SLOVENSKI STANDARD
SIST EN 13141-1:2004

01-september-2004

Prezraļevanje stavb - Preskuġanje lastnosti stanovanjskih prezraļevalnih komponent/izdelkov - 1. del: Zunanje in notranje vgrajeni zraļni prenosniki

Ventilation for buildings - Performance testing of components/products for residential ventilation - Part 1: Externally and internally mounted air transfer devices

Lüftung von Gebäuden - Leistungsprüfungen von Bauteilen/Produkten für die Lüftung von Wohnungen - Teil 1: Außenwand- und Überströmluftdurchlässe

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Ventilation des bâtiments - Essais des performance des composants/produits pour la ventilation des logements - Partie 1: Dispositifs de transfert d'air montés en extérieur et intérieur

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Ta slovenski standard je istoveten z: **EN 13141-1:2004**

ICS:

91.140.30	Prezraļevalni in klimatski sistemi	Ventilation and air-conditioning

SIST EN 13141-1:2004 **en**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13141-1

January 2004

ICS 91.140.30

English version

Ventilation for buildings - Performance testing of components/products for residential ventilation - Part 1: Externally and internally mounted air transfer devices

Ventilation des bâtiments - Essais des performances des composants/produits pour la ventilation des logements - Partie 1: Dispositifs de transfert d'air montés en extérieur et en intérieur

Lüftung von Gebäuden - Leistungsprüfungen von Bauteilen/Produkten für die Lüftung von Wohnungen - Teil 1: Außenwand- und Überströmluftdurchlässe

This European Standard was approved by CEN on 22 October 2003.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 13141-1:2004) has been prepared by Technical Committee CEN/TC 156 "Ventilation for buildings", the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by July 2004, and conflicting national standards shall be withdrawn at the latest by July 2004.

This standard is one of a series of standards on residential ventilation. The performance characteristics of the components/products for residential ventilation are given in EN 13142.

The position of this standard in the field of mechanical building services is shown in Figure 1.

Annex A is informative.

This document includes a bibliography.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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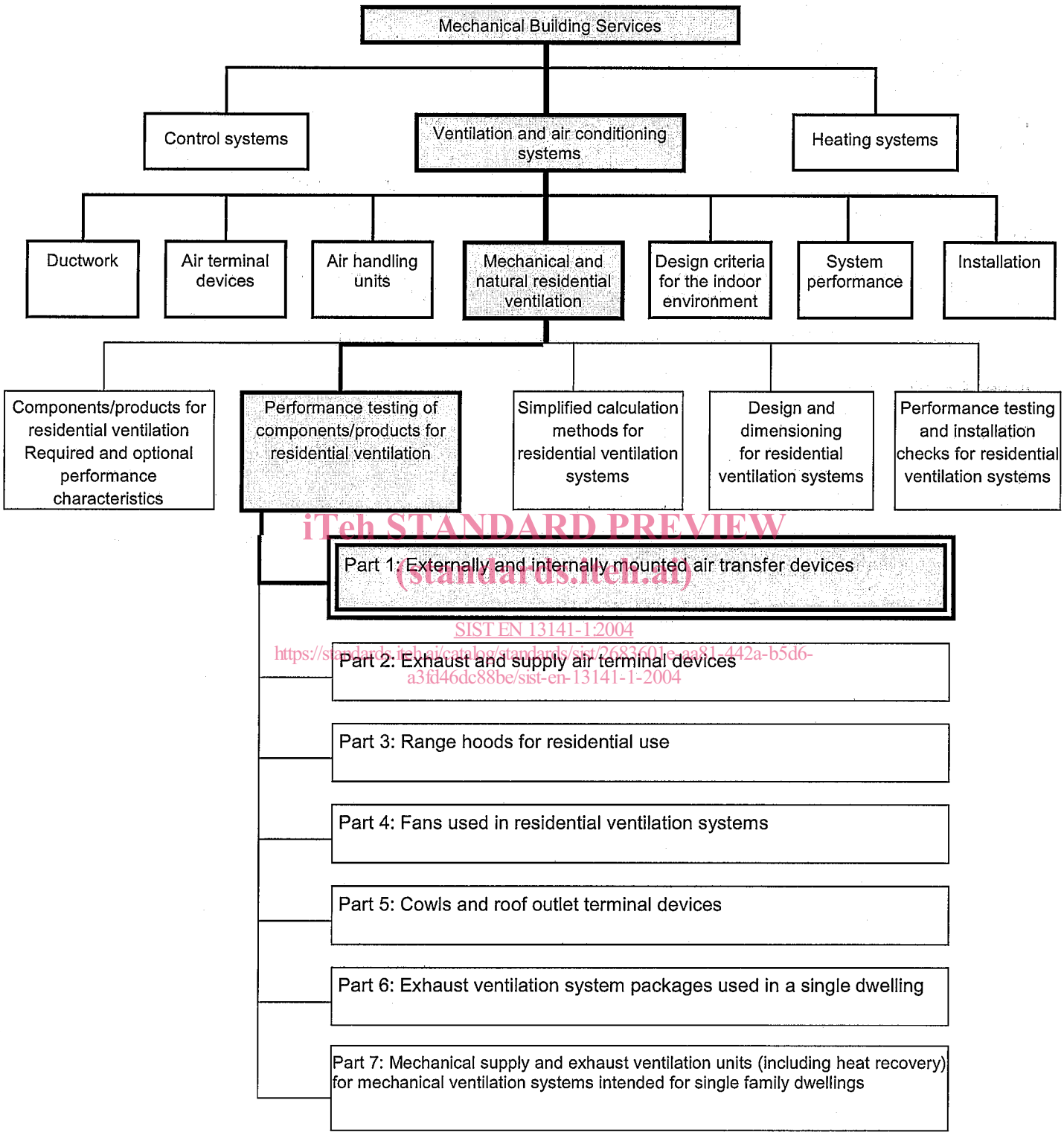

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Figure 1 - Position of EN 13141-1 in the field of mechanical building services

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1 Scope

This European Standard specifies laboratory methods for testing externally and internally mounted air transfer devices operating under pressure differences.

It applies to devices located between two spaces (between one room and outside, or between two rooms) of the following types:

— devices with fixed opening(s);

— devices with manually adjustable opening(s);

— devices with pressure difference controlled opening(s);

— window openings specifically designed to act as an air transfer device.

It describes tests intended to characterise the following:

— flow rate/pressure;

— non-reverse flow ability;

— 'air tightness when closed' (for closeable externally mounted air transfer device);

— geometrical free area;

— air diffusion in the occupied zone;

— sound insulation;

— water tightness.

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This standard does not apply to evaluation of:

— air filtration;

— condensation risk;

— noise production.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments)

EN 1027, *Windows and Doors – Watertightness – Test method.*

EN 12238, *Ventilation for buildings – Air terminal devices – Aerodynamic testing and rating for mixed flow application.*

EN 12792, *Ventilation for buildings – Symbols, terminology and graphical symbols.*

EN 13182, *Ventilation for buildings – Instrumentation requirements for air velocity measurements in ventilated spaces.*

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EN 20140, *Acoustics – Measurement of sound insulation in buildings and of building element.*

ISO 5221, *Air distribution and air diffusion – Rules to methods of measuring air flow rate in an air handling duct.*

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 12792 together with the following apply.

3.1
externally mounted air transfer device
device designed to allow the passage of air through the building envelope with the minimum ingress of rain, snow, foreign bodies, etc.

3.2
internally mounted air transfer device
device designed to allow the passage of air between two internal spaces

3.3
fixed device
device without any moving part intended to control the air flow rate

3.4
manually adjustable device
device whose moving parts are controlled by the user

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3.5
pressure difference controlled device
device whose moving parts are controlled according to the pressure difference - across it

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3.6
static pressure difference(Δp)
static pressure difference between the upstream and the downstream part of the tested device (in Pa)

3.7
flow rate/pressure characteristic
relationship between the flow rate through a device and the pressure difference across it

3.8
non-reverse flow ability
ability of an air transfer device to prevent the air flow to reverse when the pressure difference Δp across it is inverted

3.9
occupied zone (for laboratory purpose)
zone of the test room limited to 1,8 m above floor level 0,5 m from any wall and 0,1 m from floor

3.10
water tightness
ability of an externally mounted air transfer device to resist water penetration

NOTE It is observed in the conventional conditions of test defined in this standard.

3.11
water penetration
penetration of water that would continuously or repeatedly wet parts of a building or components not designed to be wetted

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3.12
pressure limit of water tightness
maximum pressure recorded during the test at which water tightness is assured

3.13
equivalent area
area of a sharp edged circular orifice which would pass the same air flow rate and at the same applied pressure difference as the product or device being tested

3.14
geometrical free area
sum of the cross sectional areas of all unobstructed openings measured in the plane of maximum restriction and at right angles to the flow through the openings

4 Performance testing of aerodynamic characteristics

4.1 Flow rate/pressure

4.1.1 Principle

This test consists of measuring several volume flow rates induced through a device by the applied static pressure difference to define the flow rate/pressure characteristic curve. In the case of manually adjustable devices this test shall be carried out at maximum and minimum opening conditions specified by the manufacturer.

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NOTE The test described below may also be used for testing the non-reverse flow ability (see 4.2) and/or for determining the "air tightness when closed" for closeable externally mounted air transfer devices (see 4.3).

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4.1.2 Test installation, conditions and uncertainty of measurement

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4.1.2.1 Test installation and conditions

Externally and internally mounted air transfer devices shall be mounted, according the manufacturer's instructions, for testing on a board which represents the thickness of partition in which they are intended to be installed, for example:

— board 20 mm thick to represent a window glass;

— board 60 mm thick to represent a window frame;

— board 300 mm thick to represent a wall

The thickness of the board shall be recorded in the report (see 4.1.4).

The device to be tested shall be installed in accordance with Figure 2.

The test installation shown in Figure 2 comprises:

— a test box where air velocity is negligible (see design data given in Figure 2).

The test box shall be rigid enough to avoid a pulsing air flow. and no displacement of more than 2 mm shall be accepted on any face under the given test conditions;

— a means for measuring static pressure inside the test box relative to the surrounding space with an uncertainty in accordance with 4.1.2.2;

— measuring duct with an air flow meter and air flow straightener in accordance with ISO 5221. Other measurement devices may be used, provided they allow measurements with an uncertainty in accordance with 4.1.2.2;

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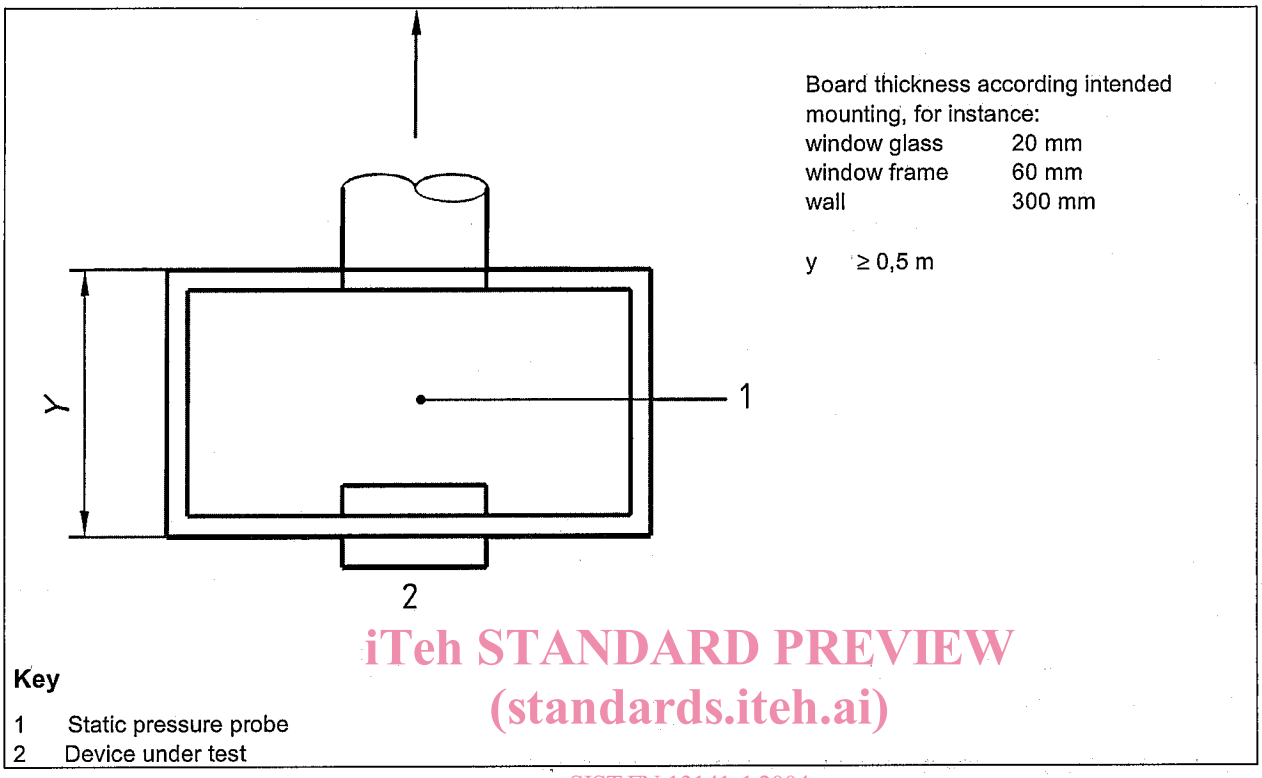
— a fan with means to vary the pressure difference across the device, covering the range of Table 1.

The test facilities shall have a range from 0 Pa to + 100 Pa.



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Key

1 Static pressure probe
2 Device under test

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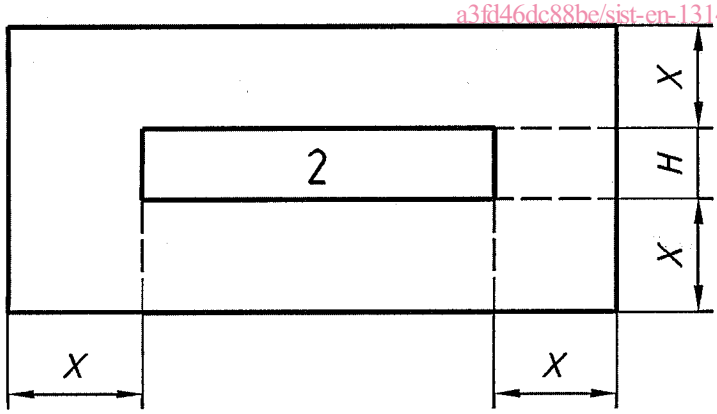
(a) Test box



x ≥ 0,3 m

Key

2 Device under test

(b) Mounting of a rectangular device box

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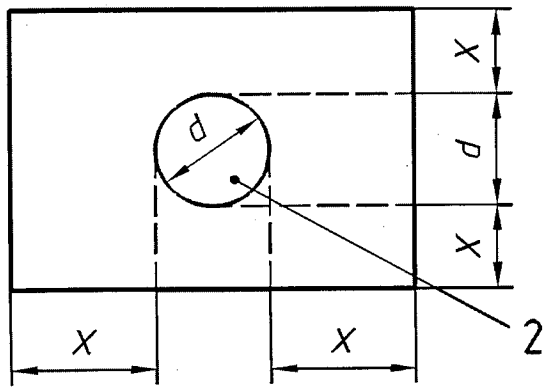

x ≥ 0,3 m

Key

2 Device under test

(c) Mounting of a round device

NOTE *H* and *d* are dimensions (height or diameter) of the device under test.

Figure 2 — Test installation

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The air permeability of the test equipment shall be measured with the test specimen sealed, over the same range of pressure differences used during the performance testing of the specimen.

The air permeability of the test equipment shall be reported and shall generate a leakage lower than 1 l/s at 100 Pa.

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4.1.2.2 Uncertainty of measurement

In the case of air transfer devices with pressure difference controlled openings:

— the pressure shall be measured with an uncertainty lower than:

(0,2 + 0,03) × (measured value) (Pa)

— the volume flow rate shall be measured with an uncertainty lower than:

(0,3 + 0,03) × (measured value) ($l \cdot s^{-1}$)

For other air transfer devices:

— the pressure shall be measured with an uncertainty lower than:

(0,5 + 0,03) × (measured value) (Pa)

— the volume flow rate shall be measured with an uncertainty lower than:

(0,3 + 0,03) × (measured value) ($l \cdot s^{-1}$)

NOTE The combined uncertainties of measurement will result in a total accuracy of the test method in the range of 3 % to 5 %.

4.1.3 Test procedure

According to the type of the tested device, the measurements shall be taken for the following number of points, each taken within one of the pressure difference ranges (bands) given in Table 1: