Test methods for determining the contribution to the fire resistance of structural members - Part 2: Vertical protective membranes

EESTI STANDARDIKESKUS
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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 13381-2:2014 sisaldab Euroopa standardi EN 13381-2:2014 inglisekeelset teksti.	This Estonian standard EVS-EN 13381-2:2014 consists of the English text of the European standard EN 13381-2:2014.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 24.09.2014.	Date of Availability of the European standard is 24.09.2014.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 13.220.50

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13381-2

September 2014

ICS 13.220.50; 13.220.99

Supersedes ENV 13381-2:2002

English Version

Test methods for determining the contribution to the fire resistance of structural members - Part 2: Vertical protective membranes

Méthodes d'essai pour déterminer la contribution à la résistance au feu des éléments de construction - Partie 2: Membranes de protection verticales

Prüfverfahren zur Bestimmung des Beitrages zum Feuerwiderstand von tragenden Bauteilen - Teil 2: Vertikal angeordnete Brandschutzbekleidungen

This European Standard was approved by CEN on 25 July 2014.

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

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Ref. No. EN 13381-2:2014 E

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Foreword

This document (EN 13381-2:2014) 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of an identical text or by endorsement, at the latest by March 2015 and conflicting national standards shall be withdrawn at the latest by March 2015.

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 ENV 13381-2:2002.

The main changes with respect to the previous edition are listed below:

Clarifications regarding the following items:

a) preparation of the test specimen;

b) instrumentation of the test specimen (no more steel plate within the cavity);

c) limits of applicability.

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

This European Standard is one of a series of standards for evaluating the contribution to the fire resistance of structural members by applied fire protection materials. Other parts of the standard are:

— *Part 1: Horizontal protective membranes,*

— *Part 3: Applied protection to concrete members,*

— *Part 4: Applied protection to steel members,*

— *Part 5: Applied protection to concrete / profiled sheet steel composite members,*

— *Part 6: Applied protection to concrete filled hollow steel columns,*

— *Part 7: Applied protection to timber members,*

— *Part 8: Applied reactive protection to steel members.*

The fire protection capacity of the vertical protective membrane can be nullified by the presence of combustible materials in the cavity behind the membrane. The applicability of the results of the assessment is limited according to the quantity and position of such combustible materials within that cavity. The amount of combustible material permissible in the cavity should be given in national regulations.

Caution

The attention of all persons concerned with managing and carrying out this fire resistance test, 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 test elements or structures, their testing and the disposal of test residues.

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

The specific health and safety instructions contained within this standard shall be followed.

When testing concrete filled hollow steel composite columns steam release holes shall be provided for the release of steam from the column, during the test, as specified in EN 13381-6.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies a test method for determining the ability of a vertical protective membrane, when used as a fire resistant barrier, to contribute to the fire resistance (loadbearing capacity R) of loadbearing vertical structural building members fabricated from steel, concrete, steel/concrete composites or timber. The method described is applicable to any type of vertical protective membrane, which can be associated with a separate bracing membrane.

The vertical protective membrane can be either separated from or attached to the structural building member and is self-supporting. This test method is applicable to vertical protective membranes where there is a gap and a cavity between the vertical protective membrane and the structural building member, otherwise alternative test methods prEN 13381-3, EN 13381-4, EN 13381-6 or prEN 13381-7 should be used as appropriate.

This test method and assessment is not applicable to the following:

a) all situations where the cavity is to be used as a service or ventilation shaft;

b) all situations where the vertical protective membrane acts as a bracing membrane.

This European Standard contains the fire test which specifies the tests which shall be carried out whereby the vertical protective membrane together with the structural member to be protected is exposed to the specified fire. The fire exposure, to the standard temperature/time curve given in EN 1363-1, is applied to the side which would be exposed in practice.

The test method makes provision, through specified optional additional procedures, for the collection of data which can be used as direct input to the calculation of fire resistance according to the processes given in EN 1992-1-2, EN 1993-1-2, EN 1994-1-2 and EN 1995-1-2.

This European Standard also contains the assessment which provides information relative to the analysis of the test data and gives guidance for the interpretation of the results of the fire test, in terms of loadbearing capacity criteria of the protected vertical structural member.

The results of the fire test and the assessment can be applied, with certain defined provisions, to vertical structural building members which can be beams, columns or a combination of both and / or which could form part of a separating element or partition.

The limits of applicability of the results of the assessment arising from the fire test are defined, together with permitted direct application of the results to different structures, membranes and fittings.

In special circumstances, where specified in national building regulations, there can be a need to subject the protection material to a smouldering curve. The test for this and the special circumstances for its use are detailed in Annex B.

Tests should be carried out without additional combustible materials in the cavity.

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 206, *Concrete - Specification, performance, production and conformity*

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

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

EN 1364-1, *Fire resistance tests for non-loadbearing elements - Part 1: Walls*

EN 1365-1, *Fire resistance tests for loadbearing elements - Part 1: Walls*

EN 1992-1-2, *Eurocode 2: Design of concrete structures - Part 1-2: General rules - Structural fire design*

EN 1993-1-2, *Eurocode 3: Design of steel structures - Part 1-2: General rules - Structural fire design*

EN 1994-1-2, *Eurocode 4 - Design of composite steel and concrete structures - Part 1-2: General rules - Structural fire design*

EN 1995-1-2:2004, *Eurocode 5: Design of timber structures - Part 1-2: General - Structural fire design*

EN 10025-1, *Hot rolled products of structural steels – Part 1: General technical delivery conditions*

EN 10080, *Steel for the reinforcement of concrete - Weldable reinforcing steel - General*

EN 10210-1, *Hot finished structural hollow sections of non-alloy and fine grain steels - Part 1: Technical delivery conditions*

prEN 13381-3, *Test methods for determining the contribution to the fire resistance of structural members - Part 3: Applied protection to concrete members*

EN 13381-4, *Test methods for determining the contribution to the fire resistance of structural members - Part 4: Applied passive protection to steel members*

EN 13381-6, *Test methods for determining the contribution to the fire resistance of structural members - Part 6: Applied protection to concrete filled hollow steel columns*

prEN 13381-7, *Test methods for determining the contribution to the fire resistance of structural members - Part 7: Applied protection to timber members*

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

ISO 8421-2, *Fire protection - Vocabulary - Part 2: Structural fire protection*

3 Terms and definitions, symbols and units

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1363-1, EN ISO 13943 and ISO 8421-2 and the following apply.

3.1.1
vertical structural building member
vertical loadbearing structural element of building construction, which may be a column, a beam or a combination of both, and / or which might form part of a separating element or partition and which is fabricated from either concrete, steel, steel/concrete composite or timber