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Preskusi požarne odpornosti nenosilnih elementov - 5. del: Zračniki

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

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Essais de résistance au feu des éléments non porteurs -
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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (prEN 1364-5:2014) has been prepared by Technical Committee CEN/TC 127 “Fire safety in buildings”, the secretariat of which is held by BSI.

This document is currently submitted to the CEN Enquiry.

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

Part 1: Walls

Part 2: Ceilings

Part 3: Curtain walls - full configuration (in course of preparation)

Part 4: Curtain walls - part configuration (in course of preparation)

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Introduction

The purpose of this test is to measure the ability of a representative specimen of an air transfer grill 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 shall be made and safety precautions need to be identified and provided. Written safety instructions need to be issued. Appropriate training needs to be given to relevant personnel. Laboratory personnel need to ensure that they follow written safety instructions at all times.

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1 Scope

This test method 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.

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 is addressed in product technical specifications (e.g. in ETAG 026 – part 4)

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

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.

Non-mechanical fire barriers for ventilation ductwork according to EN 1366-12 are excluded.

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 TC in the door standard is too specific to be handled in this standard.

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*

3 Terms and definitions

For the purposes of this test method, the definitions given in EN 1363-1 and EN ISO 13943, together with the following, apply:

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3.1

air transfer grille

A device consisting of an active/reactive part and any associated 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 surface area

total visible surface area of the air transfer grille excluding the air transfer grille frame, at the non-exposed test side

3.3

air transfer grille aperture

opening in the supporting construction in which the air transfer grille is installed

3.4

modular air transfer grilles

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

4 Test equipment

4.1 General

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.

Air transfer grilles installed in horizontal supporting constructions are always considered as being positioned in the positive pressure zone.

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. Also the corresponding height above notional floor level of top and bottom of the ATG shall 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.

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.

The design features which influence fire performance shall be included to give the 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.

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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 the actual construction to be used in practice. However, the result is then only applicable to that form of construction.

7.2.2 Walls

For air transfer grilles 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 for which 7.2.4 applies.

7.2.4 Constructions other than walls and floors

Any non-standard supporting construction shall be tested with the air transfer grille in a manner representative of the use in practice.

8 Conditioning

The test construction shall be conditioned in accordance with EN 1363-1.