INTERNATIONAL STANDARD

ISO 10077-2

Second edition
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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

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.

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 12631[1)] or EN 13947.

1) To be published.