INTERNATIONAL STANDARD

ISO 10294-2

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Fire resistance tests — Fire dampers for air distribution systems —

Part 2:
Classification, criteria and field of application of test results

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

Partie 2: Classification, critères et domaine d'application des résultats d'essai

Reference number
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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.

International Standard ISO 10294-2 was prepared by Technical Committee ISO/TC 92, *Fire safety*, Subcommittee SC 2, *Fire resistance*.

Preparation of this part of ISO 10294 was necessary because of the need to provide classification, criteria and field of application for the test method given in ISO 10294-1:1996.

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: Thermal release mechanism test*

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Fire resistance tests — Fire dampers for air distribution systems —

Part 2:
Classification, criteria and field of application of test results

1 Scope

This part of ISO 10294 provides the classification and appropriate criteria for the test procedure described in ISO 10294-1:1996, for the assessment of a fire damper to prevent the spread of fire and hot gases from one compartment to another. It also specifies the size of the dampers to be tested.

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 2: Classification, criteria and field of application of test results.*

ISO 10294-3:1999*, Fire resistance tests — Fire dampers for air distribution systems — Part 3: Guidance on the test method.*

3 Classification and criteria

Depending on the classification required, the size of the fire damper to be tested and the criteria to be applied are given in Table 1.

Table 1 — Fire test performance criteria

Classification [a]	Size to be tested	Leakage at ambient temperature $m^3/(h \cdot m^2)$ (See clause 8 of ISO 10294-1:1996)	Fire test (See clause 9 of ISO 10294-1:1996)		
			Leakage limited $m^3/(h \cdot m^2)$	Temperature rise limit, °C mean/max.	Perimeter integrity[b]
E	max.	not required	360 [c]	not required	GG/SF
ES	max.	200	200 [c]	not required	GG/SF
	min.	200	not required	not required	not required
EI	max.	not required	360 [c]	140/180	CP/GG/SF
EIS	max.	200	200 [c]	140/180	CP/GG/SF
	min.	200	not required	not required	not required

In relation to the criteria for leakage (S), the values given shall be satisfied in both the ambient temperature (smallest damper and largest damper in the range) and the fire test (largest damper in the range).

NOTE 1 The maximum temperature rise limit (180 °C) can be determined at any of the thermocouples T_1, T_2 and T_s (or the roving thermocouple described in ISO 834-1) and the mean (average) temperature rise (140 °C) will be determined from thermocouples T_2. Locations of the thermocouples are shown in Figures 3 to 8 of ISO 10294-1:1996.

NOTE 2 For the purposes of calculating compliance with the leakage criteria in this table, the area of a damper may be taken to be the cross-sectional area of the duct to which the damper is connected.

NOTE 3 Classification of integrity is according to whether or not the damper is also classified for insulation. Where a damper is classified for integrity E and insulation I, the integrity is that determined by whichever of the three criteria fails first. Where a damper is classified E but without an I classification, the integrity value is defined as the time to failure of only the cracks/openings or sustained flaming criteria, whichever fails first.

[a] E is the integrity (gas flow corrected to 20 °C);
I is the insulation (see note 1);
S is the leakage classification (see note 2) (gas leakage corrected to 20 °C).

[b] CP is the cotton pad (see note 3);
GG is the gap gauge (see note 3);
SF is the sustained flaming (see note 3).

[c] Leakage limits only apply after 5 min from the start of the test.

4 Field of application of test results

4.1 Size of fire damper

If the S classification is not required, a test result obtained for the largest fire damper in the range is applicable to all dampers of the same type (including any aspect ratio) provided that the maximum dimensions do not exceed those tested and that the components remain in the same orientation as that tested.

If the S classification is required, an additional fire damper, representing the smallest size in the range, shall satisfy the smoke leakage criteria when tested according to the procedure described in clause 8 of ISO 10294-1:1996.

4.2 Fire dampers installed within structural openings

A test result obtained for an installed fire damper is only applicable to dampers installed in the same orientation as that tested (see also 6.1.2 of ISO 10294-3:1999).

4.3 Fire dampers mounted onto the face of a wall or floor

A test result obtained for a fire damper installed onto the face of a wall or floor is only applicable to dampers installed onto the face of a separating element in the same orientation as that tested (see also 6.1.4 of ISO 10294-3:1999).

4.4 Fire dampers remote from a wall or floor

See 6.1.5 of ISO 10294-3:1999.

A test result obtained for a fire damper remote from a wall or floor (of the same fire resistance as the damper) is applicable to the following dampers:

a) for mounting remote from a wall and attached to a length of a horizontal fire-resisting ductwork when tested remote from a wall (two tests, see Figures 7 and 8 of ISO 10294-1:1996);

b) for mounting remote from a floor and attached to a length of vertical fire-resisting ductwork on the side above the floor when tested above the floor;

c) for mounting remote from a floor and attached to a length of vertical fire-resisting ductwork on the side below the floor when tested below the floor.

4.5 Separation between fire dampers and between fire dampers and construction elements

A test result obtained for only one fire damper or for two fire dampers with a minimum clear separation of 200 mm between the dampers is applicable to a minimum separation, in practice, of:

a) 200 mm between dampers installed in separate ducts;

b) 75 mm between damper and a construction element (wall/floor).

4.6 Supporting constructions

4.6.1 A test obtained for a fire damper mounted in or on the face of a supporting construction made of masonry, concrete or homogeneous partition (without continuous cavity) is applicable for the same type of supporting construction with a thickness and density equal to or greater than those of the supporting construction used in the test. The test result can apply to cellular or hollow masonry blocks or slabs that have a fire resistance time equal to or greater than the fire resistance required for the fire damper installation.

4.6.2 If a specific supporting construction different from those described in 6.5.2 of ISO 10294-1:1996 is selected, the test results obtained are applicable only to that specific wall, partition or floor having a thickness and/or density greater than that tested.

Bibliography

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

[1] To be published.

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