EESTI STANDARD

EVS-EN 13363-1:2003+A1:2007



# Solar protection devices combined with glazing - Calculation of solar and light transmittance - Part 1 : Simplified method KONSOLIDEERITUD TEKST

Solar protection devices combined with glazing - Calculation of solar and light transmittance - Part 1 : Simplified method CONSOLIDATED TEXT

EESTI STANDARDIKESKUS

**EESTI STANDARDI EESSÕNA** **NATIONAL FOREWORD**

| | |
|---|---|
| Käesolev Eesti standard EVS-EN 13363-1:2003+A1:2007 sisaldab Euroopa standardi EN 13363-1:2003+A1:2007 ingliskeelset teksti.<br><br>Käesolev dokument on jõustatud 14.09.2007 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.<br><br>Standard on kättesaadav Eesti standardiorganisatsioonist. | This Estonian standard EVS-EN 13363-1:2003+A1:2007 consists of the English text of the European standard EN 13363-1:2003+A1:2007.<br><br>This document is endorsed on 14.09.2007 with the notification being published in the official publication of the Estonian national standardisation organisation.<br><br>The standard is available from Estonian standardisation organisation. |

| | |
|---|---|
| **Käsitlusala:**<br>This European Standard specifies a simplified method based on the thermal transmittance and total solar energy transmittance of the glazing and on the light transmittance and reflectance of the solar protection device to estimate the total solar energy transmittance of a solar protection device combined with glazing | **Scope:**<br>This European Standard specifies a simplified method based on the thermal transmittance and total solar energy transmittance of the glazing and on the light transmittance and reflectance of the solar protection device to estimate the total solar energy transmittance of a solar protection device combined with glazing |

**ICS** 17.180.20, 91.120.10

**Võtmesõnad:** light transmittan, mathematical calculations, protective devices, radiation, reflectance factor, roller shutters, simplifications, solar radiation, sunlight, sunlighting, sunshading, transmission ratios, transmittance, transmittances, venetian blinds, window glass

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN 13363-1:2003+A1

July 2007

ICS 17.180.20; 91.120.10

Supersedes EN 13363-1:2003

English Version

# Solar protection devices combined with glazing - Calculation of solar and light transmittance - Part 1: Simplified method

Dispositifs de protection solaire combinés à des vitrages - Calcul du facteur de transmission solaire et lumineuse - Partie 1: Méthode simplifiée

Sonnenschutzeinrichtungen in Kombination mit Verglasungen - Berechnung der Solarstrahlung und des Lichttransmissionsgrades - Teil 1: Vereinfachtes Verfahren

This European Standard was approved by CEN on 7 May 2003 and includes Amendment 1 approved by CEN on 24 May 2007.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, 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 and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

**Management Centre: rue de Stassart, 36 B-1050 Brussels**



Ref. No. EN 13363-1:2003+A1:2007: E

# Contents

# Foreword

This document (EN 13363-1:2003+A1:2007) has been prepared by Technical Committee CEN /TC 89, "Thermal performance of buildings and building components" the secretariat of which is held by SIS.

This document shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2008 and conflicting national standards shall be withdrawn at the latest by January 2008.

This document includes Amendment 1 approved by CEN on 2007-05-24.

This document supersedes EN 13363-1:2003.

The start and finish of text introduced or altered by amendment is indicated in the text by tags ⟦A1⟩ ⟨A1⟧.

Annexes A and B are informative.

This standard consists of two parts:

Part 1: Simplified method

Part 2: ⟦A1⟩ Detailed calculation method ⟨A1⟧

⟦A1⟩ Due to the improved thermal properties of insulating glass units an adaptation of the notional parameter $G$ was necessary.

The scope of the standard was made more precise. ⟨A1⟧

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, 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 and United Kingdom.

## 1 Scope

This European Standard specifies a simplified method based on the thermal transmittance and total solar energy transmittance of the glazing and on the light transmittance and reflectance of the solar protection device to estimate the total solar energy transmittance of a solar protection device combined with glazing.

The method applies to all types of solar protection devices parallel to the glazing such as louvre, venetian or roller blinds. The position of the solar protection device can be interior, exterior or between single panes in a dual glazing system. It is applicable when the total solar energy transmittance of the glazing is between 0,15 and 0,85. Venetian or louvre blinds are assumed to be adjusted so that there is no direct solar penetration. It is assumed that for external solar protection devices and for integrated solar protection devices, the space between the solar protection devices and the glazing is unventilated and for internal solar protection devices this space is ventilated.

⟦A1⟩ The resulting $g$-values of the simplified method given here are approximate and their deviation from the exact values lie within the range between +0,10 and -0,02. The results generally tend to lie on the safe side for cooling load estimations. The results are not intended to be used for calculating beneficial solar gains or thermal comfort criteria. The simplified method is based on the normal incidence of radiation and does not take into account either the angular dependence of transmittance and the reflectance or the differences of spectral distribution.

This standard can be applied when the solar transmittance and solar reflectance of the solar protection devices are within the following ranges:

$0 \leq \tau_{e,B} \leq 0,5$ and $0,1 \leq \rho_{e,B} \leq 0,8$

For reflectance and transmittance values outside these ranges EN 13363-2 [1] applies.

An allowance can be made for this fact when applying the method. For cases not covered by the method given in this standard more exact calculations based on the optical properties (in general the spectral data) of glass and solar protection device can be carried out in accordance with EN 13363-2 [1]. ⟨A1⟩

## 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 410:1998, *Glass in building – Determination of luminous and solar characteristics of glazing.*

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

EN 674, *Glass in building – Determination of thermal transmittance (U value) – Guarded hot plate method.*

EN 675, *Glass in building – Determination of thermal transmittance (U value) – Heat flow meter method.*

EN ISO 7345:1995, *Thermal insulation – Physical quantities and definitions (ISO 7345:1987).*

## 3 Terms, definitions, symbols and units

For the purposes of this European Standard, the terms and definitions given in EN 410:1998 and EN ISO 7345:1995 apply.

Symbols are given in Table 1.

Subscripts are given in Table 2.

**Table 1 — Symbols and units**

| Symbol | Quantity | Unit |
|---|---|---|
| $g$ | total solar energy transmittance | – |
| $U$ | thermal transmittance | $W/(m^2 \cdot K)$ |
| $G$ | thermal conductance | $W/(m^2 \cdot K)$ |
| $\alpha$ | absorptance | – |
| $\rho$ | reflectance | – |
| $\tau$ | transmittance | – |