SLOVENSKI STANDARD
SIST EN 13142:2021

01-junij-2021

Nadomešča:
SIST EN 13142:2013

Prezračevanje stavb - Sestavni deli/izdelki za prezračevanje stanovanjskih stavb - Zahtevane in nezahtevane lastnosti

Ventilation for buildings - Components/products for residential ventilation - Required and optional performance characteristics

Lüftung von Gebäuden - Bauteile/Produkte für die Lüftung von Wohnungen - Geforderte und frei wählbare Leistungskenngrössen

Ventilation des bâtiments - Composants/produits pour la ventilation des logements - Caractéristiques de performances exigées et optionnelles

Ta slovenski standard je istoveten z: **EN 13142:2021**

ICS:

91.140.30	Prezračevalni in klimatski sistemi	Ventilation and air-conditioning systems

SIST EN 13142:2021 **en,fr,de**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 13142

April 2021

ICS 91.140.30

Supersedes EN 13142:2013

English Version

Ventilation for buildings - Components/products for residential ventilation - Required and optional performance characteristics

Ventilation des bâtiments - Composants/produits pour la ventilation des logements - Caractéristiques de performances exigées et optionnelles

Lüftung von Gebäuden - Bauteile/Produkte für die Lüftung von Wohnungen - Geforderte und frei wählbare Leistungskenngrößen

This European Standard was approved by CEN on 25 January 2021.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, 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: Rue de la Science 23, B-1040 Brussels

Ref. No. EN 13142:2021 E

Contents

Page

European foreword

This document (EN 13142:2021) 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 October 2021, and conflicting national standards shall be withdrawn at the latest by October 2021.

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.

This document supersedes EN 13142:2013.

In addition to a number of editorial revisions, the following main changes have been made with respect to EN 13142:2013:

— a new Annex ZA considering EU 1253/2014 and a new Annex ZB considering EU 1254/2014 have been added;

— aspects of outdoor and indoor mixing have been added in 5.1;

— unidirectional ventilation units have been added in 5.6 and fans used in residential ventilation units have been removed. Clear reference to EN 13141-4:2021 to specify the aspects of eco-design regulation for UVU has been added in 5.6;

— 5.8 has been updated with classification aspects for energy and acoustics;

— 5.9 has been updated with link to EN 13141-7:2021:

  — data input, declaration, leakage in 5.9.4.2, energy in 5.9.6;

  — nominal temperature performance factor, NTPF, has been deleted;

  — classification of humidity ratio has been reviewed;

  — acoustic classification at reference volume flow;

— 5.10 has been updated with link to prEN 13141-8:2020:

  — air flow sensitivity classification;

  — classification of humidity ratio has been reviewed;

  — nominal temperature performance factor, NTPF, has been deleted;

— Annex A has been split into a normative part Annex A and informative part Annex B;

— a new informative Annex D about filter clogging compensation has been added;

— a new informative Annex E for extended SEC calculations for defrosting aspects has been added;

— a new informative Annex F for extended SEC calculation considering infiltration has been added;

— a new informative Annex G for SEC examples has been added;

— a new Annex ZA and a new Annex ZB for eco-design aspects have been added.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive.

For relationship with EU Directive, see informative Annex ZA and Annex ZB, which are integral parts of this document.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

A combination of components and/or products is required to provide ventilation. These components/products interact to achieve a renewal of the air in a dwelling.

It is important to consider each product not only individually but also as part of the whole system: for example from the outdoor canopy of an externally mounted air transfer device to the roof outlet terminal at the end of an exhaust duct. To enable good design it is essential that certain performance characteristics for each product are available in a simple and comparable form.

This document defines also a classification for balanced ventilation units which may be used for the determination of minimum and optional product characteristic in national building regulations and standards.

The structure of this document is based on the type of products that are given in Table 1 that specifies the type of information for them.

Table 1 — Type of information for products

Product	Declaration	Classification	Codification
Externally mounted air transfer devices	X	—	—
Internally mounted air transfer devices	X	—	—
Exhaust and supply air terminal devices	X	—	—
Range hoods	X	—	—
Exhaust or supply unidirectional ventilation units in residential ventilation systems	X	X	X
Cowls and roof outlet terminals	X	—	—
Unidirectional exhaust ventilation system packages	X	—	—
Ducted mechanical bidirectional ventilation units (including heat recovery)	X	X	X
Non-ducted bidirectional ventilation units (including heat recovery)	X	X	X

This document is one of a series of standard on residential ventilation. It is referring to the performance testing of the components/products for residential ventilation.

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

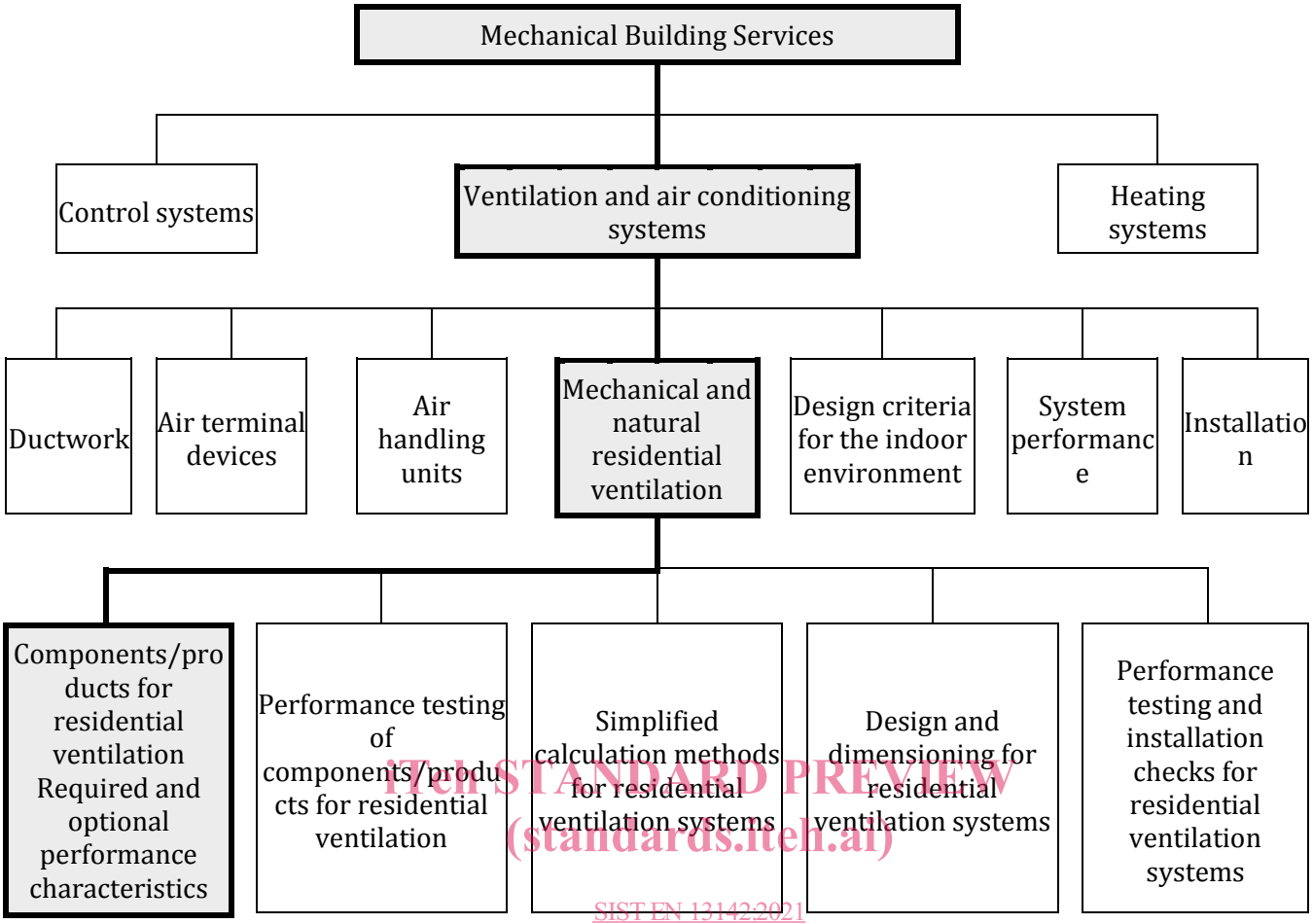

Figure 1 — Position of EN 13142 in the field of the mechanical building services

EN 13142:2013 has been revised to include new requirements according to Ecodesign requirements for ventilation units given in EU Commission Delegated Regulation No EU 1253/2014 and No EU 1254/2014.

1 Scope

This document specifies and classifies the component/product performance characteristics, which may be necessary for the design, rating and dimensioning, placing on the market of residential ventilation products and systems to provide the predetermined performance, comfort conditions of temperature, air velocity, humidity, hygiene and sound in the occupied zone.

It defines those performance characteristics (mandatory or optional) which shall be determined, measured and presented according to relevant test methods. It provides a classification scheme, which leads to a full definition of product properties based on test methods described in various EN Standards, and gives an overview of the test standards. Distinction between mandatory and optional requirement is left to each European and national regulations.

The codification part in Annex B and the classification part in Clause 8 apply to the following products:

— unidirectional mechanical supply and exhaust residential ventilation units according to EN 13141-4:2021, EN 13141-6:2014 and EN 13141-11;

— ducted mechanical bidirectional residential ventilation units according to EN 13141-7:2021;

— non-ducted mechanical bidirectional residential ventilation units according to prEN 13141-8:2020.

This document does not apply to other products such as filters, fire dampers, ducts, control devices and sound attenuators, which may also be incorporated in residential ventilation.

This document specifies in Annex ZA and Annex ZB the requirements of EU 1253/2014 and EU 1254/2014 for residential ventilation units below 1 000 m^3/h air volume flow.

This document does not cover requirements raised by European Directives (e.g. low voltage directive, EMC directive) and other requirements such as corrosion, reaction to fire and snow penetration.

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

EN 13141-1:2019, *Ventilation for buildings — Performance testing of components/products for residential ventilation — Part 1: Externally and internally mounted air transfer devices*

EN 13141-2:2010, *Ventilation for buildings — Performance testing of components/products for residential ventilation — Part 2: Exhaust and supply air terminal devices*

EN 13141-3:2017, *Ventilation for buildings — Performance testing of components/products for residential ventilation — Part 3: Range hoods for residential use without fan*

EN 13141-4:2021, *Ventilation for buildings — Performance testing of components/products for residential ventilation — Part 4: Aerodynamic, electrical power and acoustic performance of unidirectional ventilation units*

prEN 13141-5:2019, *Ventilation for buildings — Performance testing of components/products for residential ventilation — Part 5: Cowls and roof outlet terminal devices*

EN 13141-6:2014, *Ventilation for buildings — Performance testing of components/products for residential ventilation — Part 6: Exhaust ventilation system packages used in a single dwelling*

EN 13141-7:2021, *Ventilation for buildings — Performance testing of components/products for residential ventilation — Part 7: Performance testing of ducted mechanical supply and exhaust ventilation units (including heat recovery)*

prEN 13141-8:2020, *Ventilation for buildings — Performance testing of components/products for residential ventilation — Part 8: Performance testing of non-ducted mechanical supply and exhaust ventilation units (including heat recovery)*

EN 13141-9:2008, *Ventilation for buildings — Performance testing of components/products for residential ventilation — Part 9: Externally mounted humidity controlled air transfer device*

EN 13141-10:2008, *Ventilation for buildings — Performance testing of components/products for residential ventilation — Part 10: Humidity controlled extract air terminal device*

EN 13501-1:2018, *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests*

EN 60335-2-31:2014, *Household and similar electrical appliances — Safety — Part 2-31: Particular requirements for range hoods and other cooking fume extractors (IEC 60335-2-31:2012)*

EN 61591:2019, *Household range hoods and other cooking fume extractors — Methods for measuring performance (IEC 61591:2019)*

EN ISO 5801:2017, *Fans — Performance testing using standardized airways (ISO 5801:2017)*

EN ISO 16890-1:2016, *Air filters for general ventilation — Part 1: Technical specifications, requirements and classification system based upon particulate matter efficiency (ePM) (ISO 16890-1:2016)*

EN ISO 16890-2:2016, *Air filters for general ventilation — Part 2: Measurement of fractional efficiency and air flow resistance (ISO 16890-2:2016)*

EN ISO 16890-3:2016, *Air filters for general ventilation — Part 3: Determination of the gravimetric efficiency and the air flow resistance versus the mass of test dust captured (ISO 16890-3:2016)*

EN ISO 16890-4:2016, *Air filters for general ventilation — Part 4: Conditioning method to determine the minimum fractional test efficiency (ISO 16890-4:2016)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12792:2003 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 with the minimum ingress of rain, snow, foreign bodies, etc.

[SOURCE: EN 12792:2003, definition 144]

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

[SOURCE: EN 12792:2003, definition 232]

3.3
exhaust air terminal device
device through which air leaves the treated space

3.4
supply air terminal device
device through which air enters the treated space

[SOURCE: EN 12792:2003, definition 349, modified – The second sentence has been removed]

3.5
range hood
cooker hood
device intended to collect contaminated air from above a cooking appliance and either discharge it into the room or remove it from the room

Note 1 to entry: It may or may not incorporate one or more of the following components:

— filter (essential when the contaminated air is discharged into the room);

— fan;

— fire damper;

— non return flow damper.

[SOURCE: EN 12792:2003, definition 85]

3.6
cowl
air terminal device with or without moving component, intended to be fitted on top of an exhaust duct, with aim, by creating negative pressure depending of the wind speed, to avoid reverse flow and to increase the extracted flow rate in presence of wind

[SOURCE: EN 12792:2003, 92, modified – reformulation of the definition in a single sentence]

3.7
roof outlet
air terminal device without moving component, intended to be fitted on top of an exhaust duct

[SOURCE: prEN 13141-5:2019, definition 3.4]

3.8
ventilation system package
combination of compatible components which are tested, delivered and installed as specified, to complete a residential ventilation system when sold as a single product

Note 1 to entry: It may exclude minor parts such as tapes, sealants and screws.

Note 2 to entry: This definition applies for single dwelling.

3.9
bidirectional ventilation unit
ventilation unit which produces an air flow between indoors and outdoors and is equipped with both exhaust and supply fans

3.10
unidirectional ventilation unit
ventilation unit with a fan assisted air volume flow in only one direction (either supply or exhaust)

Note 1 to entry: The balancing air volume flow is provided by air transfer devices or another mechanical unit.

4 Symbols and abbreviations

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

Symbol	Designation	Unit
c_{air}	specific heat capacity of air at constant pressure and density	kWh/(kg·K)
d_i	thickness of the layer "*i*"	m
COP	coefficient of performance	—
CTRL	ventilation control factor	—
DIS	disbalance	%
$D_{n,e,w} + C_{tr}$	airborne sound insulation	dB
E_{AEC}	annual electricity consumption	kWh/(m²·a)
E_{defr}	annual electricity consumption for defrosting	kWh/(m²·a)
$E_{el,preh}$	annual electricity consumption due to internal pressure loss during frost periods	kWh/(m²·a)
EE_w	weighted energy efficiency	—
E_{preh}	annual electricity consumption for an electric preheater	kWh/(m²·a)
$E_{pump,defr}$	annual electricity consumption use for defroster pump	kWh/(m²·a)
$E_{\Delta p,ext,defr}$	annual electricity consumption use due to external pressure losses of external defrosting devices	kWh/(m²·a)
$E_{\Delta p,int,defr}$	annual electricity consumption due to internal pressure loss during frost growing	kWh/(m²·a)
f_c	conversion factor between electrical and primary energy	—
$f_{ctrl,defr}$	factor of the defrosting control	—
f_{insu}	correction value for the casing insulation	—
f_{pump}	factor for the type of the defroster	—
f_0	factor for units conversion	—

Symbol	Designation	Unit
FC	filter compensation factor	—
F_i	value of occurrence frequency for part load weighting	—
L_{WA}	A-weighted sound power levels	dB(A)
$MISC$	aggregated general typology factor, incorporating factors for ventilation effectiveness, duct leakage and extra infiltration	—
pef	primary energy factor	—
p_{qvmax}	pressure at maximum air volume flow	Pa
p_{ref}	reference pressure	Pa
P_E	electrical power input	W
$P_{E,ref}$	electric power input at the reference volume flow	W
PES	primary energy saving	kJ/m³ [a]
P_i	electrical power measured at q_{vi}	W
$P_{E,max}$	maximum electrical power input	W
P_{pump}	electrical power input of the defroster pump	W
q_0	measured air volume flow	m³
q_m	mass flow rate	kg/s
q_{net}	net ventilation rate demand	m³/(h·m²)
q_{ref}	reference natural ventilation	m³/(h·m²)
q_{ve}	external leakage (ducted units only)	%
q_{vfc}	air flow with an additional pressure drop of 1,5 times the initial pressure drop of the filter	m³
q_{vi}	internal leakage	%
q_{vio}	indoor/outdoor airtightness (non-ducted units only)	m³/s [b]
q_{vmax}	maximum air volume flow	m³/s
q_{vn}	nominal air volume flow	m³/s
q_{vref}	reference air volume flow	m³/s
Q_{defr}	annual energy for defrosting	kWh/(m²·a)
R	thermal resistance of the casing wall	m²·K/W
R_{mi}	indoor mixing	%
R_{mr}	outdoor mixing	%
R_s	transfer ratio of recirculated air in the supply air stream	%
$R_{s,int}$	internal transfer ratio from extract to supply air	%
$R_{s,tot}$	total transfer ratio in supply air	%
SPI	specific power input	W/(m³/s)