



NSAI
Standards

Irish Standard
I.S. EN 16798-1:2019

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

I.S. EN 16798-1:2019

Incorporating amendments/corrigenda/National Annexes issued since publication:

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National Foreword

I.S. EN 16798-1:2019 is the adopted Irish version of the European Document EN 16798-1:2019, 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

This standard has been drafted so that it can be used in the context of national legal requirements and as such mandatory choices may be given at national level for specific applications. Default values for those parameters subject to national choice are listed in Annex B.

Currently this standard is being reviewed by the relevant national authorities after which a decision will be made on the use of the default values (Annex B) or otherwise.

Users of this Irish standard are advised to check for updates as to the status of the national decision in relation to the use of those values listed in Annex B.

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EUROPEAN STANDARD

EN 16798-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2019

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Supersedes EN 15251:2007

English Version

**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**

Performance énergétique des bâtiments - Ventilation
des bâtiments - Partie 1 : Données d'entrées
d'ambiance intérieure pour la conception et
l'évaluation de la performance énergétique des
bâtiments couvrant la qualité de l'air intérieur,
l'ambiance thermique, l'éclairage et l'acoustique
(Module M1-6)

Energetische Bewertung von Gebäuden - Teil 1:
Eingangsparameter für das Innenraumklima zur
Auslegung und Bewertung der Energieeffizienz von
Gebäuden bezüglich Raumluftqualität, Temperatur,
Licht und Akustik - Module M1-6

This European Standard was approved by CEN on 23 December 2018.

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.

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

Contents	Page
European foreword	5
Introduction	8
1 Scope	10
2 Normative references	11
3 Terms and definitions	12
4 Symbols and abbreviations	15
4.1 Symbols	15
4.2 Abbreviations	17
5 Interactions with other standards	17
6 Design input parameters for design of buildings and sizing of heating, cooling, ventilation and lighting systems	17
6.1 Introduction	17
6.2 Thermal environment	18
6.2.1 Heated and/or mechanically cooled buildings	18
6.2.2 Buildings without mechanical cooling	19
6.2.3 Increased air velocity	19
6.3 Design for Indoor air quality (ventilation rates)	19
6.3.1 General	19
6.3.2 Methods	21
6.3.3 Non-residential buildings	23
6.3.4 Residential buildings	23
6.3.5 Access to operable windows	23
6.3.6 Filtration and air cleaning	23
6.4 Humidity	24
6.5 Lighting	24
6.5.1 General	24
6.5.2 Non-residential buildings	24
6.5.3 Residential buildings	25
6.6 Noise	25
7 Indoor environment parameters for energy calculation	25
7.1 General	25
7.2 Thermal environment	25
7.2.1 General	25
7.2.2 Seasonal and monthly calculations	26
7.2.3 Hourly calculations	26
7.3 Indoor air quality and ventilation	26
7.4 Humidity	26
7.5 Lighting	26
7.5.1 Non-residential buildings	26
7.5.2 Residential buildings	27
Annex A (normative) All national recommended criteria for indoor environment	28
A.1 General	28
A.2 Recommended criteria for the thermal environment	29

A.2.1	Recommended categories for mechanically heated and cooled buildings	29
A.2.2	Acceptable indoor temperatures of buildings without mechanical cooling systems.....	31
A.2.3	Increased air velocity	32
A.2.4	Recommended indoor temperatures for energy calculations.....	33
A.3	Basis criteria for indoor air quality and ventilation rates	34
A.3.1	Design ventilation air flow rates for non-residential buildings.....	34
A.3.1.1	General.....	34
A.3.1.2	Method 1 - Method based on perceived air quality.....	34
A.3.1.3	Method 2 - Method using limit values of substance concentration.....	35
A.3.1.4	Method 3: Method based on predefined air flow rates.....	35
A.3.2	Design ventilation air flow rates for residential buildings.....	36
A.3.2.1	General.....	36
A.3.2.2	Design supply air flow rates	36
A.3.2.3	Design extract air flow rates	37
A.3.3	Ventilation air flow rate during unoccupied periods	38
A.3.3.1	Non-residential buildings	38
A.3.3.2	Residential buildings	38
A.3.4	The recommended criteria for dimensioning of humidification and dehumidification....	38
A.4	How to define low and very low polluting buildings.....	38
A.5	Examples of criteria for lighting	39
A.6	Indoor system noise criteria of some spaces and buildings.....	40
A.7	Criteria for substances in indoor air	40
A.8	Occupant schedules for energy calculations	42
Annex B (informative)	Default criteria for the indoor environment	44
B.1	General.....	44
B.2	Default criteria for the thermal environment	44
B.2.1	Default categories for mechanically heated and cooled buildings.....	44
B.2.2	Default acceptable indoor temperatures for buildings without mechanical cooling systems.....	47
B.2.3	Increased air velocity	49
B.2.4	Default indoor temperatures for energy calculations.....	50
B.3	Basis for the criteria for indoor air quality and ventilation rates.....	51
B.3.1	Default design ventilation air flow rates	51
B.3.1.1	General.....	51
B.3.1.2	Method 1: method based on perceived air quality.....	51
B.3.1.3	Method 2 - method using limit values of substance concentration.....	52
B.3.1.4	Method 3 Method based on predefined ventilation flow rates.....	53

EN 16798-1:2019 (E)

B.3.1.5 Ventilation air flow rate during unoccupied periods	53
B.3.2 Default design ventilation air flow rates for residential buildings	53
B.3.2.1 General	53
B.3.2.2 Design supply air flow rates	53
B.3.2.3 Design extract air flow rates.....	54
B.3.2.4 Design opening areas for natural ventilation.....	55
B.3.2.5 Design ventilation air flow rate during unoccupied periods.....	55
B.3.3 The recommended criteria for dimensioning of humidification and dehumidification	56
B.4 Example on how to define low and very low polluting buildings.....	56
B.5 Examples of criteria for lighting.....	57
B.6 Indoor system noise criteria of some spaces and buildings	58
B.7 WHO health-based criteria for indoor air.....	59
B.8 Occupants schedules for energy calculations.....	60
Annex C (informative) Occupants schedules for energy calculations.....	63
Bibliography	77

European foreword

This document (EN 16798-1:2019) 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 November 2019, and conflicting national standards shall be withdrawn at the latest by November 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.

This document supersedes EN 15251:2007.

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

Regarding the most significant technical changes that were made in this new edition, see the Introduction.

Concerning the various parts of EN 16798, see below.

This standard 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 EPbd”.

EN 15251:2007 was produced to meet the requirements of Directive 2002/91/EC (16 December 2002) on energy performance of buildings referred to as “EPBD”.

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	<i>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 (revision of EN 15251)</i>
N/A	CEN/TR 16798-2	<i>Energy performance of buildings — Part 2: 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 — Technical report — Interpretation of the requirements in EN 16798-1</i>

EN 16798-1:2019 (E)

EN 13779	EN 16798-3	<i>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) (revision of EN 13779)</i>
N/A	CEN/TR 16798-4	<i>Energy performance of buildings — Part 4: Ventilation for non-residential buildings — Performance requirements for ventilation and room-conditioning systems — Technical report — Interpretation of the requirements in EN 16798-3</i>
EN 15241	EN 16798-5-1	<i>Energy performance of buildings — Modules M5-6, M5-8, M6-5, M6-8, M7-5, M7-8 — Ventilation for buildings - Calculation methods for energy requirements of ventilation and air conditioning systems — Part 5-1: Distribution and generation — method 1 (revision of EN 15241)</i>
EN 15241	EN 16798-5-2	<i>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 (revision of EN 15241)</i>
N/A	CEN/TR 16798-6	<i>Energy performance of buildings — Part 6: Ventilation for buildings — Modules M5-6, M5-8, M6-5, M6-8, M7-5, M7-8 — Calculation methods for energy requirements of ventilation and air conditioning systems — Technical report — Interpretation of the requirements in EN 16798-5-1 and EN 16798-5-2</i>
EN 15242	EN 16798-7	<i>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) (revision of EN 15242)</i>
N/A	CEN/TR 16798-8	<i>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 - (Module M5-5)</i>
EN 15243	EN 16798-9	<i>Energy performance of buildings — Part 9: Ventilation for buildings - Module M4-1, M4-4, M4-9 — Calculation methods for energy requirements — Calculation methods for energy requirements of cooling systems — General (revision of EN 15243)</i>

N/A	CEN/TR 16798-10	<i>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</i>
N/A	EN 16798-11	<i>Energy performance of buildings — Part 11: Module M4-3 — Calculation of the design cooling load</i>
N/A	EN 16798-13	<i>Energy performance of buildings — Part 13: Module M4-8 — Calculation of cooling systems — Generation</i>
N/A	CEN/TR 16798-14	<i>Energy performance of buildings — Part 14 : Module M4-8 — Calculation of cooling systems — Generation — Technical report — Interpretation of the requirements in EN 16798-13</i>
N/A	EN 16798-15	<i>Energy performance of buildings — Part 15: Module M4-7 — Calculation of cooling systems — Storage</i>
N/A	CEN/TR 16798-16	<i>Energy performance of buildings - Ventilation for buildings - Part 16: Interpretation of the requirements in EN 16798-15 - Calculation of cooling systems (Module M4-7) - Storage</i>
EN 15239 and EN 15240	EN 16798-17	<i>Energy performance of buildings — Part 17: Ventilation for buildings — Guidelines for inspection of ventilation and air conditioning systems, Module M4-11, M5-11, M6-11, M7-11</i>
N/A	CEN/TR 16798-18	<i>Energy performance of buildings — Part 18: Ventilation for buildings — Module M4-11, M5-11, M6-11, M7-11 — Guidelines for inspection of ventilation and air conditioning systems in EN 16798-17</i>

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

EN 16798-1:2019 (E)

Introduction

This European Standard is part of a series of standards aiming at international harmonization of the methodology for the assessment of the energy performance of buildings, called “set of EPB standards”.

All EPB standards follow specific rules to ensure overall consistency, unambiguity and transparency.

All EPB standards provide a certain flexibility with regard to the methods, the required input data and references to other EPB standards, by the introduction of a normative template in Annex A and Annex B with informative default choices.

For the correct use of this standard a normative template is given in Annex A to specify these choices. Informative default choices are provided in Annex B.

The main target groups of this standard are all the users of the set of EPB standards (e.g. architects, engineers, regulators).

Use by or for regulators: In case the standard is used in the context of national or regional legal requirements, mandatory choices may be given at national or regional level for such specific applications. These choices (either the informative default choices from Annex B or choices adapted to national / regional needs, but in any case following the template of this Annex A) can be made available as national annex or as separate (e.g. legal) document (national data sheet).

NOTE So in this case:

- the regulators will **specify** the choices;
- the individual user will apply the standard to assess the energy performance of a building, and thereby **use** the choices made by the regulators.

Topics addressed in this standard can be subject to public regulation. Public regulation on the same topics can override the default values in Annex B of this standard. Public regulation on the same topics can even, for certain applications, override the use of this standard. Legal requirements and choices are in general not published in standards but in legal documents. In order to avoid double publications and difficult updating of double documents, a national annex may refer to the legal texts where national choices have been made by public authorities. Different national annexes or national data sheets are possible for different applications.

It is expected, if the default values, choices and references to other EPB standards in Annex B are not followed due to national regulations, policy or traditions, that:

- national or regional authorities prepare data sheets containing the choices and national or regional values, according to the model in Annex A. In this case the national annex (e.g. NA) refers to this text;
- or, by default, the national standards body will consider the possibility to add or include a national annex in agreement with the template of Annex A, in accordance to the legal documents that give national or regional values and choices.

Further target groups are parties wanting to motivate their assumptions by classifying the building energy performance for a dedicated building stock.

More information is provided in the Technical Report accompanying this standard (CEN/TR 16798-2 [7], under preparation).

The first edition of this standard was published in 2007 as EN 15251. The major change consisted in splitting up the standard in a normative Part 1 and a Technical Report as Part 2. Part 1 includes an Annex B with tables with default values and an Annex A with similar empty tables to be used for national values. Further technical changes are the introduction of a category IV, inclusion of daylight factor and occupant schedules.

Energy consumption of buildings depends significantly on the criteria used for the indoor environment (heating, cooling, ventilation and lighting) and building (including systems) design and operation. Indoor environment also affects health, productivity and comfort of the occupants. Recent studies have shown that costs of poor indoor environment for the employer, the building owner and for society, as a whole are often considerable higher than the cost of the energy used in the same building. It has also been shown that good indoor environmental quality can improve overall work and learning performance and reduce absenteeism. In addition uncomfortable occupants are likely to take actions to make themselves comfortable which may have energy implications. There is therefore a need for specifying criteria for the indoor environment for design and energy calculations for buildings and building service systems.

The present standard is a revision of EN 15251:2007. This standard specifies different types and categories of criteria, which may have a significant influence on the energy demand. For the thermal environment criteria for the heating season (cold/winter) and cooling season (warm/summer) are listed. The criteria in EN 15251 were, however, mainly for dimensioning of building, heating, cooling and ventilation systems. They may not be used directly for energy calculations and year-round evaluation of the indoor thermal environment. Studies have shown that occupant expectations in natural ventilated buildings may differ from conditioned buildings, which will be part of this standard.

The present standard specifies how design criteria can be established and used for dimensioning of systems. It defines how to establish and define the main parameters to be used as input for building energy calculation and short and long term evaluation of the indoor environment. The present standard gives default criteria for design and energy calculations in an informative Annex B. A similar normative Annex A is included for specifying national criteria. The national Annex A may specify different criteria for design compared to criteria for energy calculation. The national annex may also specify different criteria for different building types (offices, schools, etc.).

The present standard does not require certain criteria to be used. This is up to national regulations or individual project specifications.

EN 16798-1:2019 (E)

1 Scope

This document specifies requirements for indoor environmental parameters for thermal environment, indoor air quality, lighting and acoustics and specifies how to establish these parameters for building system design and energy performance calculations.

This European Standard includes design criteria for the local thermal discomfort factors, draught, radiant temperature asymmetry, vertical air temperature differences and floor surface temperature.

This European Standard is applicable where the criteria for indoor environment are set by human occupancy and where the production or process does not have a major impact on indoor environment.

This European Standard also specifies occupancy schedules to be used in standard energy calculations and how different categories of criteria for the indoor environment can be used.

The criteria in this European Standard can also be used in national calculation methods. This standard sets criteria for the indoor environment based on existing standards and reports listed under normative references or in the bibliography.

This European Standard does not specify design methods, but gives input parameters to the design of building envelope, heating, cooling, ventilation and lighting.

Table 1 shows the relative position of this standard within the set of EPB standards in the context of the modular structure as set out in EN ISO 52000-1.

NOTE 1 In CEN ISO/TR 52000-2 the same table can be found, with, for each module, the numbers of the relevant EPB standards and accompanying technical reports that are published or in preparation.

NOTE 2 The modules represent EPB standards, although one EPB standard may cover more than one module and one module may be covered by more than one EPB standard, for instance a simplified and a detailed method respectively. See also Clause 2 and Tables A.1 and B.1.

Table 1 — Position of this standard within the EN EPB set of standards according to EN ISO 52000-1

Overarching		Building (as such)		Technical Building Systems										
	Descriptions		Descriptions		Descriptions	Heating	Cooling	Ventilation	Humidification	Dehumidification	Domestic Hot water	Lighting	Building automation and control	PV, wind, ..
sub1	M1	sub1	M2	sub1		M3	M4	M5	M6	M7	M8	M9	M10	M11
1	General	1	General	1	General									
2	Common terms and definitions; symbols, units and subscripts	2	Building Energy Needs	2	Needs									
3	Applications	3	(Free) Indoor Conditions without Systems	3	Maximum Load and Power									

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