



SLOVENSKI STANDARD SIST EN 13141-9:2008

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Ventilation for buildings - Performance testing of components/products for residential ventilation - Part 9: Humidity controlled air inlet

Lüftung von Gebäuden - Leistungsprüfung von Bauteilen/Produkten für die Lüftung von Wohnungen - Teil 9: Feuchtegeregelte Zuluftdurchlässe

Ventilation des bâtiments - Essais de performance des composants/produits pour la ventilation des logements - Partie 9: Entrée d'air hygroréglable

Ta slovenski standard je istoveten z: EN 13141-9:2008

ICS:

91.140.30 Ú|^: |æ ^çæ} ã Á|ã æ \ã Ventilation and air-conditioning
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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 13141-9

May 2008

ICS 91.140.30

English Version

**Ventilation for buildings - Performance testing of
components/products for residential ventilation - Part 9:
Externally mounted humidity controlled air transfer device**

Ventilation des bâtiments - Essais de performance des
composants/produits pour la ventilation des logements -
Partie 9: Dispositif de transfert d'air hygroréglable monté en
extérieur

Lüftung von Gebäuden - Leistungsprüfung von
Bauteilen/Produkten für die Lüftung von Wohnungen - Teil
9: Feuchteregelte Zuluftdurchlässe

This European Standard was approved by CEN on 11 April 2008.

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 CEN Management Centre or to any CEN member.

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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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

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Foreword

This document (EN 13141-9:2008) 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 November 2008, and conflicting national standards shall be withdrawn at the latest by November 2008.

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

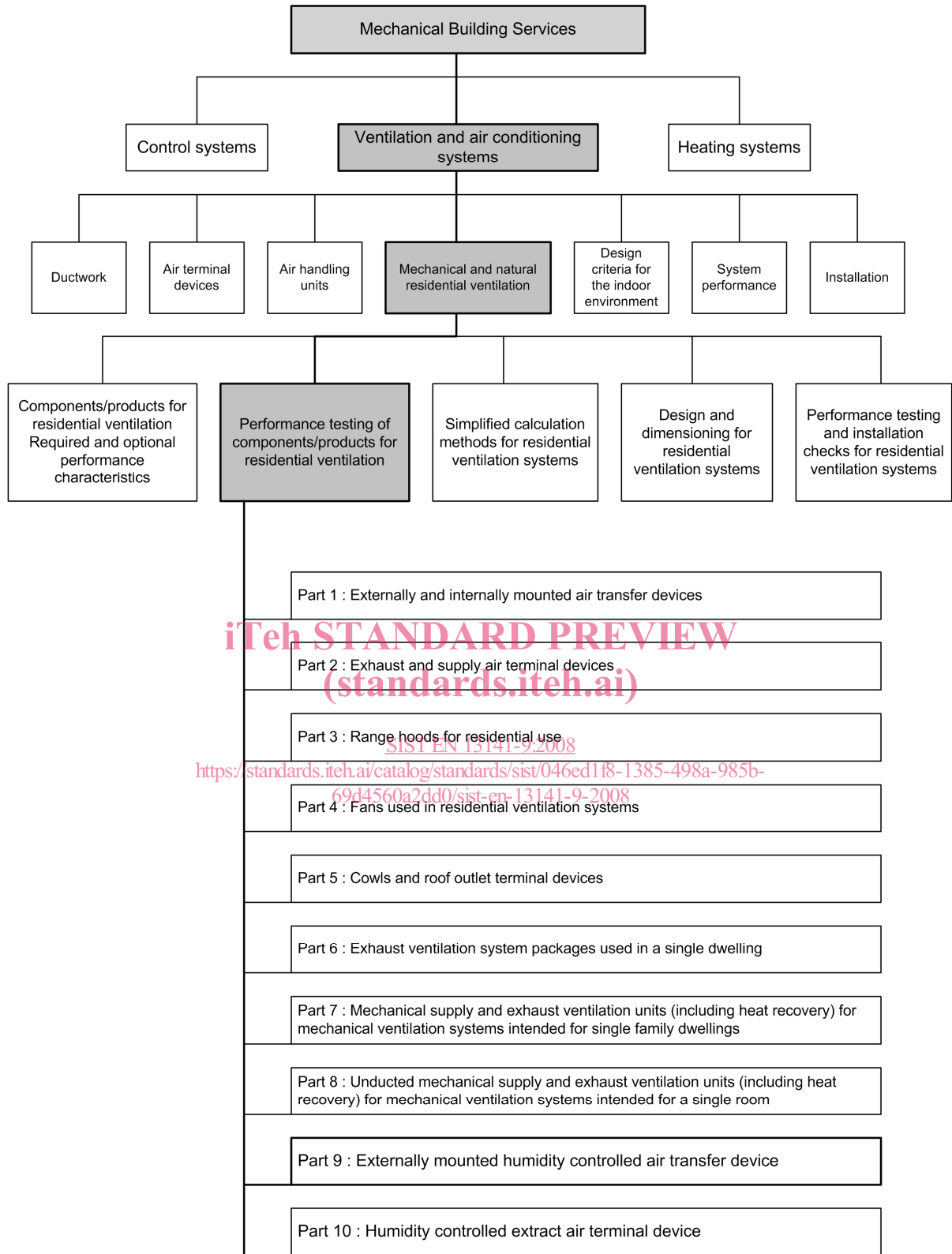
This document is one of a series of standards on residential ventilation. The performance characteristics of the components/products for residential ventilation are given in EN 13142.

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

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

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Figure 1 — Position of EN 13141-9 in the field of mechanical building services

1 Scope

This European Standard specifies laboratory methods for testing humidity controlled air inlets operating under pressure differences.

It applies to all devices located between one room and outside and controlled on indoor humidity. For instance, devices of the following types:

- humidity controlled devices with fixed setting;
- manually openable or closable humidity controlled devices;
- humidity controlled devices self-adjusting on pressure difference.

It describes tests intended to characterise:

- aero and hygro-dynamic performance;
- air tightness when closed (for closable humidity controlled air inlet);
- air diffusion in the occupied zone;
- sound insulation;
- time response.

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This European Standard does not apply to the evaluation of air filtration, condensation risk and noise production.

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2 Normative references

The following referenced documents are indispensable for the application 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 12792:2003, *Ventilation for buildings — Symbols, terminology and graphical symbols*

EN 13141-1:2004, *Ventilation for buildings — Performance testing of components/products for residential ventilation — Part 1: Externally and internally mounted air transfer devices*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12792:2003, EN 13141-1:2004 and the following apply.

3.1

hysteresis

value defined as the difference of relative humidity, read on the response curve for the same flow, in % RH

4 Symbols and abbreviations

For the purposes of this document the symbols and units given in EN 12792:2003 and the symbols and units given in Table 1 apply.

Table 1 — Symbols and units

Term	Symbol	Unit
humidity	φ	
minimum airflow	$q_{v \text{ min}}$	l. s^{-1}
maximum airflow	$q_{v \text{ max}}$	l. s^{-1}
relative humidity	φ_p	% RH
maximum relative humidity for minimum airflow	$\varphi_{p \text{ min}}$	% RH
minimum relative humidity for maximum airflow	$\varphi_{p \text{ max}}$	% RH

5 Performance testing of aerodynamic characteristics

5.1 Aero and hygro-dynamic performance

5.1.1 Principle

This test consists of measuring several volume flow rates induced through a device controlled by humidity conditions, under an applied static pressure difference, to define the flow rate/humidity characteristic curve.

5.1.2 Test installation, conditions and uncertainty of measurement

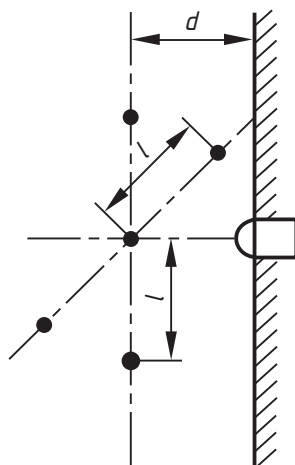
5.1.2.1 Test installation and conditions

The test facility shall include two rooms controlled both in humidity and temperature, the first one representing outside conditions, the other one indoor conditions as described in Figure 3.

The test installation and the indoor room shall comply with 4.1.2.1 of EN 13141-1:2004.

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

Special care to limit air velocities around the inlet in the test box should be taken: air velocities shall be measured at locations specified in Figure 2. The measures shall not exceed $0,10 \text{ m.s}^{-1}$ at these points without air flow through the air inlet.

**Key**

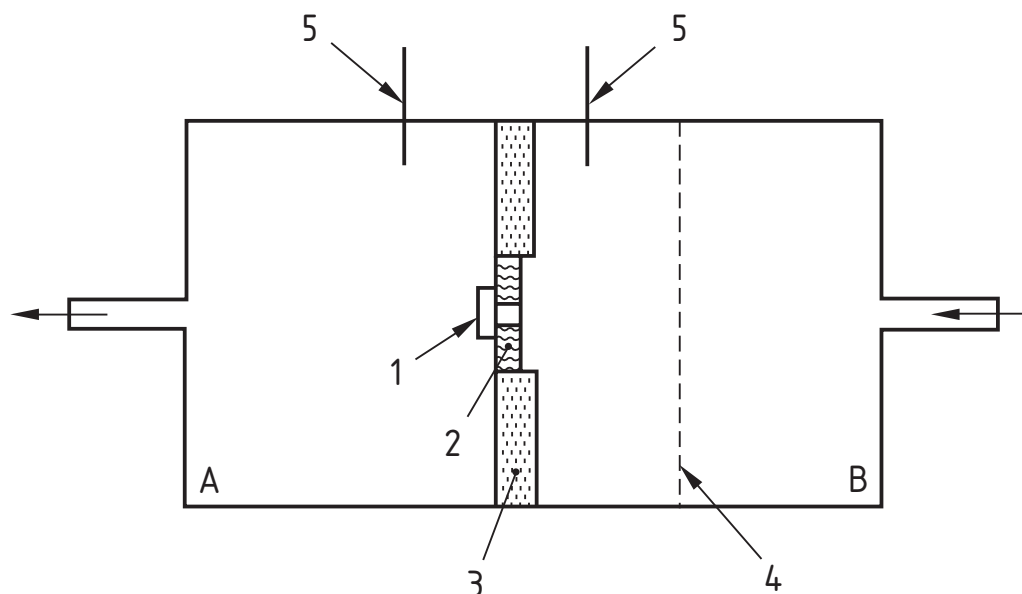
- Locations of the measurement points
- $d = 0,04 \text{ m}$
 $l = 0,20 \text{ m}$

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Figure 2 — Locations of measurement points
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EN 13141-9:2008 (E)

**Key**

- A humidity and temperature controlled room for indoor conditions
- B humidity and temperature controlled room for outdoor conditions
- 1 device under test
- 2 test plate dimensions as in EN 13141-1 (see Figure 4)
- 3 insulated wall to avoid condensation in room A
- 4 avoid high air velocity around the air intake of the device under test e.g. a perforated plate can be used
- 5 static pressure probes or piezometric ring

Figure 3 — Test installation

To avoid difficulties in the control of the room (A), the volume shall be big enough, especially for non-isothermal conditions measurements for which the “outside air” room (B) may strongly interfere with the climate in room (A).

The size of room (B) is normally of lesser importance as the climate conditions are not to be so accurate as in room (A), nevertheless it shall not affect the low velocity on the air intake of the device under test.

The wall between room (A) and room (B) shall be insulated to avoid low temperature radiation on the device under test.

Test plates shall conform to EN 13141-1.

The air permeability of the test equipment between the air inlet and the airflow/pressure measurement devices 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 $1 \text{ l} \cdot \text{s}^{-1}$ at 100 Pa.

For low airflow measurements, it may be necessary to introduce some additional by-pass flow. This by-pass flow shall be measured alone and reported.

In all cases, the leakage airflow shall be measured and used in the test report for correction of values and for uncertainty calculations.

5.1.2.2 Uncertainty of measurement

The pressure shall be measured with an uncertainty lower than:

$$0,2 + 0,03 \times (\text{measured value}) \quad (\text{Pa})$$

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

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

The temperature shall be measured with an uncertainty lower than $\pm 0,5$ K.

The relative humidity shall be measured with an uncertainty lower than 2 % RH.

5.1.3 Test procedure

5.1.3.1 Choice of tests to be performed

To check the humidity control of the devices, the measurements shall be taken in isothermal conditions (see 5.1.3.2) for at least one pressure difference (chosen by the manufacturer) in the following pressure difference ranges (bands) given in Table 2: 1, 2, 4, 10 or 20 Pa. Measurements in non-isothermal conditions (see 5.1.3.3) at the same chosen pressure shall be made if the sensor can be influenced by outdoor air temperature.

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Table 2 — Pressure difference ranges

Pressure difference, Δp	Permissible deviation during test
Pa	Pa
1	$\pm 0,25$
2	$\pm 0,5$
4	± 1
10	± 1
20	± 1

For manually openable or closable devices, in addition, the tests of EN 13141-1 shall be done in open and closed conditions.

For pressure difference controlled devices, in addition self regulation shall be verified (see 5.1.3.4) in isothermal conditions.