

This is a preview of "BS EN 14501:2021". [Click here to purchase the full version from the ANSI store.](#)



BSI Standards Publication

Blinds and shutters — Thermal and visual comfort — Performance characteristics and classification

This is a preview of "BS EN 14501:2021". [Click here to purchase the full version from the ANSI store.](#)

National foreword

This British Standard is the UK implementation of EN 14501:2021. It supersedes BS EN 14501:2005, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/538/3, Domestic shutters and blinds.

A list of organizations represented on this committee can be obtained on request to its committee manager.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2021
Published by BSI Standards Limited 2021

ISBN 978 0 580 99633 7

ICS 91.060.50

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 March 2021.

Amendments/corrigenda issued since publication

| Date | Text affected |
|------|---------------|
|------|---------------|

This is a preview of "BS EN 14501:2021". [Click here to purchase the full version from the ANSI store.](#)

EUROPÄISCHE NORM

March 2021

ICS 91.060.50

Supersedes EN 14501:2005

English Version

Blinds and shutters - Thermal and visual comfort - Performance characteristics and classification

Fermetures et stores - Confort thermique et lumineux -
Caractérisation des performances et classification

Abschlüsse - Thermischer und visueller Komfort -
Leistungsanforderungen und Klassifizierung

This European Standard was approved by CEN on 21 October 2019.

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, Turkey 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

| Contents | | Page |
|---|--|-------------|
| European foreword..... | | 4 |
| Introduction | | 5 |
| 1 | Scope | 6 |
| 2 | Normative references..... | 6 |
| 3 | Terms, definitions and symbols..... | 7 |
| 4 | Notations used..... | 9 |
| 4.1 | General..... | 9 |
| 4.2 | Visual or solar properties | 9 |
| 4.3 | Geometry of the radiation..... | 10 |
| 4.4 | Optical factors | 11 |
| 5 | Thermal comfort | 11 |
| 5.1 | General..... | 11 |
| 5.2 | Control of solar gains – Total solar energy transmittance g_{tot} | 11 |
| 5.3 | Secondary heat gains – Secondary heat transfer factor $q_{i,tot}$ | 13 |
| 5.4 | Protection from direct transmission – Normal/normal solar transmittance $\tau_{e,n-n}$ | 14 |
| 6 | Visual comfort | 14 |
| 6.1 | General..... | 14 |
| 6.2 | Darkening performance | 16 |
| 6.3 | Glare control | 17 |
| 6.4 | Night privacy..... | 19 |
| 6.5 | Visual contact with the outside | 20 |
| 6.6 | Daylight utilization..... | 21 |
| 6.7 | Rendering of colours..... | 21 |
| Annex A (normative) Reference glazing | | 22 |
| A.1 | General..... | 22 |
| A.2 | Reference glazing with integrated data only | 22 |
| A.2.1 | Glazing A..... | 22 |
| A.2.2 | Glazing B..... | 22 |
| A.2.3 | Glazing C..... | 23 |
| A.2.4 | Glazing D..... | 24 |
| A.2.5 | Glazing E | 24 |
| A.3 | Reference glazing with spectral data | 25 |
| A.3.1 | General..... | 25 |
| A.3.2 | Glazing F | 25 |
| A.3.3 | Glazing G..... | 26 |
| A.3.4 | Glazing H..... | 26 |
| A.3.5 | Spectral data for the panes..... | 26 |
| A.3.5.1 | Pane 1: clear single pane (4 mm) | 26 |

This is a preview of "BS EN 14501:2021". [Click here to purchase the full version from the ANSI store.](#)

| | |
|--|----|
| A.3.5.2 Pane 2: pane with low emissivity coating (4 mm) | 28 |
| A.3.5.3 Pane 3: solar control pane (6 mm) | 30 |
| Annex B (informative) The meaning of the secondary internal heat transfer factor $q_{i, tot}$ | 33 |
| Annex C (informative) Example of performance presentation | 34 |
| C.1 Thermal comfort | 34 |
| C.2 Visual comfort | 34 |
| Annex D (informative) Daylight Glare Probability | 36 |
| D.1 General | 36 |
| D.2 Glare | 36 |
| D.3 Daylight Glare Probability | 36 |
| D.3.1 General | 36 |
| D.3.2 Annual evaluation | 37 |
| D.3.3 Simplified annual glare evaluation | 38 |
| D.3.3.1 General | 38 |
| D.3.3.2 Solar protection device being opaque in the extended and closed position | 39 |
| D.3.3.3 Solar protection device where the curtain is made of textile, film or perforated opaque material | 40 |
| D.3.3.4 Sunshine zones | 42 |
| Annex E (normative) Opacity performance of curtain material | 44 |
| Bibliography | 45 |

This is a preview of "BS EN 14501:2021". [Click here to purchase the full version from the ANSI store.](#)

European foreword

This document (EN 14501:2021) has been prepared by Technical Committee CEN/TC 33 "Doors, windows, shutters, building hardware and curtain walling", the secretariat of which is held by AFNOR.

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 September 2021, and conflicting national standards shall be withdrawn at the latest by September 2021.

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 14501:2005.

The main modifications of this project of revision are relating to:

- the revision of the performance classification for the darkening performance;
- the revision of the performance classification for the glare control. The new classification is based on DGP (Daylight Glare Probability) calculations and considers the cut-off angle of the curtain material;
- the addition of a fifth reference glazing (triple glazing);
- the addition of an informative annex giving recommendations on the class for glare control to be used depending on the location and orientation of the building, as well as on the size of the glazed area, the distance from the façade and the light transmittance of the glazing.

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, Turkey and the United Kingdom.

This is a preview of "BS EN 14501:2021". [Click here to purchase the full version from the ANSI store.](#)

Introduction

This document is a part of a series of standards dealing with blinds and shutters for buildings as defined in EN 12216.

The characteristics covered by this document are specific requirements that are complementary to the intrinsic requirements that internal blinds, external blinds or shutters shall fulfil in accordance with EN 13120, EN 13561 and EN 13659, respectively.

This is a preview of "BS EN 14501:2021". [Click here to purchase the full version from the ANSI store.](#)

1 Scope

This document applies to the whole range of shutters, awnings and blinds defined in EN 12216, described as solar protection devices in this document.

It specifies the corresponding properties and classifications:

- relating to thermal comfort:
 - the solar factor (total solar energy transmittance);
 - the secondary heat transfer factor;
 - the direct solar transmittance;
- relating to visual comfort:
 - the darkening performance;
 - the night privacy;
 - the visual contact with the outside;
 - the glare control;
 - the daylight utilization;
 - the rendering of colours.

NOTE For other purposes, more detailed methods using different parameters can be used.

Some of the characteristics (e.g. g_{tot}) are not applicable when solar protection devices are not parallel to the glazing (e.g. folding-arm awnings).

This document is not applicable to the solar protection devices using fluorescent materials.

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 410, *Glass in building — Determination of luminous and solar characteristics of glazing*

EN 12216, *Shutters, external blinds, internal blinds — Terminology, glossary and definitions*

EN ISO 52022-1, *Energy performance of buildings — Thermal, solar and daylight properties of building components and elements — Part 1: Simplified calculation method of the solar and daylight characteristics for solar protection devices combined with glazing (ISO 52022-1)*¹

EN ISO 52022-3, *Energy performance of buildings — Thermal, solar and daylight properties of building components and elements — Part 3: Detailed calculation method of the solar and daylight characteristics for solar protection devices combined with glazing (ISO 52022-3)*²

EN 14500:2021, *Blinds and shutters — Thermal and visual comfort — Test methods*

¹ EN ISO 52022-1 supersedes EN 13363-1.

² EN ISO 52022-3 supersedes EN 13363-2.