

**SLOVENSKI STANDARD  
SIST EN ISO 12631:2017****01-september-2017****Nadomešča:  
SIST EN ISO 12631:2013**

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**Toplotne značilnosti obešenih fasad - Izračun toplotne prehodnosti (ISO 12631:2017)**

Thermal performance of curtain walling - Calculation of thermal transmittance (ISO 12631:2017)

Wärmetechnisches Verhalten von Vorhangfassaden - Berechnung des Wärmedurchgangskoeffizienten (ISO 12631:2017)

Performance thermique des façades-rideaux - Calcul du coefficient de transmission thermique (ISO 12631:2017)

**Ta slovenski standard je istoveten z: EN ISO 12631:2017****ICS:**

91.060.10	Stene. Predelne stene. Fasade	Walls. Partitions. Facades
91.120.10	Toplotna izolacija stavb	Thermal insulation of buildings

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EUROPEAN STANDARD

EN ISO 12631

NORME EUROPÉENNE

EUROPÄISCHE NORM

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ICS 91.060.10; 91.120.10

Supersedes EN ISO 12631:2012

English Version

## Thermal performance of curtain walling - Calculation of thermal transmittance (ISO 12631:2017)

Performance thermique des façades-rideaux - Calcul du coefficient de transmission thermique (ISO 12631:2017)

Wärmetechnisches Verhalten von Vorhangfassaden - Berechnung des Wärmedurchgangskoeffizienten (ISO 12631:2017)

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.

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## European foreword

This document (EN ISO 12631:2017) has been prepared by Technical Committee CEN/TC 89 "Thermal performance of buildings and building components", the secretariat of which is held by SIS, in collaboration with Technical Committee ISO/TC 163 "Thermal performance and energy use in the built environment".

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.

This document supersedes EN ISO 12631:2012.

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.

### References:

[EF1] Mandate M480, 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 14<sup>th</sup> December 2010

**EN ISO 12631:2017 (E)**

**Endorsement notice**

The text of ISO 12631:2017 has been approved by CEN as EN ISO 12631:2017 without any modification.

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INTERNATIONAL  
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ISO  
12631

Second edition  
2017-06

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**Thermal performance of curtain  
walling — Calculation of thermal  
transmittance**

*Performance thermique des façades-rideaux — Calcul du coefficient  
de transmission thermique*

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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. [www.iso.org/directives](http://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. [www.iso.org/patents](http://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: <http://www.iso.org/iso/foreword.html>

ISO 12631 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 89, *Thermal performance of buildings and building components*, in collaboration with ISO Technical Committee ISO/TC 163, *Thermal performance and energy use in the built environment*, Subcommittee SC 2, *Calculation methods*, in accordance with the agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 12631:2012) which has been technically revised. The necessary editorial revisions were made to comply with the requirements for the EPB set of standards.

In addition, the following clauses and subclauses of the previous version have been technically revised:

- Annex G and Annex H were deleted and moved to the technical report;
- Tabulated values in [Annex D](#) were checked and revised where necessary.

## ISO 12631:2017(E)

### Introduction

This document 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 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 of this document are manufacturers of curtain wallings.

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 this [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](#) of this document. 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 52022-2).

The design and construction of curtain wall systems is complex. This document specifies a procedure for calculating the thermal transmittance of curtain wall structures.

Curtain walls often contain different kinds of materials, joined in different ways, and can exhibit numerous variations of geometrical shape. With such a complex structure, the likelihood of producing thermal bridges across the curtain wall envelope is quite high.

The results of calculations, carried out following the procedures specified in this document, can be used for comparison of the thermal transmittance of different types of curtain wall or as part of the

input data for calculating the heat used in a building. This document is not suitable for determining whether or not condensation will occur on the structure surfaces nor within the structure itself. Two methods are given in this document:

- single assessment method (see [Clause 7](#));
- component assessment method (see [Clause 8](#)).

Guidance on the use of these two methods is given in [Clause 6](#). Calculation examples for these two methods are given in ISO/TR 52022-2.

Testing according to ISO 12567-1:2010 is an alternative to this calculation method.

The thermal effects of connections to the main building structure as well as fixing lugs can be calculated according to ISO 10211.

The thermal transmittance of the frame,  $U_f$ , is defined according to ISO 10077-2 or EN 12412-2 together with [Annex D](#). The thermal transmittance of glazing units,  $U_g$ , is defined according to ISO 10291, ISO 10292, ISO 10293 (or see Subjects 1, 2 and 3 in [Table C.1](#)<sup>1)</sup>) which do not include the edge effects. The thermal interaction of the frame and the filling element is included in the linear thermal transmittance  $\Psi$  which is derived using the procedures specified in ISO 10077-2.

[Table 1](#) shows the relative position of this document within the set of EPB standards in the context of the modular structure as set out in ISO 52000-1.

NOTE 2 In 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 3 The modules represent EPB standards, although one EPB standard could cover more than one module and one module could be covered by more than one EPB standard, for instance, a simplified and a detailed method respectively.

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1) See [Table C.1](#) for alternative references in line with ISO Global Relevance Policy.

## ISO 12631:2017(E)

**Table 1 — Position of this document (*in casu* M2–5), within the modular structure of the set of EPB standards**

Submodule	Overarching		Building (as such)		Technical Building Systems									
	Descriptions		Descriptions		De-scriptions	Heat-ing	Cool-ing	Ven-tilation	Hu-mid-ifi-cation	De-hu-mid-ification	Do-mes-tic Hot water	Light-ing	Build-ing automa-tion and 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								a	
3	Applications		(Free) indoor conditions without systems		Maxi-mum load and power									
4	Ways to express energy performance		Ways to express energy performance		Ways to express energy performance									
5	Building categories and building boundaries		Heat transfer by transmission	ISO 12631	Emission and control									
6	Building occupancy and operating conditions		Heat transfer by infiltration and ventilation		Distribution and control									
7	Aggregation of energy services and energy carriers		Internal heat gains		Storage and control									

<sup>a</sup> The shaded modules are not applicable.

Table 1 (continued)

Submodule	Overarching		Building (as such)		Technical Building Systems									
	Descriptions	M1	Descriptions	M2	De-scriptions	Heat-ing	Cool-ing	Ven-tila-tion	Hu-mid-ifi-cati-on	De-hu-mid-ifica-tion	Do-mes-tic Hot water	Light-ing	Build-ing automa-tion and control	PV, wind
sub1		M1		M2		M3	M4	M5	M6	M7	M8	M9	M10	M11
8	Building zoning		Solar heat gains		Genera-tion and control									
9	Calculated energy performance		Building dynamics (thermal mass)		Load dis-patching and oper-ating 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													

<sup>a</sup> The shaded modules are not applicable.