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NSAI Standards

Irish Standard
I.S. EN 12101-1:2005

Smoke and heat control systems - Part 1: Specification for smoke barriers

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Incorporating amendments/corrigenda issued since publication:
EN 12101-1:2005/A1:2006

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This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.

This document is based on:
EN 12101-1:2005

Published:
31 August, 2005

This document was published under the authority of the NSAI and comes into effect on:
4 November, 2005

ICS number:
13.220.99

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12101-1:2005/A1

March 2006

ICS 13.220.20; 23.120

English Version

Smoke and heat control systems - Part 1: Specification for smoke barriers

Systèmes pour le contrôle des fumées et de la chaleur - Partie 1: Spécifications relatives aux écrans de cantonnement de fumée

Rauch- und Wärmefreihaltung - Teil 1: Bestimmungen für Rauchschürzen

This amendment A1 modifies the European Standard EN 12101-1:2005; it was approved by CEN on 9 February 2006.

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Ref. No. EN 12101-1:2005/A1:2006: E

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Foreword

This European Standard (EN 12101-1:2005/A1:2006) has been prepared by Technical Committee CEN/TC 191 “Fixed firefighting systems”, the secretariat of which is held by BSI.

This Amendment to the European Standard EN 12101-1:2005 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2006, and conflicting national standards shall be withdrawn at the latest by December 2007.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

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NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12101-1

August 2005

ICS 13.220.99

English Version

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Ref. No. EN 12101-1:2005: E

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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 February 2006, and conflicting national standards shall be withdrawn at the latest by August 2008.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 89/106/EEC.

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

This European Standard is one part of the European Standard EN 12101, which has the general title “Smoke and heat control systems” and consists of the following separate parts:

Part 1: Specification for smoke barriers.

Part 2: Specification for natural smoke and heat exhaust ventilators.

Part 3: Specification for powered smoke and heat exhaust ventilators.

Part 4: Fire and smoke control installations — Kits.

Part 5: Guidelines on functional recommendations and calculation methods for smoke and heat exhaust ventilation systems (published as CR 12101-5)

Part 6: Specification for pressure differential systems — Kits.

Part 7: Smoke control ducts.

Part 8: Specification for smoke control dampers.

Part 9: Control panels.

Part 10: Specification for power supplies.

EN 12101 is included in a series of European Standards planned also to cover:

a) CO2 systems (EN 12094 & EN ISO 14520);

b) sprinkler systems (EN 12259);

c) powder systems (EN 12416);

d) explosion protection systems (EN 26184);

e) foam systems (EN 13565);

f) hose reel systems (EN 671);

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g) water spray systems.

Annexes A to D are normative.

Annex E is informative.

This document includes a Bibliography.

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0 Introduction

0.1 General

Smoke and heat exhaust ventilation systems (SHEVS) create a smoke free layer above the floor by removing smoke and heat, and thus improve the conditions for the safe escape and/or rescue of people and animals and the protection of property and permit the fire to be fought while still in its early stages.

The use of smoke and heat exhaust ventilation systems to create smoke free areas beneath a buoyant smoke layer has become widespread. Their value in assisting in the evacuation of people from construction works, reducing fire damage and financial loss by preventing smoke logging, facilitating fire fighting, reducing roof temperatures and retarding the lateral spread of fire is firmly established. For these benefits to be obtained it is essential that SHEVS operate fully and reliably whenever called upon to do so during their installed life. A SHEVS is a scheme of safety equipment intended to perform a positive role in a fire emergency.

Components for smoke and heat exhaust systems should be installed as part of a properly designed smoke and heat exhaust system.

SHEVS help to:

— keep the escape and access routes free from smoke;

— facilitate fire fighting operations by creating a smoke free layer;

— delay and/or prevent flashover and thus full development of the fire;

— protect equipment and furnishings and contents;

— reduce thermal effects on structural components during a fire;

— reduce damage caused by thermal decomposition products and hot gases.

For the purpose of this European Standard, a smoke barrier is deemed to be any form of barrier to the movement of fire effluent.

Smoke barriers control the movement of fire effluent within a construction works in the event of fire. Smoke barriers, when used within a smoke and heat control system, become a critical element of that system. If smoke barriers are not in their fire operational position, the system will not perform as designed. However, even in the event that other elements of the SHEVS do not function, smoke barriers in the fire operational position will provide essential smoke containment and channelling.

This European Standard applies to smoke barriers used within smoke and heat control systems, which include other equipment e.g. natural smoke and heat exhaust ventilators (EN 12101-2) and powered smoke and heat exhaust ventilators (EN 12101-3). Smoke barriers perform within specific time/temperature ranges.

0.2 Function of smoke barriers

The function of smoke barriers is to control the movement of fire effluent within construction works by forming a barrier. The functions of active or manually deployed smoke barriers are identical to those of static smoke barriers, but they also have the ability to be retracted and concealed when not in use.

Typical functions of smoke barriers are:

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— to create a smoke reservoir by containing and limiting the travel of the smoke;

— to channel smoke in a pre-determined direction;

— to prevent or retard smoke entry to another area or void.

0.3 Applications of smoke barriers

The primary applications of smoke barriers are listed below. However, as their application becomes more widespread, it is inevitable they will be put to a wider variety of uses. It should be noted that, within the scope of this standard, smoke barriers can contain smoke and gases in excess of 600 °C but are not intended to perform the same function as fire barriers, smoke control doors which show conformity with (or are tested against) EN 1634-1 and –3, unless they meet the additional temperature requirements found in Table 2. Typical applications for smoke barriers are:

— smoke reservoir boundaries;

— channelling screens;

— void edge screens;

— void sealing screens;

— corridor containment;

— shop unit containment;

— escalator containment;

— stairwell containment;

— elevator well containment.

0.4 Types of smoke barrier

Construction works elements can be used to create static smoke barriers, and they can be augmented by smoke barriers covered by this standard.

This European Standard applies to the following types of smoke barriers:

— static smoke barriers: (SSB),

— active smoke barriers: (ASB).

A wide range of different materials may be used to create smoke barriers. Typical materials used for static smoke barriers include fabric, glass, metal, fire-resisting board, fibreglass and mineral wool or any impermeable material capable of resisting the smoke at temperatures required by the design.

Typical examples of active smoke barriers include roller, pleated, folding, hinged or sliding, using the types of material as described for static smoke barriers.

Static and active smoke barriers are categorized by type and performance in Clause 4.

In addition an ASB product is deemed to include all controlling equipment etc. This does not include external controls, for example a fire alarm or a sprinkler flow switch.

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1 Scope

This part of EN 12101 specifies the product performance requirements, classifications and test methods for smoke barriers, which comprise the barrier itself, with or without associated activation and drive devices, designed for use in smoke and heat control systems. It covers only barriers installed in buildings, i.e. it does not cover barriers made of part of the building's structure. This standard provides the test methods for, and evaluation of conformity of, the smoke barrier systems.

2 Normative references

The following referenced documents are indispensable for the application of this document. 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 1634–3, *Fire resistance tests for door and shutter assemblies - Part 3: Smoke control doors and shutters*.

prCEN/TR 12101–4, *Smoke and heat control systems — Part 4: Installed SHEVS systems for smoke and heat ventilation.*

EN ISO 9001, *Quality management systems — Requirements (ISO 9001:2000)*.

EN ISO 13943:2000, *Fire safety — Vocabulary (ISO 13943:2000).*

3 Terms, definitions and symbols

3.1 General terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN ISO 13943:2000 and the following apply.

3.1.1
active smoke barrier
smoke barrier which moves from its retracted position into its fire operational position automatically when called upon to do so

3.1.2
barrier movement
travel distance (e.g. height, drop) of an active barrier from its retracted position to its fire operational position

3.1.3
channelling screen
smoke barrier installed beneath a balcony or projecting canopy to direct the flow of smoke and hot gases from a room opening to the spill edge

3.1.4
consumable power supplies
any form of power that when not available will prevent an active smoke barrier moving to the required fire operational position

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