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**Fire tests for building elements and  
components — Fire testing of service  
installations —**

**Part 1:  
Penetration seals**

*Essais au feu pour les éléments et composants de bâtiment — Essai au  
feu des installations de service —*

*Partie 1: Joints d'étanchéité*



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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 10295-1 was prepared by Technical Committee ISO/TC 92, *Fire safety*, Subcommittee SC 2, *Fire containment*.

ISO 10295 consists of the following parts, under the general title *Fire tests for building elements and components — Fire testing of service installations*:

— *Part 1: Penetration seals*

A Part 2 dealing with linear joint (gap) seals and a Part 3 dealing with the methodology for establishing direct and indirect fields of application for single component penetration seals are under preparation.

## Introduction

This part of ISO 10295 has been prepared to provide a method of test for assessing the contribution of a penetration sealing system to the fire resistance of separating elements when they have been penetrated by a service. It should be read in conjunction with ISO 834-1. This part of ISO 10295 contains specific requirements for fire resistance testing that are unique to the elements of building construction described as a penetration sealing system. The requirements for these penetration sealing systems are intended to be applied as appropriate in conjunction with the detailed and general requirements contained in ISO 834-1.

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# Fire tests for building elements and components — Fire testing of service installations —

## Part 1:

### Penetration seals

**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 the test elements or structures, their testing and 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.

## 1 Scope

This part of ISO 10295 specifies the heating condition, method of test and criteria for the evaluation of the ability of a penetration sealing system to maintain the integrity and insulation of a fire separating element at the position at which it has been penetrated, for example by a service.

This part of ISO 10295 assesses

- a) the effect of such penetrations on the integrity and insulation performance of the element concerned,
- b) the integrity and insulation performance of the penetration sealing system,
- c) the insulation performance of the penetrating service or services, and where appropriate, the integrity failure of a service.

This part of ISO 10295 does not provide information concerning the influence of the inclusion of such penetrations and sealing systems on the load-bearing capacity of the element.

It is possible that a penetration seal is a component of, or contributes to the performance of, a system to which special requirements apply. In such cases additional tests, relevant to the system and its function, can be necessary. Examples are chimneys and fire-rated ducts in air distribution systems.

This part of ISO 10295 is not intended to provide quantitative information on the rate of leakage of smoke and/or hot gases or on the transmission or generation of fumes. Such phenomena are to be noted in describing the general behaviour of specimens during test.

This part of ISO 10295 does not provide information on the ability of the seal to withstand stresses that can be caused by the movement or displacement of the penetration services in practice.

**NOTE** Explanatory notes are included in Annex A.

## 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.

ISO 13943, *Fire safety — Vocabulary*

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

## 3 Terms and definitions

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

### 3.1

#### **fire separating element**

floors, walls and other separating elements of construction having a period of fire resistance determined in accordance with ISO 834-1

### 3.2

#### **penetration**

aperture within a fire separating element usually present to accommodate the passage of a service through that element

### 3.3

#### **service**

penetrating item for example a cable, conduit, pipe with or without any insulation, duct, chimney, or trunking, excluding air ventilation systems and fire-rated ventilation ducts, smoke extract ducts and fire-rated service ducts and shafts

### 3.4

#### **penetration seal**

single component or system used to maintain the fire resistance of the fire separating element at the position where services pass through the element

### 3.5

#### **penetration sealing system**

assembly for test consisting of the penetrating service or services and the penetration seal, materials or devices, together with any service support construction, designed to maintain the integrity and insulation performance of the separating element for the duration of the fire test

### 3.6

#### **service support**

mechanical support provided in the form of clips, ties, hangers, ladder racks or trays, or any device designed to carry the load imposed by the penetrating services

### 3.7

#### **blank penetration seal**

system where an aperture of specified size in the fire separating element is sealed or closed by the specified seal without incorporation of penetrating services

### 3.8

#### **test construction**

complete assembly, consisting of the separating element and penetration sealing system