Second edition
2006-09-15

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

Part 1: General

Performance thermique des fenêtres, portes et fermetures — Calcul du coefficient de transmission thermique —

Partie 1: Généralités

Reference number
ISO 10077-1:2006(E)

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

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 10077-1 was prepared by Technical Committee ISO/TC 163, *Thermal performance and energy use in the built environment*, Subcommittee SC 2, *Calculation methods*.

This second edition cancels and replaces the first edition (ISO 10077-1:2000), the following clauses and subclauses of which have been technically revised.

Clause	Changes
Introduction	Added new paragraph explaining the various parts of the overall thermal transmittance
1	Amended 4th paragraph to permit calculation of U-value of roof windows
2	References to ISO rather than EN ISO where applicable
4.3	Added “including sashes if present” to the definition of areas
4.4	Clarification that sealing gaskets are ignored in the determination of areas. Dimensions to be measured to nearest mm.
5.1.1	Third from last paragraph inserted concerning roof windows
5.3	Data on shutters moved to Annex G
6	Added paragraph to say that declared values are to be obtained for horizontal heat flow (as in ISO 10292 and EN 673)
7.1	Second dash, drawing to give details also for metal frames
Table A.1	Added surface resistance values for horizontal or inclined window
Annex E	Complete revision of Annex E. It has been changed to normative, because it provides default values that are to be used in the absence of detailed values.
Annex F	Complete revision of Annex F, using the new values in Annex E

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

The calculation method described in this part of ISO 10077 is used to evaluate the thermal transmittance of windows and doors, or as part of the determination of the energy use of a building.

An alternative to calculation is testing of the complete window or door according to ISO 12567-1 or, for roof windows, according to ISO 12567-2.

The calculation is based on four component parts of the overall thermal transmittance:

— for elements containing glazing, the thermal transmittance of the glazing, calculated using EN 673 or measured according to EN 674 or EN 675;

— for elements containing opaque panels, the thermal transmittance of the opaque panels, calculated according to ISO 6946 and/or ISO 10211 (all parts) or measured according to ISO 8301 or ISO 8202;

— thermal transmittance of the frame, calculated using ISO 10077-2, measured according to EN 12412-2, or taken from Annex D of this part of ISO 10077;

— linear thermal transmittance of the frame/glazing junction, calculated according to ISO 10077-2 or taken from Annex E of this part of ISO 10077.

More detailed equations for calculation of heat flow through windows can be found in ISO 15099.

The thermal transmittance of curtain walling can be calculated using prEN 13947.

EN 13241-1 gives procedures applicable to doors intended to provide access for goods and vehicles.