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

Part 3:

Single component penetration seals — Guidance on the construction and use of test configurations and simulated services to characterise sealing materials

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

Partie 3: Joints de pénétration à composant unique — Lignes directrices sur la construction et l'utilisation des configurations d'essai et des processus de simulation permettant de caractériser les matériaux 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.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

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/TR 10295-3 was prepared by Technical Committee ISO/TC 92, *Fire safety*, Subcommittee SC 2, *Fire containment*.

ISO/TR 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*
- *Part 2: Linear joint (gap) seals*
- *Part 3: Single component penetration seals — Guidance on the construction and use of test configurations and simulated services to characterize sealing materials*

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Introduction

This Technical Report describes a range of standard test configurations and associated testing procedures designed to determine the relevant characteristics of a penetration seal composed of one material when subjected to the standard fire exposure conditions outlined in ISO 834-1. It is used in conjunction with ISO 10295-1 in order to establish relationships between the parameters that influence the performance of the seal in use. The test data generated by this procedure are intended to assist in the classification of penetration seals based on their intended use and fire resistance under the specified acceptance criteria of this part of ISO 10295, i.e. their field of extended application by use of the methodology given in ISO/TR 12470.

In addition, the methodology is recommended to manufacturers for use when developing new sealing products, as it provides a way of establishing the limiting characteristics of the sealing system in a quantifiable manner. This report describes a procedure intended to be followed utilizing a well selected series of test configurations, which can be used to generate a data set to characterize the fire sealing capabilities of a single component penetration seal material. The data set is intended to contain enough information to provide users with engineering data to determine the suitability of the material in applications other than that in which the material was originally tested.

A wide variety of product types is used to reinstate the integrity of a fire-separating element when penetrated by a service or group of services. These product types include, for example

- a) soft fillers (sealants or 'mastics');
- b) semi-rigid intumescent strip materials on their own or in combination with elastomeric foam materials;
- c) rigid fibrous batts;
- d) rigid board systems;
- e) rigid fillers (epoxies or cementitious);
- f) cementitious plasters/clay/vermiculite systems.

A wide variety of materials is used to "firestop" penetrations through which building services pass. These materials all fail at some time during a fire, but the nature of the method of failure; melting, slumping, charring through etc., needs to be fully understood if a field of application is to be determined with any confidence. Standard configurations and their associated test procedures need, in due course, to be derived to replicate the appropriate failure modes and also to increase the range of simulated services so the range of tests and configurations described in this part of ISO 10295 are not exhaustive.