ICS 81.040.20, 91.040.20 SLOVENSKÁ TECHNICKÁ NORMA Marec 2025

STN	**Sklo v stavebníctve Stanovenie súčiniteľa prechodu tepla (hodnota U) Výpočtová metóda**	**STN EN 673** 70 1631

Glass in building - Determination of thermal transmittance (U value) - Calculation method

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 02/25

Obsahuje: EN 673:2024

Oznámením tejto normy sa ruší
STN EN 673 (70 1631) z novembra 2011

139887

Úrad pre normalizáciu, metrológiu a skúšobníctvo Slovenskej republiky, 2025
Slovenská technická norma a technická normalizačná informácia je chránená zákonom č. 60/2018 Z. z. o technickej normalizácii v znení neskorších predpisov.

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 673

November 2024

ICS 81.040.20; 91.040.20 Supersedes EN 673:2011

English Version

Glass in building - Determination of thermal transmittance (U value) - Calculation method

Verre dans la construction - Détermination du coefficient de transmission thermique, U - Méthode de calcul

Glas im Bauwesen - Bestimmung des Wärmedurchgangskoeffizienten (U-Wert) - Berechnungsverfahren

This European Standard was approved by CEN on 13 October 2024.

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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

© 2024 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. EN 673:2024 E

Contents

Page

European foreword ... 3
Introduction ... 4
1 Scope ... 5
2 Normative references ... 5
3 Terms and definitions ... 6
4 Symbols, dimensionless numbers and subscripts ... 6
4.1 Symbols ... 6
4.2 Dimensionless Numbers ... 7
4.3 Subscripts ... 7
5 Basic formulae ... 7
5.1 General ... 7
5.2 *U* value ... 7
5.3 Radiative heat transfer coefficient of kth space $h_{r,k}$ ... 8
5.4 Gas conductance h_g ... 9
5.4.1 General ... 9
5.4.2 Heat flow direction ... 9
6 Basic material properties ... 10
6.1 Emissivity ... 10
6.2 Gas properties ... 11
7 External and internal heat transfer coefficients ... 12
7.1 External heat transfer coefficient h_e ... 12
7.2 Internal heat transfer coefficient h_i ... 13
7.3 Design values ... 15
8 Declared values: standardized boundary conditions ... 15
9 Expression of the results ... 16
9.1 *U* values ... 16
9.2 Intermediate values ... 16
10 Report ... 16
10.1 Information included in the report ... 16
10.2 Identification of the glazing ... 16
10.3 Cross section of the glazing ... 17
10.4 Results ... 17
Annex A (normative) **Iteration procedure for an insulating glass unit with more than one gas space** ... 18
Annex B (informative) **Determination of gas properties at different temperatures** ... 20
Bibliography ... 21

European foreword

This document (EN 673:2024) has been prepared by Technical Committee CEN/TC 129 “Glass in building”, the secretariat of which is held by NBN.

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 May 2025, and conflicting national standards shall be withdrawn at the latest by May 2025.

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

This document supersedes EN 673:2011.

In comparison with the previous edition, the following technical modifications have been made:

— update of references to normal and corrected emissivity for consistency with EN 12898;

— changes to some of the gas properties;

— introduction of a linear approximation for determining gas properties at different temperatures;

— modification of the calculation of the internal heat transfer coefficient for vertical glazing for consistency with EN ISO 6946;

— provision of more details on heat transfer coefficients for glazing at angles other than vertical, for consistency with EN ISO 6946 and ISO 10077-1;

— additional clarification provided on the iteration procedure for an insulating glass unit with more than one gas space.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Introduction

For the purposes of this document, the term glass has been used in the context of a material or surface property, whereas the term glazing has been adopted to refer to either monolithic glass or an insulating glass unit.

1 Scope

This document specifies a calculation method to determine the thermal transmittance of glass with flat and parallel surfaces.

This document applies to uncoated glass (including glass with structured surfaces, e.g. patterned glass), coated glass and materials not transparent in the far infrared which is the case for soda lime glass products, borosilicate glass, glass ceramic, alkaline earth silicate glass and alumino silicate glass. It applies also to multiple glazing comprising such glasses and/or materials. It does not apply to multiple glazing which include in the gas space sheets or foils that are far infrared transparent.

The procedure specified in this document determines the *U* value (thermal transmittance) in the central area of glazing.

The edge effects due to the thermal bridge through the spacer of an insulating glass unit or through the window frame are not included. Furthermore, energy transfer due to solar radiation is not taken into account. The effects of Georgian and other bars are excluded from the scope of this document.

NOTE EN ISO 10077-1:2017 provides a methodology for calculating the overall *U* value of windows, doors and shutters [1], taking account of the *U* value calculated for the glass components according to this document.

Also excluded from the calculation methodology are any effects due to gases that absorb infrared radiation in the 5 to 50 µm range.

The primary purpose of this document is product comparison, for which a vertical position of the glazing is specified. In addition, *U* values are calculated using the same procedure for other purposes, in particular for predicting:

— heat loss through glass;

— conduction heat gains in summer;

— condensation on glass surfaces;

— the effect of the absorbed solar radiation in determining the solar factor [2].

Reference can be made to [3], [4] and [5] or other European Standards dealing with heat loss calculations for the application of glazing *U* values determined by this standard.

Reference can be made to [6] for detailed calculations of *U* values of glazing, including shading devices.

Vacuum Insulating Glass (VIG) is excluded from the scope of this document. For determination of the *U* value of VIG, please refer to EN 674 or ISO 19916-1.

A procedure for the determination of emissivity is given in EN 12898.

The rules have been made as simple as possible consistent with accuracy.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN 12898, *Glass in building - Determination of the emissivity*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN