compartments of the building to reach the outside of the building,
- c) the use of pressurisation to maintain smoke free clear areas.

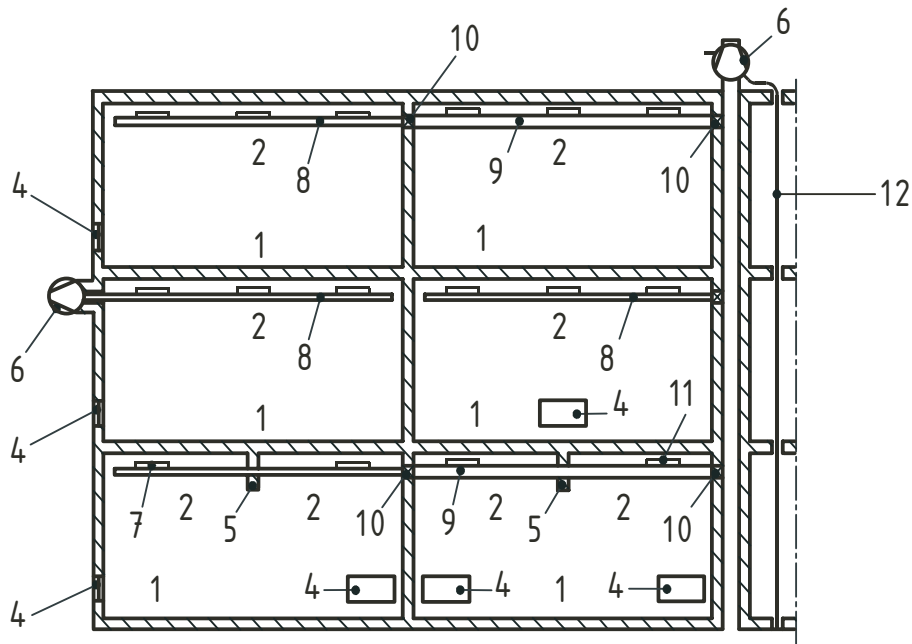
Smoke control dampers are commonly used in smoke and heat control systems as a means of limiting the number of ducts and high temperature fan units. The ducts into which such smoke control dampers are fitted generally serve a number of different fire compartments. The systems may be dedicated smoke extraction or possibly a combined environmental ventilation/smoke extraction.

The smoke and heat control system may remove smoke using either high temperature fans (in accordance with EN 12101-3) or natural ventilators (in accordance with EN 12101-2).

It may be necessary for a number of reasons (fire growth, smoke release, etc.) that the open smoke control damper(s) is (are) required to close and that the damper(s) previously closed is(are) required to open.

The tests defined in this standard are based on the assumption that when smoke is detected within a building, all smoke control dampers other than those serving the fire compartment/smoke reservoir (where the fire has initiated) remain closed or move to the closed position. All smoke control dampers serving the smoke affected fire compartment/smoke reservoir remain open or move to the open position, and the fan(s) started/natural vents opened.

NOTE Figure 1 gives examples of installation positions, but these are not the only positions where dampers may be fitted.



Key

- 1 Fire compartment
- 2 Smoke reservoir
- 4 Air inlet
- 5 Smoke barrier
- 6 Powered smoke and heat exhaust ventilator (fan)
- 7 Smoke control dampers for single compartments (FprEN 12101-8 and EN 1366-10)
- 8 Smoke control ducts for single compartments (FprEN 12101-7 and EN 1366-9)
- 9 Smoke control ducts for multi compartments (FprEN 12101-7 and EN 1366-8)
- 10 Smoke control dampers for multi compartments (FprEN 12101-8 and EN 1366-10) mounted inside or outside of wall or floor
- 11 Smoke control dampers for multi compartments (FprEN 12101-8 and EN 1366-10) mounted on the surface of the duct
- 12 Electrical equipment

Figure 1 – Example of powered smoke and heat exhaust ventilation

Further guidance on the application of smoke control dampers may be found within the rest of the EN 12101 series of harmonised standards and technical reports.

The areas for which products supplied to this standard are considered applicable include for example:

- a) commercial premises,
- b) shopping and retail centres,
- c) hospitals,
- d) multi-residential buildings.

Smoke control dampers are intended for use in the following types of systems, including:

- 1) pressurisation,

- 2) pressure relief,
- 3) extraction systems,
- 4) ductwork systems,
- 5) inerting fire suppression systems.

It is realised that all the above systems do not address smoke directly, but similar properties are required of such smoke control dampers to limit leakage in a fire and smoke control situation.

1 Scope

This European Standard applies to smoke control dampers, placed on the market and intended to operate as part of a pressure differential system or smoke and heat control system. This standard specifies requirements and gives reference to the test methods defined for smoke control dampers and their associated components, such as actuators which are intended to be installed in such systems in buildings. It also provides for the evaluation of conformity of these products to the requirements of this standard. Furthermore, provision on marking and information on installation and maintenance of these products are also given.

This European Standard distinguish between two categories of smoke control dampers, i.e. single compartment smoke control dampers and multi-compartment fire resisting smoke control dampers.

Smoke control dampers covered by this European Standard can be installed into smoke control system ducts or onto the ducts' surface. They can be installed also into a wall, floor or ceiling/roof elements or onto the surface of these elements.

To avoid duplication, reference is made to a variety of other standards. To this end, this standard is to be read in conjunction with EN 13501-4, EN 1366-10 and EN 1366-2, for details of the furnace testing.

This standard does not consider in detail the detrimental and/or corrosive effects that may be caused by process chemicals present in the atmosphere, which are drawn through the system intentionally or inadvertently.

2 Normative references

The following referenced documents are indispensable for the application 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 1366-2, *Fire resistance tests for service installations – Part 2: Fire dampers*

EN 1366-10, *Fire resistance tests for service installations – Part 10: Smoke control dampers*

EN 1751, *Ventilation for buildings – Air terminal devices – Aerodynamic testing of dampers and valves*

prEN 12101-9, *Smoke and heat control systems - Part 9: Control panels*

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

EN 13501-4, *Fire classification of construction products and building elements – Part 4: Classification using data from fire resistance tests on components of smoke control systems*

EN 60068-2-52:1996, *Environmental testing – Part 2-52: Test methods, Test Kb: Salt mist cyclic (sodium chloride solution) (IEC 60068-2-52:1996)*

EN ISO 5135, *Acoustics – Determination of sound power levels of noise from air-terminal devices, air-terminal units, dampers and valves by measurement in a reverberation room (ISO 5135:1997)*

EN ISO 13943, *Fire safety – Vocabulary (ISO 13943:2008)*

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