
**Fire resistance tests — Fire dampers for air
distribution systems —**

**Part 4:
Test of thermal release mechanism**

*Essai de résistance au feu — Clapets résistant au feu pour systèmes de
distribution d'air —*

Partie 4: Méthode d'essai du mécanisme de déclenchement thermique



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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 3.

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 part of ISO 10294 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 10294-4 was prepared by Technical Committee ISO/TC 92, *Fire safety*, Subcommittee SC 2, *Fire containment*. A test method was needed to evaluate the correct operation of damper-operating mechanisms.

ISO 10294 consists of the following parts, under the general title *Fire resistance tests — Fire dampers for air distribution systems*:

- *Part 1: Test method*
- *Part 2: Classification, criteria and field of application of test results*
- *Part 3: Guidance on the test method*
- *Part 4: Test of thermal release mechanism*

Annexes A and B of this part of ISO 10294 are for information only.

Fire resistance tests — Fire dampers for air distribution systems —

Part 4: Test of thermal release mechanism

WARNING — In order that suitable precautions may be taken to safeguard health, the attention of all concerned in fire testing is drawn to the possibility that toxic or harmful gases may be evolved during the conduct of this test.

1 Scope

This part of ISO 10294 specifies the test requirements related to thermal release mechanisms used in fire dampers tested in accordance with ISO 10294-1. Only the thermal release mechanism is subjected to the tests described. The test methods are designed to ensure that under fire conditions the thermal release mechanism complies with the expected functions so that the damper will close completely so as to prevent the spread of fire.

This part of ISO 10294 also includes a method for ensuring that the thermal release mechanism does not close the damper in non-fire conditions. The effect of corrosion on the operational reliability of the release mechanism is also evaluated.

This method is only applicable to thermal release mechanisms installed within the damper or duct. It does not cover thermal release mechanisms that are located outside the ventilation duct.

The test can provide information on comparative performance between one thermal release mechanism and another and thus provides for the testing of thermal release mechanisms that have not been included in the damper assembly that was tested in accordance with ISO 10294-1.

The method specified in this part of ISO 10294 will determine whether the thermal activation system for the closing device of a fire damper system

- is suitable for a fire damper assembly to be tested according to ISO 10294-1,
- is suitable for a fire damper already qualified according to ISO 10294-1 with an alternative system of the same class (temperature-load),
- is capable of maintaining its performance after the reliability tests.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 10294. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 10294 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 10294-1:1996, *Fire resistance tests — Fire dampers for air distribution systems — Part 1: Test method*.

ISO/IEC 13943:2000, *Fire safety — Vocabulary*.

3 Terms and definitions

For the purposes of this part of ISO 10294, the terms and definitions given in ISO/IEC 13943 and the following apply.

3.1 fire dampers

mobile closure within a duct which is operated automatically or manually and is designed to prevent the passage of fire

3.2 thermal release mechanisms

system which evaluates the parameters of temperature in the airflow of the ventilation duct and initiates the closing of the fire damper before a predicted threshold limit is reached

NOTE The sensing element may be, for example, a fusible link, memory metal, frangible bulb or electrical sensor.

3.3 threshold limit

temperature before which the thermal release mechanism must have operated

4 Requirements

4.1 Thermal release

The thermal release mechanism is installed in the centreline of the cross section of the test duct, which is part of the test arrangement according to Figure 1 or Figure 2. The test arrangement shall include a heating arrangement that can expose the thermal release mechanism to the conditions specified in 4.2, also a fan and velocity measuring equipment. A suitable method of controlling the air temperature and velocity shall be provided.

The position in which the thermal release mechanism is installed shall be chosen such that the airflow conditions near the heat-sensitive element are in accordance with the practical conditions. If the test specimens are not absolutely symmetrical, the test of response behaviour described in 4.2 and the test of faulty set-off described in 4.3 shall be performed in both possible directions of airflow.