SLOVENSKI STANDARD

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Prezraļevanje stavb ï Poģarne lopute v zraļni napeljavi

Ventilation for buildings - Duct mounted fire dampers

Lüftung von Gebäuden - Brandschutzklappen in Luftleitungen

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Ventilation for buildings - Duct mounted fire dampers

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 156.

If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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Foreword

This document (prEN 15650:2007) has been prepared by Technical Committee CEN/TC 156 “Ventilation for buildings”, the secretariat of which is held by BSI.

This document is currently submitted to the CEN Enquiry.

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, B, C or D, which is an integral part of this document.

Introduction

This standard contains the basic performance and requirements for fire dampers.

A fire damper is used to prevent fire and reduce smoke spreading from one fire compartment to another through the air ductwork system which may penetrate fire separating walls and floors.

In building construction holes have to be made in walls and floors to allow the transfer of air between fire compartments. This occurs both with, and without, ducted air systems.

Where the words separating element are used in this standard, they should be taken to mean e.g. a wall, a floor, a ceiling or any other barrier that is designed to maintain compartmentation. This covers any type of construction (e.g. block and mortar, concrete, board or mineral wool).

In the case of fire, or elevated temperatures (at or above 72 °C) the dampers are required to close automatically by means contained within their own tested construction (a thermal activation element). As an addition, dampers may be closed by an external input. They should then remain closed to protect the building compartmentation.

In addition to other requirements in this standard, the fire damper will be subjected to a furnace mounted fire test. The purpose of the test is to evaluate the ability of a fire damper to prevent fire and smoke spreading from one fire compartment to another through the air ductwork system which may penetrate fire separating walls and floors.

The fire damper is attached (directly or remotely via a section of ducting), to a fire separating element in a manner generally representative of practice using a method described in the test standard (EN1366-2). Dampers may be situated within the construction of the wall/floor, attached to the face of the wall/floor, or mounted remotely from it via a section of fire resistant ducting.

NOTE Test results are only valid for the tested method of mounting, together with any direct field of application, that may be applicable (see also extended field of application for other test requirements)

Tests are performed starting with the fire damper in the open position to expose the thermal release mechanism of the fire damper to furnace conditions.

Temperature and integrity measurements are carried out in various parts of the test construction during the test. The impermeability of the fire damper system is measured by direct flow measurements whilst maintaining a constant pressure differential across the closed fire damper of 300 Pa. The tightness of the fire damper in the closed position is also measured at ambient temperature

As smoke is seen as being as, if not more, dangerous than fire, closing actuators may be used that close the unit early as the result of, for instance, a fire alarm. These may form a part of the tested construction if the actuator is seen as being the prime mover of the unit. If not, typical examples should be tested at the same time as the fire damper to ensure that the proposed installation protects the actuator and does not allow it to flame.

It may be necessary to test fire dampers not mounted directly within the centre of the, both inside and outside the wall to be universally acceptable for that method of construction.

Particular reference is required to EN 1366-2, which defines the furnace testing associated with these products and EN13501-3, which provides details on their classification. Consideration of any caution notices within any fire testing standards (e.g. health and safety) should be considered before undertaking any fire testing .

In addition, the aerodynamic performance of fire dampers should be tested to EN 1751, if such information is to be presented by a manufacturer.

NOTE Where other standards or other appropriate design guides allow the use of Fire dampers to allow the extraction of smoke or heat fire dampers, reference to these standards or design guides should be made (e.g. the EN12101 series). The testing and classification of Smoke Control Dampers is defined in EN1366-10 and EN13501-4 respectively.

The areas for which products supplied to this standard are considered applicable include, but are not limited to :

a) commercial premises;

b) shopping and retail centres;

c) hospitals;

d) multi-residential buildings.

It has been assumed in the preparation of this standard that the execution of its provisions are entrusted to appropriately qualified and experienced people.

1 Scope

This European standard applies to fire dampers that are to be used in conjunction with partitions to maintain fire compartments. This includes dampers that are included in both ducted and un-ducted systems.

This standard specifies requirements and gives reference to the test methods defined for fire dampers, which are intended to be installed in general Heating and Ventilating (HVAC) ducts in buildings.

To avoid duplication reference is made to a variety of other standards. To this end this standard must be read in conjunction with EN 1366-2 and EN1363 for details of the furnace testing.

This standard has not considered 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 1363 (all parts), *Fire resistance tests*

EN 1366-2, *Fire resistance tests for service installations Part 2 : Fire dampers*

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

EN13501-3, *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 60068-2-52, *Environmental testing Part 2 : Tests Test Kb: Salt mist cyclic (sodium chloride solution)*

EN ISO 13943, *Fire safety vocabulary*

ISO 5129, *Acoustics - Measurement of sound pressure levels in the interior of aircraft during flight*

ISO 9001 : 2000, *Quality systems; Model for quality assurance in design/development, production, installation and servicing*

3 Terms and definitions

Where not covered by the requirements of EN ISO 13943, the following definitions apply :

3.1
fire damper
mobile closure within a duct, which is designed to prevent the passage of fire

3.2
insulated fire damper
fire damper of any type that shows classifiable insulation characteristics when tested (*I* criteria)

3.3
leakage rated fire damper
fire damper of any type that shows classifiable reduced leakage characteristics when tested (*S* criteria)

3.4
multi-section dampers
fire damper of any type constructed from smaller individually tested units

3.5
fire compartment
enclosed space, comprising one or more separate spaces, bounded by elements of construction having a specified fire resistance and intended to prevent the spread of fire (in either direction) for a given period of time.

NOTE Fire compartment often has regulatory definitions and requirements. The term should not be confused with "room of origin" or "fire cell".

3.6
triggering device
device such as a fire detector system, smoke detector or pushbutton, which sends an activating signal to the initiation device.

3.7
horizontal mounting
damper will be considered to be mounted horizontally if it is installed in a vertical duct (floor or ceiling)

3.8
vertical mounting
damper will be considered to be mounted vertically if it is installed in a horizontal duct (wall). Blade axis shall also be noted (i.e. whether the blades are supported vertically or horizontally).

4 Typical fire damper descriptions

4.1 General

This clause gives details of available units, but this may not be exhaustive and other products may be available that fulfil the requirements of this standard.

4.2 Folding Curtain Fire Dampers

Folding curtain fire dampers are constructed of a series of interlocking blades, which fold to the top of the assembly permitting the maximum free area in the airway. The blades are held open by means of a thermal release mechanism normally rated at 72 °C ± 4 °C. The blades fall/are sprung to fill the airway to prevent the passage of the fire. They are designed to close against static air conditions. Test results or assessments are required for plane of installation (e.g. horizontal and vertical) and the method of installation.

4.3 Single Blade Fire Dampers

Single blade fire dampers are constructed with a single pivoting blade within a frame. The blade is released from its open position by means of a thermal release mechanism normally rated at 72 °C ± 4 °C. The blade pivots/moves to close the airway to prevent the passage of fire. Test results or assessments are required for plane of installation (e.g. horizontal and vertical) and the method of installation.

4.4 Multi-blade Fire Dampers

Multi-blade dampers are constructed with a number of linked pivoting blades contained within a frame. The blades are released from their open position by means of a thermal release mechanism normally rated at 72 °C ± 4 °C. The blades pivot/move to close the airway to prevent the passage of fire. Test results or assessments are required for plane of installation (e.g. horizontal and vertical) and the method of installation.

4.5 Fire rated cone type valve (toilet) damper

A damper consisting of a cone which closes into a profiled ring to give good shut off. This usually achieved by a spring arrangement and held open by a thermal element.

4.6 Intumescent Fire Dampers

Intumescent fire dampers incorporate components, which swell by intumescent activity under the action of heat, to close the airway to prevent the passage of fire. The intumescent materials form the main component for fire integrity. In some instances this may be supported with a mechanical device to prevent cold smoke leakage. Activation temperatures will be influenced by the type of intumescent material selected and these temperatures typically range from 120 °C to 270 °C. Test results or assessments are required for plane of installation (e.g. horizontal and vertical) and the method of installation.

4.7 Insulated Fire Dampers

Insulated fire dampers are fire dampers of any type that show insulation characteristics when tested.

4.8 Leakage rated Fire Damper

Leakage rated fire dampers are fire dampers of any type that show the reduced leakage characteristics when tested .

4.9 Multi-section dampers

Where the damper required exceeds the maximum tested size of individual unit (or single section), manufacturers may provide multi-section units. These will generally be supplied with some type of joining strip or mullion to allow the unit to be assembled on site. This joining is not, necessarily, structural. Consideration must be given by installers for additional support, particularly on larger multi-section units.

5 Fire damper requirements

5.1 General

5.1.1 Fire resistance

Fire Dampers are designed to close automatically to maintain compartmentation where the passage of air is normally required to pass through a fire compartment barrier. This applies to both ducted and un-ducted air systems. Only complete fire dampers, incorporating all components, which have been successfully tested in accordance with the requirements of the standard shall be acceptable for use in systems referred to in this standard. The correct function of fire dampers is essential for the safety of the building and its occupants.

The fire damper manufacturer shall :

a) test and declare the integrity classification (E) of the fire damper in accordance with the requirements of EN 13501-3;

b) as an option, test and declare the insulation classification (I) of the fire damper in accordance with the requirements of EN 13501-3;

c) as an option, test and declare the leakage classification (S) of the fire damper in accordance with the requirements of EN 13501-3.