SLOVENSKI STANDARD
SIST EN ISO 52017-1:2017

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Nadomešča:
SIST EN 15255:2007
SIST EN 15265:2007
SIST EN ISO 13791:2012
SIST EN ISO 13792:2012

Energijske lastnosti stavb - Zaznavne in latentne toplotne obremenitve ter notranje temperature - 1. del: Splošni računski postopki (ISO 52017-1:2017)

Energy performance of buildings - Sensible and latent heat loads and internal temperatures - Part 1: Generic calculation procedures (ISO 52017-1:2017)

Energieeffiziens von Gebäuden - Fühlbare und latente Wärmelasten und Innentemperaturen - Teil 1: Allgemeine Berechnungsverfahren (ISO 52017-1:2017)

Performance énergétique des bâtiments - Charges thermiques latentes et sensibles et températures intérieures - Partie 1: Méthodes de calcul génériques (ISO 52017-1:2017)

Ta slovenski standard je istoveten z: **EN ISO 52017-1:2017**

ICS:

27.015	Energijska učinkovitost. Ohranjanje energije na splošno	Energy efficiency. Energy conservation in general
91.120.10	Toplotna izolacija stavb	Thermal insulation of buildings

SIST EN ISO 52017-1:2017 **en**

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 52017-1

July 2017

English Version

Energy performance of buildings - Sensible and latent heat loads and internal temperatures - Part 1: Generic calculation procedures (ISO 52017-1:2017)

Performance énergétique des bâtiments - Charges thermiques latentes et sensibles et températures intérieures - Partie 1: Méthodes de calcul génériques (ISO 52017-1:2017)

Energieeffiziens von Gebäuden - Fühlbare und latente Wärmelasten und Innentemperaturen - Teil 1: Allgemeine Berechnungsverfahren (ISO 52017-1:2017)

This European Standard was approved by CEN on 27 February 2017.

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, 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

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European foreword

This document (EN ISO 52017-1:2017) has been prepared by Technical Committee ISO/TC 163 "Thermal performance and energy use in the built environment" in collaboration with Technical Committee CEN/TC 89 "Thermal performance of buildings and building components" the secretariat of which is held by SIS.

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 January 2018, and conflicting national standards shall be withdrawn at the latest by January 2018.

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 document is part of the set of standards on the energy performance of buildings (the set of EPB standards) and has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association (Mandate M/480, see reference [EF1] below), and supports essential requirements of EU Directive 2010/31/EC on the energy performance of buildings (EPBD, [EF2]).

In case this 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, in particular for the application within the context of EU Directives transposed into national legal requirements.

Further target groups are users of the voluntary common European Union certification scheme for the energy performance of non-residential buildings (EPBD art.11.9) and any other regional (e.g. Pan European) parties wanting to motivate their assumptions by classifying the building energy performance for a dedicated building stock.

References:

[EF1] Mandate M/480, Mandate to CEN, CENELEC and ETSI for the elaboration and adoption of standards for a methodology calculating the integrated energy performance of buildings and promoting the energy efficiency of buildings, in accordance with the terms set in the recast of the Directive on the energy performance of buildings (2010/31/EU) of 14th December 2010

[EF2] EPBD, Recast of the Directive on the energy performance of buildings (2010/31/EU) of 14th December 2010

[EF3] EN 15265:2007, *Energy performance of buildings — Calculation of energy needs for space heating and cooling using dynamic methods — General criteria and validation procedures*

[EF4] EN 15255:2007, *Thermal performance of buildings Sensible room cooling load calculation - General criteria and validation procedures*

Together with EN ISO 52016-1 this document supersedes EN ISO 13791:2012, EN ISO 13792:2012, EN 15255:2007 [EF3] and EN 15265:2007 [EF4].

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According to the CEN-CENELEC Internal Regulations, the national standards organizations 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.

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Endorsement notice

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The text of ISO 52017-1:2017 has been approved by CEN as EN ISO 52017-1:2017 without any modification.

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INTERNATIONAL STANDARD

ISO
52017-1

First edition
2017-06

Energy performance of buildings — Sensible and latent heat loads and internal temperatures —

Part 1:
Generic calculation procedures

Performance énergétique des bâtiments — Charges thermiques latentes et sensibles et températures intérieures —

Partie 1: Méthodes de calcul génériques

Reference number
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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

ISO 52017-1 was prepared by ISO Technical Committee ISO/TC 163, *Thermal performance and energy use in the built environment*, Subcommittee SC 2, *Calculation methods,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 89, *Thermal performance of buildings and building components,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This first edition of ISO 52017-1 cancels and replaces ISO 13791:2012, which has been technically revised.

A list of all parts in the ISO 52017 series can be found on the ISO website.

Introduction

This document is part of a series aimed at the international harmonization of the methodology for assessing the energy performance of buildings. Throughout, this series is referred to as a "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 document, a normative template is given in Annex A to specify these choices. Informative default choices are provided in Annex B.

The main target groups for this document are architects, engineers and regulators.

Use by or for regulators: In case the document 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 Annex A) can be made available as national annex or as separate (e.g. legal) document (national data sheet).

NOTE 1   So in this case:

— the regulators will specify the choices;

— the individual user will apply the document to assess the energy performance of a building, and thereby use the choices made by the regulators.

Topics addressed in this document can be subject to public regulation. Public regulation on the same topics can override the default values in Annex B. Public regulation on the same topics can even, for certain applications, override the use of this document. 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 a national annex (e.g. NA) is recommended, containing a reference to these data sheets;

— 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 document (ISO/TR 52016-2[3]) accompanying this document.

The subset of EPB standards prepared under the responsibility of ISO/TC 163/SC 2 cover *inter alia*:

— calculation procedures on the overall energy use and energy performance of buildings;

— calculation procedures on the internal temperature in buildings (e.g. in case of no space heating or cooling);

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— indicators for partial EPB requirements related to thermal energy balance and fabric features;

— calculation methods covering the performance and thermal, hygrothermal, solar and visual characteristics of specific parts of the building and specific building elements and components, such as opaque envelope elements, ground floor, windows and facades.

ISO/TC 163/SC 2 cooperates with other TC's for the details on, e.g. appliances, technical building systems and indoor environment.

This document is intended for use by specialists to develop methods for the hourly or subhourly calculation of the internal temperatures and/or the heating, cooling and/or the humidification loads of a thermal zone in a building.

Examples of application of such methods includes the following:

a) assessing the risk of internal overheating;

b) optimizing aspects of building design (building thermal mass, solar protection, ventilation rate, etc.) to provide thermal comfort conditions;

c) assessing whether a building requires mechanical cooling;

d) assessing the energy needs for heating and cooling and for humidification and dehumidification;

e) assessing the sensible heating and cooling and humidification and dehumidification loads under system design conditions.

Criteria for building performance are not included. They can be considered at national level. This document can also be used as a reference to develop more simplified methods for the above and similar applications.

Specific calculation procedures based on the generic calculation procedures of this document are given in ISO 52016-1. The specific simplifications, assumptions and boundary conditions in ISO 52016-1 are tailored to the respective application areas.

The main differences compared to ISO 13791 are the following:

— assumptions or procedures that are not relevant for the generic calculation procedures have been moved to the standard with specific application and combined with other specific assumptions and procedures, for example, specification of the convective heat transfer coefficients;

— the calculation of the operative temperature is added. The solution techniques for the calculation of the operative temperature are not provided in this document, but left up to the specific application standards (e.g. ISO 52016-1);

— the heat flow rates representing the sensible heating and cooling loads and the humidification and dehumidification loads to hold a specific (temperature, moisture) set point are added to the formulae. This widens the application range of the generic calculation procedures without adding complexity. The solution techniques for the calculation of these loads are not provided in this standard, but left up to the specific application standards (e.g. ISO 52016-1), because this is highly application dependent;

— the validation cases have been removed, because there is no need to validate the implementation of the generic calculation method itself. Conformance criteria and deviation allowances highly depend on the application area. Moreover, the reference results of the main validation cases of ISO 13791[1] were questioned and could not be reproduced. Instead, the "BESTEST" test suite, standardized as ANSI/ASHRAE 140[9], comprises a number of test cases that are appropriate for (optional) validation of the calculation methods described in this document. The relevant subset of BESTEST cases is similar to the test cases of ISO 13791. The most relevant BESTEST cases have been adopted in ISO 52016-1 for verification of the specific calculation procedures of that standard.