SLOVENSKI STANDARD
SIST EN 13141-1:2019

01-julij-2019

Nadomešča:
SIST EN 13141-1:2004

Prezračevanje stavb - Preskušanje lastnosti sestavnih delov/izdelkov za prezračevanje stanovanjskih stavb - 1. del: Zunanje in notranje vgrajeni zračni 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

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

Ta slovenski standard je istoveten z: **EN 13141-1:2019**

ICS:

91.140.30	Prezračevalni in klimatski sistemi	Ventilation and air-conditioning systems

SIST EN 13141-1:2019 **en,fr,de**

EUROPEAN STANDARD

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EN 13141-1

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

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This European Standard was approved by CEN on 26 November 2018.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 13141-1:2019) 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 2019, and conflicting national standards shall be withdrawn at the latest by July 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

A list of all parts in the EN 13141 series, published under the general title "*Ventilation for buildings — Performance testing of components/products for residential ventilation"* can be found on the CEN website.

This document supersedes EN 13141-1:2004.

In addition to a number of editorial revisions, the following main changes have been made with respect to EN 13141-1:2004:

— terms, definitions, symbols and units have been updated;

— in 5.1.2.1, the test installation has been completed;

— in 5.1.2.2, uncertainty of measurement has been amended and brackets removed;

— in 5.1.3, the test procedure has been updated;

— in 5.1.4, analysis of results has been updated;

— in 5.1.5, a dimensioned drawing of the air transfer device, opening and position on the board in the test is now required in the test report;

— in 5.5.3, one minor update to the zone test heights has been made;

— in Clause 6, performance of testing sound insulation requirement to conduct test in the board configuration as indicated in 5.1.2.1 has been added;

— Annex B (informative) showing typical examples has been added.

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

Introduction

The position of this document in the field of standards for the mechanical building services is shown in Figure 1.

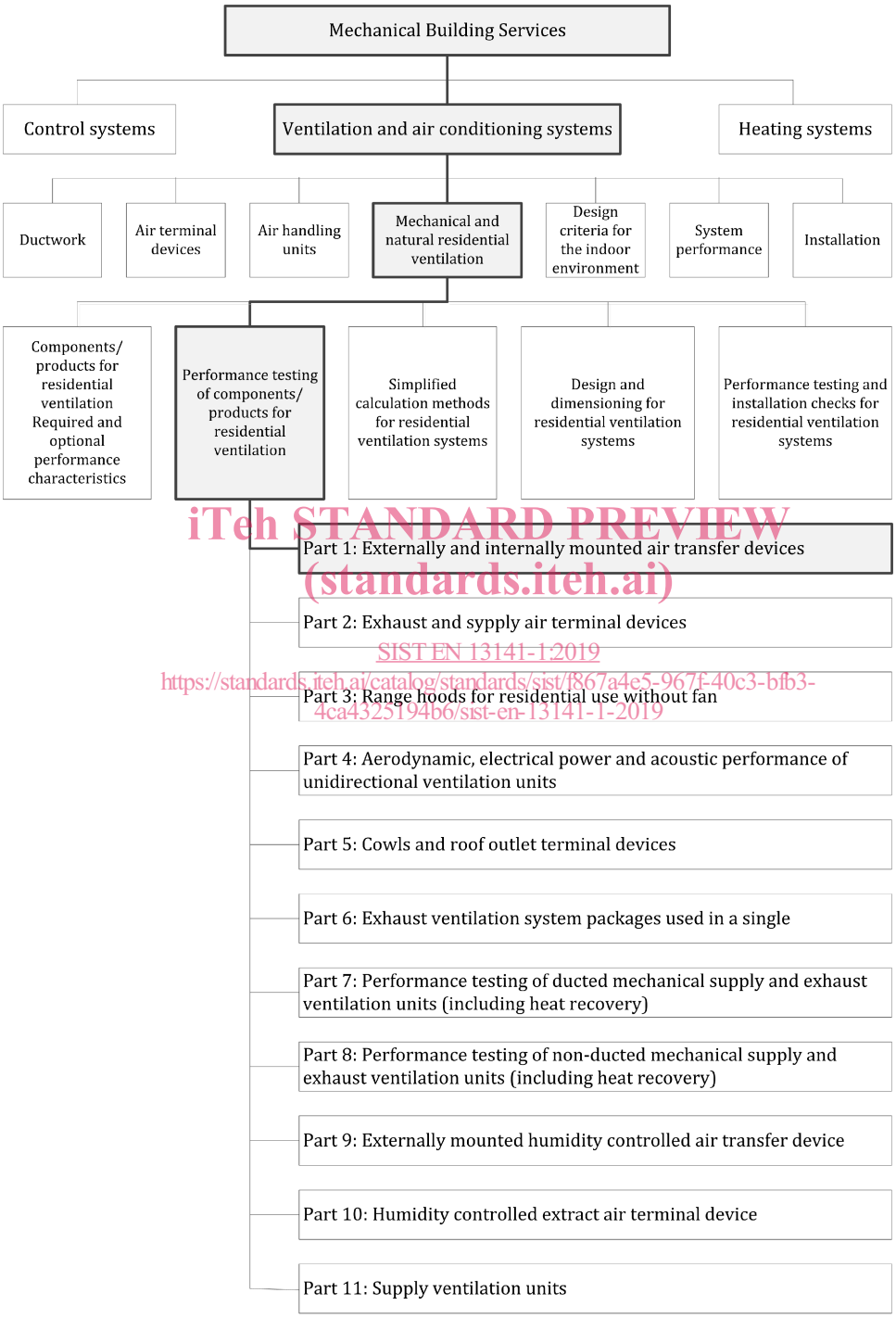

Figure 1 — Position of EN 13141-1 in the field of the mechanical building services

1 Scope

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

This document applies to air transfer devices of the following types:

— air transfer devices with fixed opening(s);

— air transfer devices with manually adjustable opening(s);

— air transfer devices with pressure difference controlled opening(s);

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

This document describes tests intended to characterize the following:

— flow rate/pressure;

— equivalent area

— reverse flow ability;

— air tightness when closed;

— free area;

— air diffusion in the occupied zone;

— sound insulation;

— water tightness.

This document does not apply to evaluation of:

— air filtration;

— condensation risk;

— noise production.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN 1027, *Windows and doors — Water tightness —- 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*

EN ISO 10140-2, *Acoustics — Laboratory measurement of sound insulation of building elements — Part 2: Measurement of airborne sound insulation (ISO 10140-2)*

EN ISO 5167 (all parts), *Measurement of fluid flow by means of pressure differential devices inserted in circular cross-section conduits running full (ISO 5167 (series))*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12792 and the following apply.

ISO and IEC maintain terminological databases for the use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
externally mounted air transfer device
device designed to allow the passage of air through the building envelope

Note 1 to entry: Schematically, an externally mounted air transfer device is an assembly made of an external component, an opening and an internal component.

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

Note 1 to entry: Schematically an internally mounted air transfer device is an assembly made of an internal component, an opening and another internal component.

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

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

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

3.6
flow rate/pressure characteristic
relationship between the flow rate through a device and the pressure difference across it

3.7
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

3.8
occupied zone
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

Note 1 to entry: This definition is given for laboratory purpose.

3.9
water tightness
ability of a device to resist water penetration

Note 1 to entry: It is observed in the conventional conditions of test defined in this document.

3.10
water penetration
penetration of water that would continuously or repeatedly wet parts of a building or components not designed to be wetted

3.11
pressure limit of water tightness
maximum pressure recorded during the test at which water tightness is assured

3.12
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 device being tested

3.13
free area
area of all unobstructed openings measured in the plane of maximum restriction

4 Symbols

For the purposes of this document, symbols listed in Table 1 apply.

Table 1 — Symbols

Symbol	Quantity	Unit
A_e	equivalent area	mm^2
A_g	free area	mm^2
C	air flow coefficient	$l/(s \cdot Pa^n)$
C_0	air flow coefficient at standard conditions	$l/(s \cdot Pa^n)$
$D_{n,e}$	sound insulation	dB
k	coefficient	—
n	air flow exponent	—
p_a	atmospheric pressure	Pa
q_m	mass flow rate	l/s
q_v	air flow rate	l/s
$q_{v,cor}$	air flow rate at standard conditions	l/s

Symbol	Quantity	Unit
$q_{v,meas}$	measured air flow rate	l/s
$q_{v,pr}$	air flow rate at reference pressure difference	l/s
r	coefficient of determination of the regression line	—
U	thermal transmittance	W/m²·°C
v_i	air velocity at position i	m/s
Δp	static pressure difference	Pa
Δp_m	measured pressure difference	Pa
Δp_r	reference pressure difference	Pa
$\Delta\theta$	temperature difference	°C
Φ_T	transmission heat losses of the walls	W/m²
θ_a	ambient temperature	°C
θ_i	air temperature at position i	°C
θ_{in}	indoor air temperature	°C
θ_{out}	outdoor air temperature	°C
θ_w	set value of air temperature	°C

5 Performance testing of aerodynamic characteristics

5.1 Flow rate/pressure

5.1.1 Principle

The test consists of applying various static pressure differences through an air transfer device and measuring the induced volume flow rates in order to define the flow rate/pressure characteristic curve.

5.1.2 Test installation and uncertainty of measurement

5.1.2.1 Test installation

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

If the opening is not provided as a part of the test sample, it shall be replaced by an opening(s) in the board. The opening(s) in the board shall be clearly defined and reported in the test report.

Typical examples of air transfer devices mounted on a board are given in Annex B.

Examples for thickness of the board are given in Table 2.

Table 2 — Thickness of the board representing the partition

Partition	Thickness of the board mm
Window glass	20
Window frame	60
Wall	300

The air transfer device to be tested shall be installed in the board in accordance with Figure 2.

The test installation shall consist of (see Figure 2):

— 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. Displacement of more than 2 mm shall not 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 5.1.2.2;

— a measuring duct with an air flow meter and air flow straightener in accordance with the series EN ISO 5167. Other measurement devices may be used, provided they allow measurements with an uncertainty in accordance with 5.1.2.2;

— a fan with means to vary the pressure difference across the air transfer device, covering the range of Table 4.

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