DIN EN ISO 10077-2

ICS 91.060.50; 91.120.10

Supersedes
DIN EN ISO 10077-2:2012-06 and
DIN EN ISO 10077-2
Corrigendum 1:2012-10

Thermal performance of windows, doors and shutters – Calculation of thermal transmittance – Part 2: Numerical method for frames (ISO 10077-2:2017); English version EN ISO 10077-2:2017, English translation of DIN EN ISO 10077-2:2018-01

Wärmetechnisches Verhalten von Fenstern, Türen und Abschlüssen –
Berechnung des Wärmedurchgangskoeffizienten –
Teil 2: Numerisches Verfahren für Rahmen (ISO 10077-2:2017);
Englische Fassung EN ISO 10077-2:2017,
Englische Übersetzung von DIN EN ISO 10077-2:2018-01

Performance thermique des fenêtres, portes et fermetures –
Calcul du coefficient de transmission thermique –
Partie 2: Méthode numérique pour les encadrements (ISO 10077-2:2017);
Version anglaise EN ISO 10077-2:2017,
Traduction anglaise de DIN EN ISO 10077-2:2018-01

Document comprises 83 pages

Translation by DIN-Sprachendienst.

In case of doubt, the German-language original shall be considered authoritative.

01.18 2808178

A comma is used as the decimal marker.

National foreword

This document (EN ISO 10077-2:2017) has been prepared by Technical Committee CEN/TC 89 "Thermal performance of buildings and building components" (Secretariat: SIS, Sweden) in collaboration with Technical Committee ISO/TC 163 "Thermal performance and energy use in the built environment", Subcommittee SC 2 "Calculation methods".

The responsible German body involved in its preparation was *DIN-Normenausschuss Bauwesen* (DIN Standards Committee Building and Civil Engineering), Working Committee NA 005-56-97 AA "Transparent components (national Mirror Committee to CEN/TC 89/WG 7, ISO/TC 163/SC 1/WG 17, ISO/TC 163/SC 2/WG 9 (for transparent components))".

This standard has been prepared under the EPBD mandate M/480.

DIN EN ISO 10077-2 is an International Standard and CEN ISO/TR 52022-2 is the accompanying Technical Report to this standard containing further informative content for assessing the energy performance of a building.

In Germany, the Directive on the energy performance of buildings (2010/31/EU) of the European Parliament and the European Council is primarily implemented by national energy conservation law. National energy conservation law refers to dated national and European Standards and national prestandards that have been specified to be implemented in Germany.

In Germany, the application of this standard in connection with national energy conservation law is defined by provisions in this law.

Provisions of German energy conservation law cannot be systematically fully and identically implemented with the set of standards under the EPBD mandate M/480 and the therein referenced International and European Standards. When applying the standards of the mandate, accordance with German energy conservation law cannot be achieved, whether in terms of the procedure, the result, or assessment of the result.

Currently, the set of standards of the EPBD mandate M/480 is not applicable for the purposes of German energy conservation law, even if references to national regulations in the respective national annexes are taken into consideration.

EN ISO 10077-2:2017 contains errors that were corrected when this document was prepared. The corrections made have been marked by and explained in national footnotes.

The DIN documents corresponding to the international documents referred to in this document are as follows:

ISO 6946	DIN EN ISO 6946
ISO 7345	DIN EN ISO 7345
ISO 10077-1	DIN EN ISO 10077-1
ISO 10211	DIN EN ISO 10211
ISO 10456:2007	DIN EN ISO 10456:2008-04
ISO 12567-2:2005	DIN EN ISO 12567-2:2006-03
ISO 17025	DIN EN ISO/IEC 17025
ISO 52000-1	DIN EN ISO 52000-1
ISO/TR 52022-2	DIN CEN ISO/TR 52022-2

Amendments

This standard differs from DIN EN ISO 10077-2:2012-06 and DIN EN ISO 10077-2 Corrigendum 1:2012-10 as follows:

a) Clause 6 has been technically revised: a new approach for the treatment of cavities has been included; conduction/convection and radiation have been separated; the radiosity method has been included;

b) former Annexes C and D have been technically revised and new Annex D has been included;

c) Annexes G and H have been included;

d) necessary editorial changes have been made to correspond to the requirements of the EPB standards series.

Previous editions

DIN EN ISO 10077-2: 2003-12, 2008-08, 2012-06
DIN EN ISO 10077-2 Corrigendum 1: 2012-10

National Annex NA
(informative)

Bibliography

DIN EN ISO 6946, *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method*

DIN EN ISO 7345, *Thermal insulation — Physical quantities and definitions*

DIN EN ISO 10077-1, *Thermal performance of windows, doors and shutters — Calculation of thermal transmittance — Part 1: General*

DIN EN ISO 10211, *Thermal bridges in building construction — Heat flows and surface temperatures — Detailed calculations*

DIN EN ISO 10456:2008-04, *Building materials and products — Hygrothermal properties — Tabulated design values and procedures for determining declared and design thermal values (ISO 10456:2007)*

DIN EN ISO 12567-2:2006-03, *Thermal performance of windows and doors — Determination of thermal transmittance by hot box method — Part 2: Roof windows and other projecting windows (ISO 12567-2:2005)*

DIN EN ISO 52000-1, *Energy performance of buildings — Overarching EPB assessment — Part 1: General framework and procedures*

DIN EN ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

DIN CEN ISO/TR 52022-2, *Energy performance of buildings — Thermal, solar and daylight properties of building components and elements — Part 2: Explanation and justification*

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 10077-2

July 2017

ICS 91.060.50; 91.120.10

Supersedes EN ISO 10077-2:2012

English Version

Thermal performance of windows, doors and shutters - Calculation of thermal transmittance - Part 2: Numerical method for frames (ISO 10077-2:2017)

Performance thermique des fenêtres, portes et fermetures - Calcul du coefficient de transmission thermique - Partie 2: Méthode numérique pour les encadrements (ISO 10077-2:2017)

Wärmetechnisches Verhalten von Fenstern, Türen und Abschlüssen - Berechnung des Wärmedurchgangskoeffizienten - Teil 2: Numerisches Verfahren für Rahmen (ISO 10077-2:2017)

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

Ref. No. EN ISO 10077-2:2017 E

Contents

European foreword

This document (EN ISO 10777-2:2017) 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 10077-2:2012.

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

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[N1)]

N1) National footnote: The publication date of the new edition of the Directive is 19 May 2010, not 14 December 2010. This has been corrected in the German version.

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

Endorsement notice

The text of ISO 10777-2:2017 has been approved by CEN as EN ISO 10777-2:2017 without any modification.

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 10077-2 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 third edition cancels and replaces the second edition (ISO 10077-2:2012), which has been technically revised to comply with the requirements for the EPB set of standards. It also incorporates the Technical Corrigendum ISO 10077-2:2012/Cor 1:2012.

In addition, Clause 6 has been technically revised by

— adding a new approach for the treatment of cavities,

— separating conduction/convection and radiation, and

— introducing the radiosity method.

Annex H and Annex G were also added.

A list of all parts in the ISO 10077 series can be found on the ISO website.