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TEST METHODS FOR DETERMINING THE CONTRIBUTION TO THE FIRE RESISTANCE OF STRUCTURAL MEMBERS - PART 2: VERTICAL PROTECTIVE MEMBRANES

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English version

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

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

This European Prestandard (ENV) was approved by CEN on 1 March 2002 as a prospective standard for provisional application.

The period of validity of this ENV is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the ENV can be converted into a European Standard.

CEN members are required to announce the existence of this ENV in the same way as for an EN and to make the ENV available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the ENV) until the final decision about the possible conversion of the ENV into an EN is reached.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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Foreword

This document ENV 13381-2:2002 has been prepared by Technical Committee CEN/TC127 "Fire safety in buildings", the secretariat of which is held by BSI.

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

As there was little experience in carrying out these tests in Europe CEN/TC127 agreed that more experience should be built up during a prestandardisation period before agreeing text as European Standards. Consequently all parts are being prepared as European Prestandards.

This European Prestandard 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 ENV 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.

The fire protection provided by the vertical protective membrane can be nullified by the presence of combustible materials in the cavity behind the membrane. The assessment methodology can be modified according to the quantity and position of such materials within that cavity.

Annex A is normative.

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 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.

The specific health and safety instructions contained within this prestandard should be followed.

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

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this European Prestandard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This part of this European Prestandard 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 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 separate from the structural building member and be self-supporting or can be attached to the structural building member and can form part of any load bearing structure. This test method is applicable to vertical protective membranes where there is a separating gap of at least 5 mm size between the vertical protective membrane and the structural building member, otherwise alternative test methods ENV 13381-3, ENV 13381-4, ENV 13381-6 or ENV 13381-7 should be used as appropriate

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

a) all situations where the cavity behind the vertical protective membrane contains more than a specified amount of combustible materials, e.g. electrical cables and pipes, other than where timber structural members themselves are required;

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

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

This European Prestandard contains the fire test which specifies the tests which should 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 ENV 1992-1-2, ENV 1993-1-2, ENV 1994-1-2 and ENV 1995-1-2.

This European Prestandard 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.