SLOVENSKI STANDARD
SIST-TP CEN/TR 16798-4:2018

01-julij-2018

Energijske lastnosti stavb - Prezračevanje stavb - 4. del: Razlaga in utemeljitev EN 16798-3 - Prezračevanje nestanovanjskih stavb - Zahtevane lastnosti za sisteme prezračevanja in klimatizacije prostorov - Modula M5-1, M5-4

Energy performance of buildings - Ventilation for buildings - Part 4: Interpretation of the requirements in EN 16798- 3 - For non-residential buildings - Performance requirements for ventilation and room-conditioning systems (Modules M5-1, M5-4)

Energieeffizienz von Gebäuden - Teil 4: Lüftung von Nichtwohngebäuden - Anforderungen an die Leistung von Lüftungs- und Klimaanlagen und Raumkühlsystemen - Technischer Bericht - Interpretation der Anforderungen der EN 16798-3 (Module M5-1, M5-4)

Performance énergétique des bâtiments - Ventilation des bâtiments - Partie 4 : Interprétation des exigences de l'EN 16798-3 - Pour les bâtiments non résidentiels - Exigences de performances pour les systèmes de ventilation et de conditionnement d'air (Modules M5-1, M5-4)

Ta slovenski standard je istoveten z: **CEN/TR 16798-4:2017**

ICS:

91.140.30	Prezračevalni in klimatski sistemi	Ventilation and air-conditioning systems

SIST-TP CEN/TR 16798-4:2018 **en**

TECHNICAL REPORT

RAPPORT TECHNIQUE

TECHNISCHER BERICHT

CEN/TR 16798-4

June 2017

ICS 91.120.10; 91.140.30

English Version

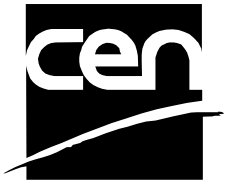
Energy performance of buildings - Ventilation for buildings - Part 4: Interpretation of the requirements in EN 16798-3 - For non-residential buildings - Performance requirements for ventilation and room-conditioning systems(Modules M5-1, M5-4)

Performance énergétique des bâtiments - Partie 4 : Ventilation dans les bâtiments non résidentiels - Exigences de performances pour les systèmes de ventilation et de conditionnement d'air - Rapport technique - Interprétation des exigences de l'EN 16798-3

Energieeffizienz von Gebäuden - Teil 4: Lüftung von Nichtwohngebäuden - Anforderungen an die Leistung von Lüftungs- und Klimaanlagen und Raumkühlsystemen - Technischer Bericht - Interpretation der Anforderungen der EN 16798-3

This Technical Report was approved by CEN on 3 April 2017. It has been drawn up by the Technical Committee CEN/TC 156.

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, 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: Avenue Marnix 17, B-1000 Brussels

Contents

Page

European foreword

This document (CEN/TR 16798-4:2017) has been prepared by Technical Committee CEN/TC 156 "Ventilation for buildings", the secretariat of which is held by BSI.

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 has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

This TR has been produced to meet the requirements of Directive 2010/31/EU 19 May 2010 on the energy performance of buildings (recast), referred to as "recast EPDB".

This document goes together with EN 16798-3:2017 which supersedes EN 13779:2007. The latter document was produced to meet the requirements of Directive 2002/91/EC of 16 December 2002 on energy performance of buildings referred to as "EPBD". This document gives additional guidance to EN 16798-3:2017.

For the convenience of Standards users, CEN/TC 156, together with responsible Working Group Convenors, have prepared a simple table below relating, where appropriate, the relationship between the 'EPBD' and 'recast EPBD' standard numbers prepared by Technical Committee CEN/TC 156 "Ventilation for buildings".

EPBD EN Number	Recast EPBD EN Number	Title
EN 15251	EN 16798–1	Energy performance of buildings – Ventilation for buildings - Part 1: Indoor environmental input parameters for design and assessment of energy performance of buildings addressing indoor air quality, thermal environment, lighting and acoustics (Module M1-6)
N/A	CEN/TR 16798–2	Energy performance of buildings – Ventilation for buildings - Part 2: Interpretation of the requirements in EN 16798-1 - Indoor environmental input parameters for design and assessment of energy performance of buildings addressing indoor air quality, thermal environment, lighting and acoustics (Module M1-6)
EN 13779	EN 16798–3	Energy performance of buildings – Ventilation for buildings - Part 3: For non-residential buildings – Performance requirements for ventilation and room-conditioning systems (Modules M5-1, M5-4)
N/A	CEN/TR 16798–4	Energy performance of buildings – Ventilation for buildings - Part 4: Interpretation of the requirements in EN 16798- 3 - For non-residential buildings – Performance requirements for ventilation and room-conditioning systems(Modules M5-1, M5-4)
EN 15241	EN 16798–5–1	Energy performance of buildings — Ventilation for buildings – Part 5-1: Calculation methods for energy requirements of ventilation and air conditioning systems (Modules M5-6, M5-8, M6-5, M6-8, M7-5, M7-8) — Method 1: Distribution and generation

EN 15241	EN 16798–5–2	Energy performance of buildings – Ventilation for buildings - Part 5-2: Calculation methods for energy requirements of ventilation systems (Modules M5-6, M5-8, M6-5, M6-8, M7-5, M7-8) - Method 2: Distribution and generation
N/A	CEN/TR 16798–6	Energy performance of buildings - Ventilation for buildings – Part 6: Interpretation of the requirements in EN 16798-5 -1 and EN 16798-5-2 – Calculation methods for energy requirements of ventilation and air conditioning systems (Modules M5-6, M5-8, M 6-5, M6-8 , M7-5, M7-8)
EN 15242	EN 16798–7	Energy performance of buildings - Ventilation for buildings - Part 7: Calculation methods for the determination of air flow rates in buildings including infiltration (Modules M5-5)
N/A	CEN/TR 16798–8	Energy performance of buildings – Ventilation for buildings – Part 8: Interpretation of the requirements in EN 16798-7 – Calculation methods for the determination of air flow rates in buildings including infiltration – (Modules M5-5)
EN 15243	EN 16798–9	Energy performance of buildings – Ventilation for buildings - Part 9: Calculation methods for energy requirements of cooling systems (Modules M4-1, M4-4, M4-9) - General
N/A	CEN/TR 16798–10	Energy performance of buildings – Ventilation for buildings – Part 10: Interpretation of the requirements in EN 16798-9 – Calculation methods for energy requirements of cooling systems (Module M4-1,M4-4, M4-9) - General
N/A	EN 16798–13	Energy performance of buildings – Ventilation for buildings - Part 13: - Calculation of cooling systems (Module M4-8) – Generation
N/A	CEN/TR 16798–14	Energy performance of buildings – Ventilation for buildings - Part 14: Interpretation of the requirements in EN 16798-13 – Calculation of cooling systems (Module M4-8) – Generation
N/A	EN 16798–15	Energy performance of buildings – Ventilation for buildings – Part 15: Calculation of cooling systems (Module M4-7) – Storage
N/A	CEN/TR 16798–16	Energy performance of buildings – Ventilation for buildings – Part 16: Interpretation of the requirements in EN 16798-15 – Calculation of cooling systems (Module M4-8) – Storage
EN 15239 and EN 15240	EN 16798–17	Energy performance of buildings – Ventilation for buildings - Part 17: Guidelines for inspection of ventilation and air- conditioning systems (Module M4-11, M5-11, M6-11, M7-11)
N/A	CEN/TR 16798–18	Energy performance of buildings – Ventilation for buildings – Part 18: Interpretation of the requirements in EN 16798-17 – Guidelines for inspection of ventilation and air-conditioning systems (Module M4-11, M5-11, M6-11, M7-11)

Introduction

The set of EPB standards, technical reports and supporting tools

In order to facilitate the necessary overall consistency and coherence, in terminology, approach, input/output relations and formats, for the whole set of EPB-standards, the following documents and tools are available:

a) a document with basic principles to be followed in drafting EPB-standards:

   CEN/TS 16628, *Energy Performance of Buildings — Basic Principles for the set of EPB standards* [1];

b) a document with detailed technical rules to be followed in drafting EPB-standards:

   CEN/TS 16629, *Energy Performance of Buildings — Detailed Technical Rules for the set of EPB-standards* [2];

c) the detailed technical rules are the basis for the following tools:

   1) a common template for each EPB standard, including specific drafting instructions for the relevant Clauses;

   2) a common template for each technical report that accompanies an EPB standard or a cluster of EPB standards, including specific drafting instructions for the relevant Clauses;

   3) a common template for the spreadsheet that accompanies each EPB standard, to demonstrate the correctness of the EPB calculation procedures.

Each EPB standard follows the basic principles and the detailed technical rules and relates to the overarching EPB-standard, EN ISO 52000-1 [3].

One of the main purposes of the revision of the EPB-standards is to enable that laws and regulations directly refer to the EPB-standards and make compliance with them compulsory. This requires that the set of EPB-standards consists of a systematic, clear, comprehensive and unambiguous set of energy performance procedures. The number of options provided is kept as low as possible, taking into account national and regional differences in climate, culture and building tradition, policy and legal frameworks (subsidiarity principle). For each option, an informative default option is provided (Annex B).

Rationale behind the EPB technical reports

There is a risk that the purpose and limitations of the EPB standards will be misunderstood, unless the background and context to their contents – and the thinking behind them – is explained in some detail to readers of the standards. Consequently, various types of informative contents are recorded and made available for users to properly understand, apply and nationally or regionally implement the EPB standards.

If this explanation would have been attempted in the standards themselves, the result is likely to be confusing and cumbersome, especially if the standards are implemented or referenced in national or regional building codes.

Therefore each EPB standard is accompanied by an informative technical report, like this one, where all informative content is collected, to ensure a clear separation between normative and informative contents (see CEN/TS 16629 [2]):

— to avoid flooding and confusing the actual normative part with informative content,

— to reduce the page count of the actual standard, and

— to facilitate understanding of the set of EPB standards.

This was also one of the main recommendations from the European CENSE project [5] that laid the foundation for the preparation of the set of EPB standards.

This Technical Report

This Technical Report accompanies the EPB standard on performance requirements for ventilation and room-conditioning systems. It relates to EN 16798-3, which forms part of a set of standards related to the evaluation of the energy performance of buildings (EPB).

The role and the positioning of the accompanied standard in the set of EPB standards is defined in the Introduction to the standard.

This technical report provides guidance to EN 16798-3 especially for designers, installers, manufacturers, building owners and users, on ventilation, air-conditioning and room-conditioning systems in order to achieve a comfortable and healthy indoor environment in all seasons with acceptable installation and running costs. The standard focuses on the system-aspects for typical applications and covers the following:

— aspects important to achieve and maintain a good energy performance in the systems without any negative impact on the quality of the internal environment;

— relevant parameters of the indoor environment;

— definitions of design and performances data.

Relationships between this standard and related standards are introduced in EN 16798-3.

1 Scope

This Technical Report refers to EN 16798-3.

It contains information to support the correct understanding and use of EN 16798-3.

This Technical Report does not contain any normative provision.

This Technical Report applies to the design and implementation of ventilation, air conditioning and room conditioning systems for non-residential buildings subject to human occupancy, excluding applications like industrial processes. It focuses on the definitions of the various parameters, which are relevant for such systems.

The guidance for design given in this standard and its annexes are mainly applicable to mechanical supply and exhaust ventilation systems, and the mechanical part of hybrid ventilation systems. Furthermore general design principles of natural ventilation systems are introduced in Annex D.

Applications for residential ventilation are not dealt with in this technical report. Performance of ventilation systems in residential buildings are dealt with in CEN/TR 14788.

The classification uses different categories. For some values, examples are given and, for requirements, typical ranges with default values are presented. The default values given in this standard are not normative as such, and should be used where no other values are specified. Classification should always be appropriate to the type of building and its intended use, and the basis of the classification should be explained if the examples given in the standard are not to be used.

NOTE Different standards might express the categories for the same parameters in a different way, and the category symbols may be different.

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.

NOTE More information on the use of EPB module numbers for normative references between EPB standards is given in CEN ISO/TR 52000-2.

EN 308, *Heat exchangers - Test procedures for establishing performance of air to air and flue gases heat recovery devices*

EN 1886, *Ventilation for buildings - Air handling units - Mechanical performance*

EN 13053, *Ventilation for buildings — Air handling units — Rating and performance for units, components and sections*

EN 15287-1, *Chimneys — Design, installation and commissioning of chimneys — Part 1: Chimneys for non-roomsealed heating appliances*

EN 15287-2, *Chimneys - Design, installation and commissioning of chimneys - Part 2: Chimneys for roomsealed appliances*

prEN 16798-1, *Energy performance of buildings — Part 1: Indoor environmental input parameters for design and assessment of energy performance of buildings addressing indoor air quality, thermal environment, lighting and acoustics — Module M1-6*

EN 16798-3:2017, *Energy performance of buildings — Part 3: Ventilation for non-residential buildings — Performance requirements for ventilation and room-conditioning systems*

CEN ISO/TR 52000-2, *Energy performance of buildings — Overarching EPB assessment — Part 2: Explanation and justification of ISO 52000-1 (ISO/TR 52000-2)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 16798-3 apply.

NOTE More information on some key EPB terms and definitions is given in CEN ISO/TR 52000-2.

4 Symbols and subscripts

4.1 Symbols

For the purposes of this Technical Report, the symbols as mentioned and given in the accompanied EPB standard, EN 16798-3, apply.

More information on key EPB symbols is given in CEN ISO/TR 52000-2.

4.2 Subscripts

For the purposes of this Technical Report, the subscripts as mentioned and given in the accompanied EPB standard, EN 16798-3, apply.

More information on key EPB subscripts is given in CEN ISO/TR 52000-2.

5 Brief description of the method and routing

5.1 Output of the method

See same Clause in EN 16798-3.

5.2 General description of the method

See same Clause in EN 16798-3.

6 Calculation method

This report contains additional designing and calculation aspects. See EN 16798-3 for further explanations and links to other related EPB Standards.

7 Indoor Environment

7.1 General

See same Clause in EN 16798-3.

7.2 Occupied zone

See same Clause in EN 16798-3

8 Agreement of design criteria

8.1 General

8.2 Principles

See same Clause in EN 16798-3.

8.3 General building characteristics

8.3.1 Location, outdoor conditions, neighbourhood

See same Clause in EN 16798-3.

8.3.2 Design weather data

See same Clause in EN 16798-3.

8.3.3 Information on the operation of the building

See same Clause in EN 16798-3.

8.4 Construction data

See same Clause in EN 16798-3.

8.5 Geometrical description

See same Clause in EN 16798-3.

8.6 Use of the rooms

See same Clause in EN 16798-3.

8.6.1 General

See same Clause in EN 16798-3.

8.6.2 Human occupancy

See same Clause in EN 16798-3.

8.6.3 Internal heat gains

See same Clause in EN 16798-3.

8.6.4 Internal pollution and moisture sources

See same Clause in EN 16798-3.

8.6.5 Given extract airflow

See same Clause in EN 16798-3.

8.7 Requirements in the rooms

8.7.1 General

The requirements and internal loads should be specified room by room. The requirements with respect to thermal conditions and draught should be satisfied in the occupied zone, specified in accordance with prEN 16798-1.

8.7.2 Type of control

See same Clause in EN 16798-3.

8.7.3 Thermal comfort

See same Clause in EN 16798-3.

8.7.4 Air quality for people

See same Clause in EN 16798-3.

8.7.5 Noise level

With no regulations or specific requirements, the reference values in Table 1 should be the maximum allowable sound pressure level from the ventilation and room conditioning system in the room.

For maximum allowable total sound pressure level including all technical building systems, building performance and acoustic surroundings see prEN 16798-1.

Default design values for sound pressure level are given in Table 1. The values can be exceeded in the case when the occupant can control the operation of the equipment. For example a room air conditioner may generate a higher sound pressure level if its operation is controlled by the occupant, but even in this case the rise of the sound pressure level over the design values should be limited, for example to 5 dB(A).

Table 1 — Examples of design A-weighted sound pressure level

Type of building/space	Recommended range Sound pressure dB(A)
Single office	30—40
Landscaped office (open plan office)	35—45[a]
Conference room	30—40
Auditorium	20—35
Cafeteria/Restaurant	35—50
Classroom, Kindergarten	35—45
Department store	40—50
[a] For a better privacy of speech, it is in this case recommended not to achieve lower levels in the room.	

8.7.6 Lighting

See same Clause in EN 16798-3.

8.8 System recommendations

8.8.1 General

The following guidelines are established for mechanical ventilation, air-conditioning and room-conditioning systems for buildings subject to human occupancy. When applying the given principles for other applications like natural or hybrid ventilation systems, their special needs should be considered in an appropriate way (see Annex D).

8.8.2 Location of intake openings

The following recommendations give examples of issues to be considered. These depend much on local climatic conditions.

— No air intake should be located closer than 8 m of horizontal distance from a garbage collection point, a frequently used parking area for three or more cars, driveways, loading areas, sewer vents, chimney heads and other similar polluting sources.