
Prezračevanje stavb - Preskušanje lastnosti stanovanjskih prezračevalnih komponent/izdelkov - 11. del: Prezračevalni sistemi z nadtlakom

Ventilation for buildings - Performance testing of components/products for residential ventilation - Part 11: Positive pressure ventilation systems

Lüftung von Gebäuden - Leistungsprüfung von Bauteilen/Produkten für die Lüftung von Wohnungen - Teil 11: Überdruck-Zuluftsysteme

Ventilation des bâtiments - Essais de performance des composants/produits pour la ventilation des logements - Partie 11: Systèmes de ventilation à pression positive

<https://standards.iteh.ai/catalog/standards/sist/dfc8adac-d646-4b79-b9d1-75857286a8f4/sist-en-13141-11-2015>

Ta slovenski standard je istoveten z: EN 13141-11:2015

ICS:

91.140.30	Prezračevalni in klimatski sistemi	Ventilation and air-conditioning
-----------	------------------------------------	----------------------------------

SIST EN 13141-11:2015**en,fr,de**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 13141-11:2015

<https://standards.iteh.ai/catalog/standards/sist/dfc8adac-d646-4b79-b9d1-75857286a8f4/sist-en-13141-11-2015>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 13141-11

May 2015

ICS 91.140.30

English Version

**Ventilation for buildings - Performance testing of
components/products for residential ventilation - Part 11: Supply
ventilation units**

Ventilation des bâtiments - Essais de performance des
composants/produits pour la ventilation des logements -
Partie 11 : Unités de ventilation par insufflation

Lüftung von Gebäuden - Leistungsprüfung von
Bauteilen/Produkten für die Lüftung von Wohnungen - Teil
11: Zuluftsysteme

This European Standard was approved by CEN on 16 April 2015.

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

CEN members are the national standards bodies of 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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....	3
Introduction	4
1 Scope	6
2 Normative references	6
3 Terms and definitions	7
4 Symbols and abbreviations	9
5 Declaration of intended use.....	9
6 Performance testing of aerodynamic characteristics.....	9
6.1 General.....	9
6.2 External leakage.....	10
6.3 Airflow	11
6.3.1 Un-ducted room unit.....	11
6.3.2 Ducted unit	11
6.4 Acoustic characteristic	11
6.4.1 General.....	11
6.4.2 Un-ducted unit.....	12
6.4.3 Ducted unit	14
6.5 Electrical power input	17
7 Test report	18
7.1 Presentation of results.....	18
7.2 General information.....	18
7.3 Product specifications	18
7.4 External leakage.....	19
7.5 Airflow	19
7.6 Acoustic characteristics	20
7.7 Electrical power input	20
Annex A (informative) Typical applications	21
Annex B (informative) Sound insulating box.....	24
Annex C (informative) Acoustic box.....	25
Annex D (normative) Pressure leakage test method	26
Bibliography	27

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 13141-11:2015
<https://standards.iteh.ai/catalog/standards/sist/dfc8adac-d646-4b79-b9d1-75857286a884/sist-en-13141-11-2015>

Foreword

This document (EN 13141-11:2015) 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 2015, and conflicting national standards shall be withdrawn at the latest by November 2015.

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.

EN 13141 consists of the following parts, under the general title *Ventilation for buildings — Performance testing of components/products for residential ventilation*:

- *Part 1: Externally and internally mounted air transfer devices*
- *Part 2: Exhaust and supply air terminal devices*
- *Part 3: Range hoods for residential use*
- *Part 4: Fans used in residential ventilation systems*
- *Part 5: Cowls and roof outlet terminal devices*
- *Part 6: Exhaust ventilation system packages used in a single dwelling*
- *Part 7: Performance testing of a mechanical supply and exhaust ventilation units (including heat recovery) for mechanical ventilation systems intended for single family dwellings*
- *Part 8: Performance testing of un-ducted mechanical supply and exhaust ventilation units (including heat recovery) for mechanical ventilation systems intended for a single room*
- *Part 9: Externally mounted humidity controlled air transfer device*
- *Part 10: Humidity controlled extract air terminal device*
- *Part 11: Supply ventilation units*

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, 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.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 13141-11:2015](https://standards.iteh.ai/catalog/standards/sist/dfc8adac-d646-4b79-b9d1-75857286a8f4/sist-en-13141-11-2015)

<https://standards.iteh.ai/catalog/standards/sist/dfc8adac-d646-4b79-b9d1-75857286a8f4/sist-en-13141-11-2015>

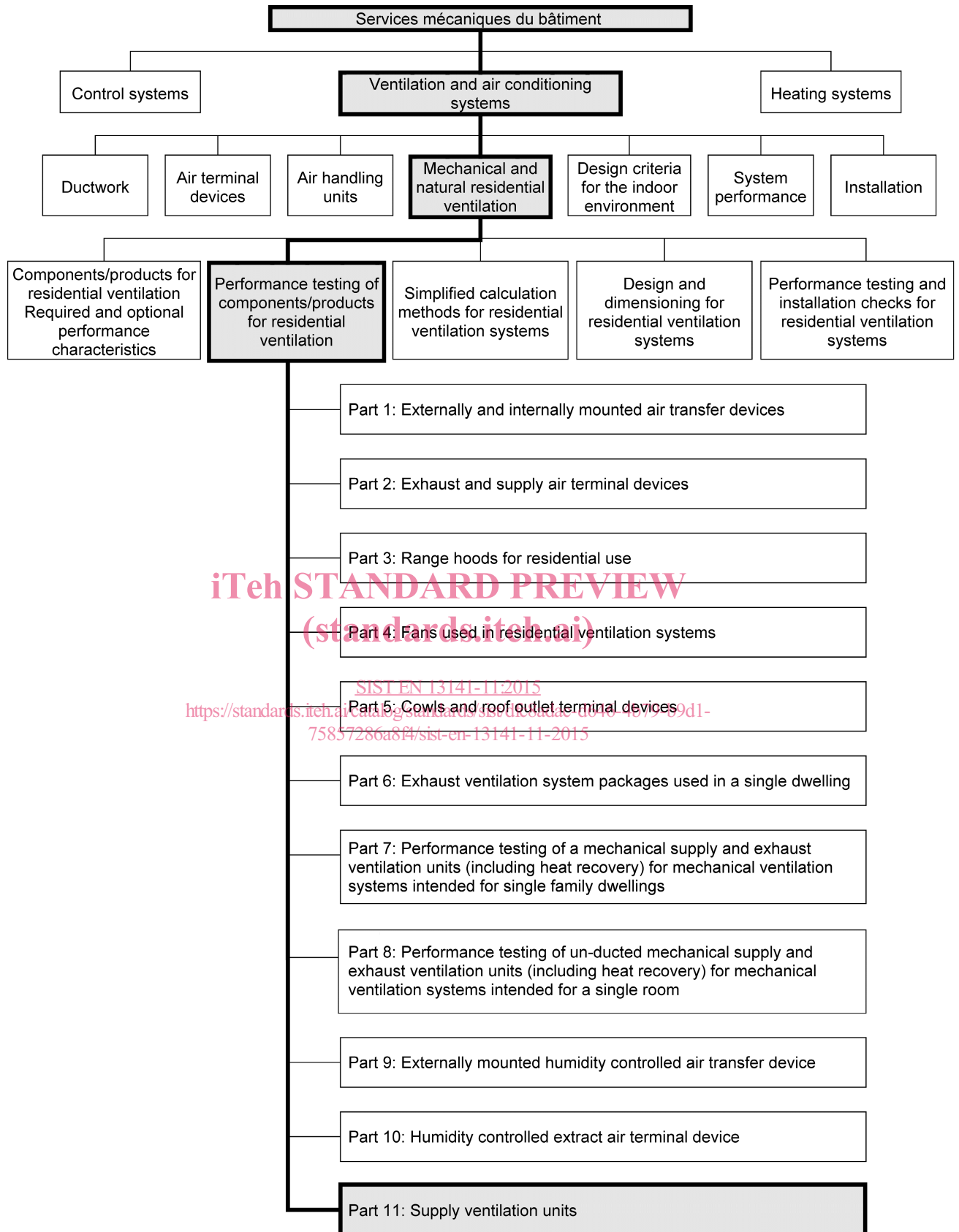


Figure 1 — Position of EN 13141-11 in the field of the mechanical building services

EN 13141-11:2015 (E)**1 Scope**

1.1 This European Standard specifies aerodynamic, acoustic and electrical power performance test measurements for

- un-ducted continuous supply ventilation units in a single room;
- ducted continuous supply ventilation units in a single room;
- un-ducted supply air ventilation units in a single room;
- ducted supply air ventilation units in a single room;
- centralised unit for whole dwelling;

used in residential ventilation.

In general such units contain the following elements:

- fan;
- air filter;
- control system.

1.2 This European Standard does not cover the following:

- grilles, air delivery or air supply devices when the unit is ducted;
- sound attenuation;
- any heating devices or pre-heaters.

1.3 Safety requirements are given in EN 60335-2-80:2003 and its A2:2009 [2].

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 306, *Heat exchangers - Methods of measuring the parameters necessary for establishing the performance*

EN 12792:2003, *Ventilation for buildings - Symbols, terminology and graphical symbols*

EN 13141-4:2011, *Ventilation for buildings - Performance testing of components/products for residential ventilation - Part 4: Fans used in residential ventilation systems*

EN ISO 717-1, *Acoustics - Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation (ISO 717-1)*

EN ISO 3741, *Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Precision methods for reverberation test rooms (ISO 3741)*

EN ISO 3743-1, *Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Engineering methods for small movable sources in reverberant fields - Part 1: Comparison method for a hard-walled test room (ISO 3743-1)*

EN ISO 3743-2, *Acoustics - Determination of sound power levels of noise sources using sound pressure - Engineering methods for small, movable sources in reverberant fields - Part 2: Methods for special reverberation test rooms (ISO 3743-2)*

EN ISO 3744, *Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Engineering methods for an essentially free field over a reflecting plane (ISO 3744)*

EN ISO 3745, *Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Precision methods for anechoic rooms and hemi-anechoic rooms (ISO 3745)*

EN ISO 5135, *Acoustics - Determination of sound power levels of noise from air-terminal devices, air-terminal units, dampers and valves by measurement in a reverberation room (ISO 5135)*

EN ISO 5136, *Acoustics - Determination of sound power radiated into a duct by fans and other air-moving devices - In-duct method (ISO 5136)*

EN ISO 9614-1, *Acoustics - Determination of sound power levels of noise sources using sound intensity - Part 1: Measurement at discrete points (ISO 9614-1)*

EN ISO 9614-2, *Acoustics - Determination of sound power levels of noise sources using sound intensity - Part 2: Measurement by scanning (ISO 9614-2)*

EN ISO 9614-3, *Acoustics - Determination of sound power levels of noise sources using sound intensity - Part 3: Precision method for measurement by scanning (ISO 9614-3)*

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 5801, *Industrial fans - Performance testing using standardized airways (ISO 5801)*

3 Terms and definitions

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

3.1

test voltage

voltage to be used for supplying the components during the testing

[SOURCE: EN 13141-7:2010 [1], definition 3.1.9]

3.2

fan unit

casing incorporating a fan and provided with spigots

[SOURCE: EN 12792:2003, definition 164]

3.3

external leakage

q_{ve}

leakage to or from the air flowing inside the casing of the unit to or from the surrounding air

[SOURCE: EN 13141-7:2010 [1], definition 3.1.1]

EN 13141-11:2015 (E)**3.4****declared maximum air volume flow**

q_{vd}
air volume flow corresponding to the declared total pressure p_{tUd} of the unit at the maximum setting for standard air conditions (20 °C, 101 325 Pa)

Note 1 to entry: Not including any boost function used for short time duty (for example purge ventilation).

Note 2 to entry: For category A units $p_{tUd} = 0$.

Note 3 to entry: q_{vd} is expressed in $m^3 \cdot s^{-1}$ or $l \cdot s^{-1}$.

3.5**electric power input**

P_E
average electrical power input to the equipment within a defined interval of time obtained from:

- the power input of the fan;
- the power input of all control and safety devices of the equipment

Note 1 to entry P_E is expressed in watts.

3.6**reference air volume flow**

q_{vref}
airflow at 70 % of q_{vd}

Note 1 to entry: If the unit's air volume flow cannot be adjusted to reach (q_{vref} , $p_{tUd}/2$), the closest value above 70 % is selected.

Note 2 to entry: q_{vref} is expressed in $m^3 \cdot s^{-1}$ or $l \cdot s^{-1}$.

3.7**fan pressure**

p_F
pressure increase induced by the fan given as the difference of outlet and inlet total pressure

Note 1 to entry: p_F is expressed in Pa.

[Source: EN 13141-4:2011, definition 3.1 with expression of the unit modified]

3.8**declared total pressure**

p_{tUd}
pressure used to set the maximum air volume flow corresponding to 100 Pa, or to a lower total pressure if the intended use declared by the manufacturer is less than 100 Pa

Note 1 to entry: p_{tUd} is expressed in Pa.

3.9**habitable room**

room used for purposes such as living rooms, bedrooms or study rooms

3.10**wet room**

room used for domestic activities such as kitchens, utility rooms, bathrooms or sanitary accommodation

4 Symbols and abbreviations

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

Table 1 — Symbols and abbreviations

Symbol	Description	Unit
$D_{n,e}$	Sound insulation	dB
$D_{n,e,w}$	Overall sound insulation	dB
$D_{n,e,w} + C_{tr}$	Overall sound insulation for a standardized traffic noise	dB
q_v	Air volume flow	$m^3 \cdot s^{-1}$ or $l \cdot s^{-1}$
q_{vd}	Declared maximum air volume flow	$m^3 \cdot s^{-1}$ or $l \cdot s^{-1}$
q_{ve}	External leakage air volume flow	$m^3 \cdot s^{-1}$ or $l \cdot s^{-1}$
q_{vref}	Reference air volume flow	$m^3 \cdot s^{-1}$ or $l \cdot s^{-1}$
L_W	Sound power level	dB
L_{WA}	A-weighted sound power level	dB(A)
$L_{WglobalN}$	Global sound power level of the N identical duct connection	dB
$L_{Wsingle}$	Sound power level of a single duct	dB
N	Number of identical duct connections	—
P_E	Electrical power input	W
p_F	Fan pressure	Pa
p_{tU}	Total pressure (difference between outlet and inlet) of the unit	Pa
p_{tUd}	Declared total pressure	Pa

5 Declaration of intended use

The intended use of product shall be declared as follows:

- for single room application where one unit is required for each habitable room see Figure A.1;
- for single unit providing centralised whole dwelling ventilation see Figure A.2 or Figure A.3.

6 Performance testing of aerodynamic characteristics

6.1 General

A fan is specified to supply a given flow rate to an installation. In order to choose the appropriate fan, it is necessary to know its performance characteristics, given as the volume flow rate as a function of fan pressure.

These characteristics are strongly influenced by upstream flow conditions (velocity profile, possible presence of a swirl and wind). Downstream conditions do not usually affect the fan operation, but the nature of flow downstream from the fan, especially the swirl, can have an effect on pressure losses in the circuit and should be taken into account during installation design.

The four following categories of installations are defined in EN ISO 5801: