



SLOVENSKI STANDARD SIST EN ISO 10077-2:2012

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Nadomešča:

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Toplotne lastnosti oken, vrat in polken - Izračun toplotne prehodnosti - 2. del: Računska metoda za okvirje (ISO 10077-2:2012)

Thermal performance of windows, doors and shutters - Calculation of thermal transmittance - Part 2: Numerical method for frames (ISO 10077-2:2012)

Wärmetechnisches Verhalten von Fenstern, Türen und Abschlüssen - Berechnung des Wärmedurchgangskoeffizienten - Teil 2: Numerisches Verfahren für Rahmen (ISO 10077-2:2012)

Performance thermique des fenêtres, portes et fermetures - Calcul du coefficient de transmission thermique - Partie 2: Méthode numérique pour les encadrements (ISO 10077-2:2012)

Ta slovenski standard je istoveten z: EN ISO 10077-2:2012

ICS:

91.060.50	Vrata in okna	Doors and windows
91.120.10	Toplotna izolacija stavb	Thermal insulation

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EUROPEAN STANDARD

EN ISO 10077-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2012

ICS 91.060.50; 91.120.10

Supersedes EN ISO 10077-2:2003

English Version

Thermal performance of windows, doors and shutters -
Calculation of thermal transmittance - Part 2: Numerical method
for frames (ISO 10077-2:2012)

Performance thermique des fenêtres, portes et fermetures -
Calcul du coefficient de transmission thermique - Partie 2:
Méthode numérique pour les encadrements (ISO 10077-
2:2012)

Wärmetechnisches Verhalten von Fenstern, Türen und
Abschlüssen - Berechnung des
Wärmedurchgangskoeffizienten - Teil 2: Numerisches
Verfahren für Rahmen (ISO 10077-2:2012)

This European Standard was approved by CEN on 29 February 2012.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN ISO 10077-2:2012) 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 August 2012, and conflicting national standards shall be withdrawn at the latest by August 2012.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 10077-2:2003.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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Endorsement notice

The text of ISO 10077-2:2011 has been approved by CEN as a EN ISO 10077-2:2012 without any modification.

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INTERNATIONAL STANDARD

ISO
10077-2

Second edition
2012-03-01

Thermal performance of windows, doors and shutters — Calculation of thermal transmittance —

Part 2: Numerical method for frames

*Performance thermique des fenêtres, portes et fermetures — Calcul du
coefficient de transmission thermique —
Partie 2 Méthode numérique pour les encadrements*

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ISO 10077-2:2012(E)

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 10077-2 was prepared by 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 International Standard is one of a series of standards on methods for the design and evaluation of the thermal performance of building equipment and industrial installations.

This second edition cancels and replaces the first edition (ISO 10077-2:2003), which has been technically revised. The main changes compared to the previous edition are given in the following table:

Clause	Changes
5.1	Clarified use of measured data.
5.4	Added calculation rules for roller shutter boxes and added new figure.
5.5	Added calculation rules for extensions of window frame profiles and new added figure.
Annex A	Added Table A.2 — Thermal conductivity of timber species.
Annex A	Added Table A.3 — Typical emissivities of metallic surfaces.
Annex B	Added Table B.2 for roller shutter boxes.
C.2	Added calculation rules for the combination of frame constructions with insulating glazing units (IGU) and Figure C.3 showing a representative metal spacer incorporated in an IGU.
Annex D	Updated Figures D.1 to D.10 for frame sections.

ISO 10077 consists of the following parts, under the general title *Thermal performance of windows, doors and shutters — Calculation of thermal transmittance*:

- Part 1: General
- Part 2: Numerical method for frames

Introduction

ISO 10077 consists of two parts. The method in this part of ISO 10077 is intended to provide calculated values of the thermal characteristics of frame profiles, suitable to be used as input data in the calculation method of the thermal transmittance of windows, doors and shutters given in ISO 10077-1. It is an alternative to the test method specified in EN 12412-2. In some cases, the hot box method is preferred, especially if physical and geometrical data are not available or if the profile is a complicated geometrical shape.

Although the method in this part of ISO 10077 basically applies to vertical frame profiles, it is an acceptable approximation for horizontal frame profiles (e.g. sill and head sections) and for products used in sloped positions (e.g. roof windows). For calculations made with the glazing units in place, the heat flow pattern and the temperature field within the frame are useful by-products of this calculation.

This part of ISO 10077 does not cover building façades and curtain walling. These are covered in ISO 12631¹⁾ or EN 13947.

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Thermal performance of windows, doors and shutters — Calculation of thermal transmittance —

Part 2: Numerical method for frames

1 Scope

This part of ISO 10077 specifies a method and gives reference input data for the calculation of the thermal transmittance of frame profiles and of the linear thermal transmittance of their junction with glazing or opaque panels.

The method can also be used to evaluate the thermal resistance of shutter profiles and the thermal characteristics of roller shutter boxes and similar components (e.g. blinds).

This part of ISO 10077 also gives criteria for the validation of numerical methods used for the calculation.

This part of ISO 10077 does not include effects of solar radiation, heat transfer caused by air leakage or three-dimensional heat transfer such as pin point metallic connections. Thermal bridge effects between the frame and the building structure are not included.

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2 Normative references (standards.iteh.ai)

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

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

ISO 10456: 2007, *Building materials and products — Hygrothermal properties — Tabulated design values and procedures for determining declared and design thermal values*

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

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

EN 673, *Glass in building — Determination of thermal transmittance (U-value) — Calculation method*

EN 12519, *Windows and pedestrian doors — Terminology*

3 Terms, definitions and symbols

For the purposes of this document, the terms and definitions given in ISO 7345 and EN 12519 apply.