

Blinds and shutters - Thermal and visual comfort - Test and calculation methods

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EUROPEAN STANDARD

**EN 14500**

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English Version

## Blinds and shutters - Thermal and visual comfort - Test and calculation methods

Fermetures et stores - Confort thermique et lumineux -  
Méthodes d'essai et de calcul

Abschlüsse - Thermischer und visueller Komfort - Prüf-  
und Berechnungsverfahren

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

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

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## European foreword

This document (EN 14500:2021) 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of an identical text or by endorsement, at the latest by September 2021, and conflicting national standards shall be withdrawn at the latest by September 2021.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 14500:2008.

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

- the improvement of the method for the determination of the optical properties with an integrating sphere. The major improvement concerns the consideration of samples with scattering properties (critical samples). This implied the definition of specific requirements relating to the geometry of the test equipment and a methodology to identify if a sample is critical or not;
- the addition of a new method for the determination of the optical properties from direct measurement (without integrating sphere);
- the addition of a method for the determination of the cut-off angle;
- the improvement of the method for the determination of the darkening performance of curtain materials and complete products, including a method to qualify both the test equipment and the observer.

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.

## **Introduction**

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

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## 1 Scope

This document defines test and calculation methods for the determination of the reflection and transmission characteristics to be used to determine the thermal and visual comfort performance classes of external blinds, internal blinds and shutters, as specified in EN 14501:2021.

This document also specifies the method to determine the darkening performance of external blinds, internal blinds and shutters, as specified in EN 14501:2021.

This document applies to the whole range of shutters, awnings and blinds defined in EN 12216, described as solar protection devices in this document. Some of the characteristics (e.g.  $g_{tot}$ ) are not applicable when products are not parallel to the glazing (e.g. folding-arm awnings).

NOTE 1 Informative Annex D presents an approach for the determination of characteristics in case of projectable products.

Retro-reflecting products are outside the scope of this document for reflectance measurements.

NOTE 2 Retro-reflecting products refer to products for which the reflected radiation comes back to the light source in the same direction.

Products using a significant amount of fluorescent are outside the scope of this document.

NOTE 3 “Significant amount” refers to materials which are designed to be fluorescent or retroreflective and marketed as such. It does not refer to trace amounts of materials exhibiting fluorescence, e.g. for colour or identification purposes. Small amounts of materials such as titanium dioxide, which are not primarily included to achieve fluorescence, can be present.

## 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 14501:2021, *Blinds and shutters — Thermal and visual comfort — Performance characteristics and classification*

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)*

EN ISO 52022-3:2017, *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 52022-3:2017)*