SLOVENSKI STANDARD
SIST EN 1364-5:2017

01-september-2017

Preskusi požarne odpornosti nenosilnih elementov - 5. del: Prezračevalne rešetke

Fire resistance tests for non-loadbearing elements - Part 5: Air transfer grilles

Feuerwiderstandsprüfungen für nichttragende Bauteile - Teil 5: Lüftungsgitter

Essais de résistance au feu des éléments non porteurs - Partie 5: Grilles de transfert

Ta slovenski standard je istoveten z: **EN 1364-5:2017**

ICS:

13.220.50	Požarna odpornost gradbenih materialov in elementov	Fire-resistance of building materials and elements
91.060.99	Drugi stavbni elementi	Other elements of buildings

SIST EN 1364-5:2017 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 1364-5

June 2017

ICS 13.220.50; 91.060.99

English Version

Fire resistance tests for non-loadbearing elements - Part 5: Air transfer grilles

Essais de résistance au feu des éléments non porteurs - Partie 5 : Grilles de transfert

Feuerwiderstandsprüfungen für nichttragende Bauteile - Teil 5: Lüftungsbausteine

This European Standard was approved by CEN on 10 April 2017.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 1364-5:2017 E

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European foreword

This document (EN 1364-5:2017) has been prepared by Technical Committee CEN/TC 127 “Fire safety in buildings”, 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of an identical text or by endorsement, at the latest by December 2017, and conflicting national standards shall be withdrawn at the latest by December 2017.

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 has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

EN 1364 ‘Fire resistance tests for non-loadbearing elements’ consists of the following parts:

— *Part 1: Walls*

— *Part 2: Ceilings*

— *Part 3: Curtain walling - Full configuration (complete assembly)*

— *Part 4: Curtain walling - Part configuration*

— *Part 5: Air transfer grilles*

— *Part 6: Cavity Barriers*

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

The purpose of this test is to measure the ability of a representative specimen of an air transfer grille to resist the spread of fire from one side to another.

A representative sample of the air transfer grille is exposed to a specified regime of heating and the performance of the test specimen is monitored on the basis of criteria given in this standard. Fire resistance of the test specimen is expressed as the time for which the appropriate criteria have been satisfied. The times so obtained are a measure of the adequacy of the construction in a fire but have no direct relationship with the duration of a real fire.

CAUTION - The attention of all persons concerned with managing and carrying out this furnace testing is drawn to the fact that fire testing can be hazardous and that there is a possibility that toxic and/or harmful smoke and gases can be evolved during the test. Mechanical and operational hazards can also arise during the construction of the test elements or structures, their testing and disposal of test residues.

An assessment of all potential hazards and risks to health should be made and safety precautions should be identified and provided. Written safety instructions should be issued. Appropriate training should be given to relevant personnel. Laboratory personnel should ensure that they follow written safety instructions at all times.

1 Scope

This European Standard specifies a method for determining the fire resistance of air transfer grilles (ATG).

It is applicable to air transfer grilles intended for installation in building components (typically walls, floors or ceilings). The orientation of the installation of the air transfer grille can be vertical or horizontal.

The closing mechanism of the air transfer grille can come from expansion of material and/or from any mechanical or electrical closing device.

This test method is valid for fire resistant or fire resistant and smoke control air transfer grilles.

An additional test configuration is valid for fire resistant or fire resistant and smoke control air transfer grilles in applications where flame impingement is a risk during open state from start of fire (Annex A).

This test method evaluates the behaviour of the air transfer grille when exposed to the standard fire curve described in EN 1363-1 and the standard pressure described in EN 1363-1. It is not the intention of this test to provide quantitative information on the rate of leakage of smoke and/or hot gases or on the transmission or generation of fumes under fire conditions. Such phenomena are only to be noted in describing the general behaviour of test specimens during the test.

The rate of leakage of smoke at ambient temperature or at 200 °C as an optional requirement for ATG with declared smoke control will be confirmed in accordance with standard EN 1634-3.

This test method is not valid for determining the fire resistance of air transfer grilles that are used in ducts because ATG are considered as separating elements. The test method for ATG, used in ducts is described in the corresponding duct standards.

This test method is not valid for determining the fire resistance of a fire damper or a fire barrier connected to a duct on either or both sides because an ATG is tested as a fire-separating element on its own. Fire dampers are tested according to EN 1366-2. Non-mechanical fire barriers are tested according to EN 1366-12.

This test method is not valid for determining the fire resistance of air transfer grilles in fire doors, shutters and openable windows as specified in EN 1634-1 and EN 1364-2, because the deformation of fire doors, shutters and openable windows in fire conditions differs from the deformation of flexible/rigid walls. Moreover the location of thermocouples in the door standard is too specific to be handled in this standard.

All values given in this standard are nominal unless otherwise specified.

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

EN 1363-2, *Fire resistance tests - Part 2: Alternative and additional procedures*

EN ISO 13943, *Fire safety - Vocabulary (ISO 13943)*

3 Terms and definitions

For the purposes of this document, the definitions given in EN 1363-1, EN 1363-2 and EN ISO 13943, together with the following, apply.

3.1
air transfer grille
device consisting of an active/reactive part which could include a decorative cover as to be used in practice, allowing movement of air at ambient temperature and pressure and providing fire resistance in case of fire

3.2
air transfer grille flow zone
total visible surface area of the air transfer grille which allows air to flow from one side to the other (this excludes the air transfer grille frame)

3.3
air transfer grille face
total surface area of the air transfer grille in its non-installed state (this includes any air transfer grille frame)

3.4
aperture
opening in the supporting construction in which the air transfer grille is installed and sealed off towards the supporting construction

3.5
modular air transfer grilles
air transfer grilles that can be fitted together to form a larger ATG unit

4 Test equipment

See EN 1363-1 and, if applicable, EN 1363-2.

5 Test conditions

5.1 Heating conditions

The heating conditions and the furnace atmosphere shall conform to those given in EN 1363-1 or, if applicable, EN 1363-2.

5.2 Pressure conditions

Pressure conditions and tolerances shall be as given in EN 1363-1.

Depending on the field of application, air transfer grilles installed in vertical supporting constructions can be tested in the positive or negative pressure zone. If the grille is intended for both zones, both scenarios should be tested.

If both tests are done in 1 set-up, the pressure level in the furnace will be organized such that the 0-level is situated between the specimens to be tested in a negative and positive pressure zone. The height of the 0-level in the furnace will therefore be adjusted according to the tested specimen.

Air transfer grilles installed in horizontal supporting constructions are always considered as being positioned in the positive pressure zone. For ATG installed in a horizontal separating element, the pressure shall be controlled to (20 ± 3) Pa at 100 mm below the underside of the separating element to which it is fixed.

The pressure during the test at the top and at the bottom of the ATG will be calculated and reported in the test report and in the classification report. The corresponding height above notional floor level of top and bottom of the ATG shall also be reported.

6 Test specimen

6.1 General

The test specimen consists of an air transfer grille together with a supporting construction. In cases where multiple test specimens are included in a single test construction, they shall be the subject of a separate evaluation.

6.2 Size

The test specimen shall be normally full size.

If modular air transfer grilles are tested, the largest assembly size shall be tested.

In order to avoid boundary effects, the distance between the perimeter of the air transfer grille and the internal surfaces of the furnace shall be not less than 200 mm at any point.

In cases where multiple test specimens are included in a single test construction, the minimum distance between adjacent air transfer grilles shall be not less than 200 mm. However, if a specific installation requires smaller distance, then ATG shall be tested to the minimum separation used in practice.

6.3 Number

For grilles installed in vertical supporting constructions, the number of test specimens required is given in EN 1363-1.

For horizontal separating elements, only one test specimen is required with fire exposure from the underside.

For grilles that are not symmetrical, each side has to be tested.

Where an air transfer grille is intended for use both in floors and walls, the ATG shall be tested both vertically and horizontally.

6.4 Design

6.4.1 General

The test specimen shall be fully representative of the air transfer grille used in practice, including any special features which are unique to the grille, e.g. decorative covers.

Each shape (e.g. circular, rectangular) with maximum dimensions has to be tested, to give widest application according to the field of direct application (Clause 13).

6.4.2 Restraint

The edges of the test specimen shall be restrained as in practice. The method of restraining the air transfer grille is considered part of the test specimen.

6.5 Construction

The test specimen shall be constructed as described in EN 1363-1.

6.6 Verification

Verification of the test specimen shall be carried out as described in EN 1363-1.

7 Installation of test specimen

7.1 General

The test specimen shall be installed, as far as possible, in a manner representative of the use in practice.

Inclusion of decorative covers: Where decorative covers are to be supplied with the air transfer grille and installed symmetrically, testing of the air transfer grille shall also include the decorative covers as part of the test specimen. If the decorative cover will be installed non symmetrically, a test of the decorative cover inside and outside the fire shall be required.

7.2 Supporting constructions

7.2.1 General

The standard supporting constructions given in EN 1363-1 apply.

The supporting construction chosen for the test may be a non-standard support construction. However, the result is then only applicable to this non-standard support construction.

7.2.2 Walls

For air transfer grills intended to be installed in walls, the following supporting constructions described in EN 1363-1 apply:

— High density rigid construction;

— Low density rigid construction;

— Flexible construction;

— Non-standard supporting construction.

7.2.3 Floors

For air transfer grilles intended to be installed in floors, the following supporting constructions described in EN 1363-1 apply:

— High density rigid construction;

— Low density rigid construction;

— Non-standard supporting construction.

NOTE Suspended ceilings described in EN 1364–2, are non-standard supporting constructions.