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NSAI Standards

Irish Standard
I.S. EN 13381-4:2013

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

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I.S. EN 13381-4:2013

EUROPEAN STANDARD

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EN 13381-4

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English Version

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

Méthodes d'essai pour déterminer la contribution à la résistance au feu des éléments de construction - Partie 4 : Protection passive appliquée aux éléments en acier

Prüfverfahren zur Bestimmung des Beitrages zum Feuerwiderstand von tragenden Bauteilen - Teil 4: Passive Brandschutzmaßnahmen für Stahlbauteile

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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Foreword

This document (EN 13381-4:2013) 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of an identical text or by endorsement, at the latest by November 2013, and conflicting national standards shall be withdrawn at the latest by November 2013.

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 13381-4:2002.

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

With respect to the previous version, the following changes have been made:

— A change has been made to the test method to introduce of a means allowing loaded beams to reach a deflection of L/30.

— In addition the graphical assessment method now includes a point to point method of constructing lines and a new virtual data point related to furnace temperature.

This document is compatible with EN 13381-8 and specifically deals with the testing and assessment of passive fire protection systems (sprays, renderings, mat products and boards) designed to protect structural steel.

This document is part of the EN 13381 series with the general title *Test methods for determining the contribution to the fire resistance of structural members*. Other parts of this series are:

— *Part 1: Horizontal protective membranes*;

— *Part 2: Vertical protective membranes*;

— *Part 3: Applied protection to concrete member*;

— *Part 4: Applied passive protection to steel members* (the present document);

— *Part 5: Applied protection to concrete/profile sheet steel and composite members*;

— *Part 6: Applied protection to concrete filled steel composite members*;

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

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

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

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ensure that they follow written safety instructions at all times. The specific health and safety instructions contained within this standard should be followed.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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1 Scope

This European Standard specifies a test method for determining the contribution made by applied passive fire protection systems to the fire resistance of structural steel members, which can be used as beams or columns. It considers only sections without openings in the web. It is not directly applicable to structural tension members without further evaluation. Results from analysis of I or H sections are directly applicable to angles, channels and T-sections for the same section factor, whether used as individual elements or as bracing. This European Standard does not apply to solid bar or rod.

This European Standard covers fire protection systems that involve only passive materials and not to reactive fire protection materials as defined in this document.

The evaluation is designed to cover a range of thicknesses of the applied fire protection material, a range of steel sections, characterised by their section factors, a range of design temperatures and a range of valid fire protection classification periods.

This European Standard contains the fire test procedures, which specifies the tests which should be carried out to determine the ability of the fire protection system to remain coherent and attached to the steelwork, and to provide data on the thermal characteristics of the fire protection system, when exposed to the standard temperature/time curve specified in EN 1363-1.

The fire test methodology makes provision for the collection and presentation of data, which can be used as direct input to the calculation of fire resistance of steel structural members in accordance with the procedures given in EN 1993-1-2 and EN 1994-1-2.

This European Standard also contains the assessment, which prescribes how the analysis of the test data shall be made and gives guidance on the procedures by which interpolation should be undertaken.

The assessment procedure is used to establish:

a) on the basis of temperature data derived from testing loaded and unloaded sections, a correction factor and any practical constraints on the use of the fire protection system under fire test conditions, (the physical performance);

b) on the basis of the temperature data derived from testing short steel sections, the thermal properties of the fire protection system, (the thermal performance).

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 steel sections and grades and to the fire protection system.

The results of the test and assessment obtained according to this European Standard are directly applicable to steel sections of I and H cross sectional shape and hollow sections.

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 12467, *Fibre cement flat sheets — Product specification and test methods*

EN 13162, *Thermal insulating products for buildings — Factory made mineral wool (MW) products — Specification*

EN 823, *Thermal insulating products for building applications — Determination of thickness*

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