Nederlandse

Ontwerp

norm

NEN-EN 16798-9

Energieprestatie voor gebouwen - Deel 9: Ventilatie van gebouwen - Module M4-1 - Berekeningsmethoden voor energiebehoefte van koelsystemen - Algemeen

Publicatie uitsluitend voor commentaar

Energy performance of buildings - Part 9: Ventilation for buildings - Module M4-1 - Calculation methods for energy requirements Calculation methods for energy requirements of cooling systems - General

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Zal vervangen NEN-EN 15243:2007

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Normcommissie 35107425 "Europese en mondiale normalisatie klimaatbeheersing"

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EUROPEAN STANDARD

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DRAFT
prEN 16798-9

November 2014

ICS 91.120.10; 91.140.30

Will supersede EN 15243:2007

English Version

Energy performance of buildings - Part 9: Ventilation for buildings - Module M4-1 - Calculation methods for energy requirements Calculation methods for energy requirements of cooling systems - General

Performance énergétique des bâtiments - Partie 9: Ventilation des bâtiments - Modules M4-1 - Méthodes de calcul pour les exigences énergétiques - Méthodes de calcul pour les exigences énergétiques des systèmes de refroidissement - Généralités

Energieeffizienz von Gebäuden - Teil 9: Modul M4-1 - Lüftung von Gebäuden - Berechnungsmethoden für den Energiebedarf von Kälteanlagen - Allgemeines

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 156.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (prEN 16798-9:2014) has been prepared by Technical Committee CEN/TC 156 “Ventilation for Buildings”, the secretariat of which is held by BSI.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 15243:2007.

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

Introduction

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

As part of the "EPB set of standards" it complies with the requirements for the set of basic EPB documents (EN 15603 (see Normative references), CEN/TS 16628 and CEN/TS 16629 (see bibliography [xx] and [yy]) developed under a mandate given to CEN by the European Commission and the European Free Trade Association (Mandate M/480, [4]), and supports essential requirements of EU Directive 2010/31/EC on the energy performance of buildings (EPBD).

Where appropriate, the method(s) in each of the EPB standards may provide simplified procedures and/or default values as alternative options.

— Without further specification, these simplified procedures and/or default values may be used without restricting criteria.

NOTE 1 For instance because these are conservative procedures or values.

NOTE 2 The term 'default values' should not be confused with 'informative values'. If the values are given in the normative part of the standard, they are normative values. See also next options.

— In other cases, these simplified procedures and/or default values may be intended to be used only for situations where there is limited information. This may be the case in existing buildings with limited possibilities to acquire all input data. In particular when the EPB set of standards is used in the context of national or regional building regulations, specific criteria when the simplified method and/or default data are allowed, may be given at national or regional level, following the template in Annex A. Annex B provides (informative) default choices.

TC 156 deals with ventilation and air conditioning systems in buildings. Subjects covered by TC 156 are:

— energy performance calculation for ventilation, air conditioning and cooling systems;

— inspection of ventilation and air conditioning systems;

— installation and commissioning of ventilation and air conditioning systems.

This standard gives the method how to apply and combine the calculation methods given in the different cooling related standards covering sub system calculations, in order to get a consistent overall calculation of an envisaged cooling system. It also contains information on how to express the energy performance of cooling systems as technical system related energy performance indicators.

This standard replaces EN 15243, which was developed during the first EPBD mandate and was published in 2007. However, due to the revision of the whole EBPD related standards, the majority of the contents are not any more content of this standard, because they are covered elsewhere or the calculation methods presented cover the issues that were described more generally. Specifically, the following parts are covered in other standards:

— Clause 5: prCEN TR 16798-10;

— Clauses 6 to 8: ISO WD 52016-1 and prEN 16798-11;

— Clause 9: prCEN TR 16798-12;

— Clause 10 and 11: prEN 16798-11;

— Clause 12: prCEN TR 16798-12;

— Clause 13: ISO WD 52016-1.

This standard specifically replaces Clause 14 of EN 15243:2007.

1 Scope

Table 1 shows the relative position of this standard within the EN EPB set of standards.

Table 1 — Position of this standard within the EPB set of standards

	Over-arching	Building (as such)	Technical Building Systems										
Submodule	Descriptions	Descriptions	Descriptions	Heating	Cooling	Ventilation	Humidification	Dehumidification	Domestic Hot water	Lighting	Building automation & control	PV, wind, ..
sub1	M1	M2		M3	M4	M5	M6	M7	M8	M9	M10	M11
1	General	General	General									
2	Common terms and definitions; symbols, units and subscripts	Building Energy Needs	Needs									
3	Applications	(Free) Indoor Conditions without Systems	Maximum Load and Power									
4	Ways to Express Energy Performance	Ways to Express Energy Performance	Ways to Express Energy Performance									
5	Building Functions and Building Boundaries	Heat Transfer by Transmission	Emission & control									
6	Building Occupancy and Operating Conditions	Heat Transfer by Infiltration and Ventilation	Distribution & control									
7	Aggregation of Energy Services and Energy Carriers	Internal Heat Gains	Storage & control									
8	Building Partitioning	Solar Heat Gains	Generation & control									
9	Calculated Energy Performance	Building Dynamics (thermal mass)	Load dispatching and operating conditions									
10	Measured Energy Performance	Measured Energy Performance	Measured Energy Performance									
11	Inspection	Inspection	Inspection									
12	Ways to Express Indoor Comfort		BMS									
13	External Environment Conditions											
14	Economic Calculation											

This standard covers the energy performance calculation of complete cooling systems. It gives a calculation method which defines how to collect the cooling energy requirements from the thermal zones and from the air handling units connected to a distribution system, and how to aggregate multiple distribution systems to an overall system energy requirement. It integrates the calculation of the emission and distribution losses and auxiliary energy. The required cooling energy to be extracted by the cooling generation system is calculated, considering cooling energy storage. It gives a method on how to dispatch the cooling energy provided by the cooling generation to different distribution systems, considering possible priorities.

This standard defines technical system related energy performance indicators for cooling systems.

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.

prEN15603:2014 Energy performance of buildings – Overarching standard EPB

prEN 15316-2 Heating systems and water based cooling systems in buildings - Method for calculation of system energy requirements and system efficiencies - Part 2: Space emission systems (heating and cooling);

prEN 15316-3 Heating systems and water based cooling systems in buildings - Method for calculation of system energy requirements and system efficiencies - Part 3: Space distribution systems (DHW, heating and cooling);

prEN 16798-5-1 Energy performance of buildings - Part 5: 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 (revision of EN 15241) – method 1;

prEN 16798-5-2 Energy performance of buildings - Part 5: 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 (revision of EN 15241) – method 2;

prEN 16798-7 Energy performance of buildings - Part 7: Ventilation for buildings - Modules M5-1, M5-5, M5-6, M5-8 - Calculation methods for the determination of air flow rates in buildings including infiltration; (revision of EN 15242)

prEN 16798-13 Energy performance of buildings - Part 13 : Module M4-8 - Calculation of cooling systems - generation;

prEN 16798-15 Energy performance of buildings - Part 15 : Module M4-7 - Calculation of cooling systems - storage

ISO WD 52016-1 Energy performance of buildings — Calculation of the energy needs for heating and cooling, internal temperatures and heating and cooling load in a building or building zone — Part 1: Calculation procedures

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 7345:1995, prEN 15603:2013, EN 12792 apply.

4 Symbols and abbreviations

4.1 Symbols

For the purposes of this Standard, the symbols given in prEN 15603:2014, EN 12792 apply.

4.2 Subscripts

For the purposes of this Standard, the subscripts given in prEN 15603:2014, EN 12792 and the specific subscripts listed in Table 2 apply.

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