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**Fire resistance tests — Elements  
of building construction —  
Requirements for active fire curtains**



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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 92, *Fire safety*, Subcommittee SC 2, *Fire containment*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

As fire-separating elements, active fire curtains are intended to provide two main functions:

- a) to maintain any compartmentation of buildings needed to limit the spread of fire and smoke; and
- b) to allow access to protected escape routes, both vertical and horizontal, without any loss of fire resistance, and to limit smoke entry into these routes, i.e. protected corridors and protected shafts.

They can also be partially deployed to control the deployment of fire effluent within buildings in the event of fire, prior to being fully deployed as active fire curtains.

Recommended positions and ratings for fire-separating elements for means of escape purposes are given in national codes providing either prescriptive or risk-based approaches using the principles of fire safety engineering.

When used as part of a fire-engineered design solution, active fire curtains can become a critical element of design. If active fire curtains do not deploy to their operational position, the fire-engineered design solution is compromised. However, in the event that other fire protection systems or elements do not function (e.g. due to total power failure), active fire curtains in their fire-operational position provide fire separation.

Active fire curtains used in life safety and property protection applications can be vertical, horizontal or angled. Depending on the application, they are at times used to replace fire doors, roller shutters, non-loadbearing walls, non-loadbearing ceilings, glazed elements, etc. At times, they are also used to form fire separation, e.g. forming protected routes or lobbies. They provide some of the functionalities of a fire door, but when used only for fire and smoke leakage, as a fire door, then different requirements apply. These requirements are given in ISO 3008-1 and ISO 5925-1, and further information is given in ISO/TR 5925-2. Active fire curtains enable greater widths and deployments using less space than other traditional methods.

It is essential that any proposed use of active fire curtains be assessed in the context of the building use and perceived occupancy to ensure that it is ultimately suitable and fit for purpose, taking into consideration such factors as:

- a) fire resistance;
- b) reaction to fire;
- c) smoke leakage;
- d) occupancy type and risk profile;
- e) occupancy load;
- f) means of escape for egress;
- g) ingress for fire and rescue service;
- h) life safety and property protection objectives.

Some examples of how active fire curtains are deployed are:

- a) deploy fully upon receipt of a signal from the fire alarm system;
- b) remain retracted when the fire alarm system is activated and only deploy upon receipt of a signal from a local smoke/heat detector. In these circumstances, the only active fire curtains to deploy are those where fire or smoke are in the vicinity;
- c) remain retracted when the fire alarm system is activated for a predetermined time to allow for evacuation before deploying fully;

- d) for vertical installations, move to a given height above finished floor level when the fire alarm system is activated to contain smoke for a predetermined time before closing fully for fire separation;
- e) for vertical installations, move to a given height above finished floor level when a specific fire alarm system signal is provided to contain smoke when the fire location is such that active fire curtains are not required to deploy fully;
- f) deploy upon loss of primary and auxiliary power supply.

In fire safety situations, it is often important to establish the heat transfer from one side of the separating element to the other in order to calculate escape route sizes and safe operating distances. Traditionally this has been established using insulation and radiation measurements.

NOTE National codes apply to life safety. Higher performance levels are sometimes necessary for certain applications if property protection is required.





# Fire resistance tests — Elements of building construction — Requirements for active fire curtains

## 1 Scope

This document specifies requirements for the design, testing and classification of active fire curtains, applicable to any material, that are designed to provide fire and smoke resistance.

This document gives recommendations for the application, installation and maintenance of active fire curtains. It is also intended to provide guidance and recommendations for designers, specifiers (e.g. architects, fire engineers), authorities having jurisdiction (AHJs), installers and maintainers for the following:

- a) creating compartmentation;
- b) creating protected routes for the purpose of means of escape;
- c) providing protection at the location of non-fire resisting elements (e.g. in front of non-fire-resisting glazing and doorsets) where required for compartmentation or protecting means of escape;
- d) providing fire- and smoke-resistant active fire curtains in conjunction with non-smoke rated products protecting openings to reduce leakage of smoke.

This document does not apply to the following, which are intended for a different use:

- barriers made of part of the building's structure;
- theatre/proscenium textile curtains;
- smoke barriers according to ISO 21927-1;
- door and shutter assemblies according to ISO 3008-1.

NOTE 1 Smoke barriers used solely for smoke control are covered by ISO 21927-1. Such smoke barriers are not considered to be active fire curtains.

NOTE 2 Requirements of fire doors are given in ISO 3008-1. Requirements for leakage are given in ISO 5925-1 and further information is given in ISO/TR 5925-2.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 834-1, *Fire-resistance tests — Elements of building construction — Part 1: General requirements*

ISO 1182, *Reaction to fire tests for products — Non-combustibility test*

ISO 1716, *Reaction to fire tests for products — Determination of the gross heat of combustion (calorific value)*

ISO 3009, *Fire-resistance tests — Elements of building construction — Glazed elements*

ISO 5925-1, *Fire tests — Smoke-control door and shutter assemblies — Part 1: Ambient- and medium-temperature leakage tests*

ISO 9705-1, *Reaction to fire tests — Room corner test for wall and ceiling lining products — Part 1: Test method for a small room configuration*

ISO 11925-2, *Reaction to fire tests — Ignitability of products subjected to direct impingement of flame — Part 2: Single-flame source test*

ISO 13943, *Fire safety — Vocabulary*

ISO 21927-10, *Smoke and heat control systems — Part 10: Specification for power output devices*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 834-1 and ISO 13943 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

#### 3.1 active fire curtain

curtain, manufactured from flexible materials, not hinged or pivoted, provided for the passage of persons, air and objects, which, together with its frame as installed in a building, is intended (when closed) to resist the passage of fire

#### 3.2 compartmentation

process of separating a building or part of a building into one or more rooms, spaces or storeys, with the intention of preventing the spread of fire to or from another part of the same building or adjoining building

Note 1 to entry: Compartmentation is mainly implemented to assist the fire and rescue services by confining the fire within a fire-resisting enclosure. In some instances, it is employed to assist means of escape in buildings where evacuation might be delayed (e.g. where phased evacuation policy has been applied in premises such as hospitals and care homes) or where a policy of non-evacuation (e.g. “defend in place” or “stay put strategy”) is employed, as in blocks of flats.

Note 2 to entry: Fire enclosures specifically for the purpose of means of escape, such as lobby protection to stairways and enclosure of special risks, are not regarded as compartments and may employ passive smoke separation measures.

#### 3.3 competent person

individual suitably trained and qualified by knowledge and practical experience and provided with the necessary instructions to enable the required task(s) to be carried out correctly

#### 3.4 deployment

movement of an active fire curtain from its retracted position to its fire-operational position

#### 3.5 dwelling

unit of residential accommodation occupied (whether or not as a sole or main residence):

- a) by a single person or by people living together as a family; or
- b) by not more than six residents living together as a single household, including a household where care is provided for residents