



BSI Standards Publication

Paints and varnishes — Coating materials and coating systems for exterior wood

Part 12: Ultraviolet and visible radiation transmittance

This is a preview of "PD CEN/TS 927-12:202...". [Click here to purchase the full version from the ANSI store.](#)

National foreword

This Published Document is the UK implementation of CEN/TS 927-12:2023.

The UK participation in its preparation was entrusted to Technical Committee STI/28, Paint systems for non-metallic substrates.

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

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

This publication is not to be regarded as a British Standard.

© The British Standards Institution 2023
Published by BSI Standards Limited 2023

ISBN 978 0 539 23961 4

ICS 87.040

Compliance with a Published Document cannot confer immunity from legal obligations.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 May 2023.

Amendments/corrigenda issued since publication

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

This is a preview of "PD CEN/TS 927-12:202...". [Click here to purchase the full version from the ANSI store.](#)

TECHNISCHE SPEZIFIKATION

May 2023

ICS 87.040

English Version

Paints and varnishes - Coating materials and coating systems for exterior wood - Part 12: Ultraviolet and visible radiation transmittance

Peintures et vernis - Produits de peinture et systèmes de peinture pour le bois extérieur - Partie 12: Transmission du rayonnement ultraviolet et visible

Beschichtungsstoffe - Beschichtungsstoffe und Beschichtungssysteme für Holz im Außenbereich - Teil 12: Durchlässigkeit für ultraviolette und sichtbare Strahlung

This Technical Specification (CEN/TS) was approved by CEN on 24 March 2023 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

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

This is a preview of "PD CEN/TS 927-12:202...". [Click here to purchase the full version from the ANSI store.](#)

Contents	Page
European foreword	3
Introduction	4
1 Scope	5
2 Normative references	5
3 Terms and definitions	5
4 Abbreviations	5
5 Principle	6
6 Apparatus and materials	6
6.1 Film applicator for coating material	6
6.2 Substrate for free coating film preparation	6
6.2.1 Preparation of free film and test specimen	6
6.2.2 Coating application	6
6.3 Film thickness measurement	7
6.4 UV/VIS spectrophotometer	7
6.5 Long-pass filter specification for check	8
7 Test procedure	8
7.1 Test procedure with spectrophotometer	8
7.2 Check of spectrophotometer with long-pass filter	9
7.3 Spectral transmittance of the specimen (film)	9
7.4 Calculation of transmittance	10
8 Precision	10
9 Test report	10
Annex A (normative) Spectral transmittance of long-pass filter	12
Annex B (informative) Application and evaluation references	13
Bibliography	14

This is a preview of "PD CEN/TS 927-12:202...". [Click here to purchase the full version from the ANSI store.](#)

European foreword

This document (CEN/TS 927-12:2023) has been prepared by Technical Committee CEN/TC 139 “Paints and varnishes — Coating materials and coating systems for exterior wood — Ultraviolet and visible radiation transmittance”, the secretariat of which is held by DIN.

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.

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 announce this Technical Specification: 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.

This is a preview of "PD CEN/TS 927-12:202...". [Click here to purchase the full version from the ANSI store.](#)

Introduction

Wood is a natural material that must be protected against solar radiation, heat, rain, and microorganisms to maintain its appearance and mechanical integrity when used outdoors. Wood and its components (especially lignin) are sensitive to photo oxidation and must therefore be protected by suitable coatings, particularly against ultraviolet (UV) and visible (VIS) radiation in the violet and blue region.

Clear and transparent coating films may be modified by fine sized transparent (mostly yellow or red ferrous oxide-based) pigments and more or less colourless, organic and inorganic UV-absorbers to reduce the harmful part of solar radiation. As these additives are not visible, there is a demand for a test method to determine their efficiency.

The transmittance in a specific wavelength range allows to evaluate the UV and VIS radiation protection of a coating film.

This is a preview of "PD CEN/TS 927-12:202...". Click here to purchase the full version from the ANSI store.

1 Scope

This document describes a test method to measure the ultraviolet (UV) and visible (VIS) spectral transmittance in the wavelength range from 280 nm to 700 nm of coatings for exterior wood. From the spectral transmittance the transmittance of UV, VIS and the combined UV and VIS wavelength range can be calculated.

It is applicable to free coatings films or coatings applied on a UV-transparent substrate.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 2808, *Paints and varnishes - Determination of film thickness (ISO 2808)*

EN ISO 4618, *Paints and varnishes - Terms and definitions (ISO 4618)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 4618 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1 transmittance

τ

quotient of transmitted radiant flux, Φ_t , and incident radiant flux, Φ_m

$$\tau = \frac{\Phi_t}{\Phi_m}$$

Note 1 to entry: Transmittance is also defined spectrally in terms of wavelength, in which case, "spectral" is added before the quantity name.

Note 2 to entry: Due to energy conservation, $\alpha + \rho + \tau = 1$ except when polarized radiation is observed, where α is absorptance and ρ is reflectance.

Note 3 to entry: Transmittance, τ , is the sum of regular transmittance, τ_r , and diffuse transmittance, τ_d : $\tau = \tau_r + \tau_d$.

Note 4 to entry: The transmittance has unit one.

[SOURCE: CIE S 017:2020]

4 Abbreviations

UV ultraviolet radiation in the wavelength range from 280 nm to 400 nm

VIS visible radiation in the wavelength range from 400 nm to 700 nm