

**Akende, uste ja luukide soojustehniline toimivus.
Soojuslähivuse arvutus. Osa 2: Raamide numbriline
arvutusmeetod**

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 10077-2:2012 sisaldab Euroopa standardi EN ISO 10077-2:2012+AC:2012 ingliskeelset teksti.

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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)

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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of an identical text or by endorsement, at the latest by August 2012, and conflicting national standards shall be withdrawn at the latest by August 2012.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.

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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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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.

1) To be published.

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.

2 Normative references

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.