Paints and varnishes - Coating materials and coating systems for exterior wood - Part 14: Determination of tensile properties of coating films

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 927-14:2023 sisaldab Euroopa standardi EN 927-14:2023 ingliskeelset teksti.	This Estonian standard EVS-EN 927-14:2023 consists of the English text of the European standard EN 927-14:2023.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 25.01.2023.	Date of Availability of the European standard is 25.01.2023.
Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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English Version

Paints and varnishes - Coating materials and coating systems for exterior wood - Part 14: Determination of tensile properties of coating films

Peintures et vernis - Produits de peinture et systèmes de peinture pour le bois en extérieur - Partie 14 : Détermination des propriétés en traction des films de revêtement

Beschichtungsstoffe - Beschichtungsstoffe und Beschichtungssysteme für Holz im Außenbereich - Teil 14: Bestimmung der Zugeigenschaften von Beschichtungsfilmen

This European Standard was approved by CEN on 25 December 2022.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 927-14:2023) has been prepared by Technical Committee CEN/TC 139 “Paints and varnishes”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by July 2023, and conflicting national standards shall be withdrawn at the latest by July 2023.

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.

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Introduction

Wood as a natural exterior construction material may be protected from rain, sunlight and microbial attack by a coating film, thus ensuring its appearance and mechanical integrity over many years. However, since most coatings are permeable to some extent to moisture from rain and air humidity, swelling of the wood and coating occurs. Consequent shrinking of the wood and coating occurs upon drying. The magnitude of swelling and shrinking depends on the amount of moisture uptake and varies depending on the wood species and on the direction of wood movement (longitudinal < radial < tangential). These cyclic expansions and contractions lead to different stresses in the surface coating over time. The coating should ideally stay intact over time and continue to protect the wood substrate. A coating material that is too rigid and brittle will crack and fail allowing increased moisture and water uptake, microbial attack, eventual complete coating failure and possible wood degradation. The tensile properties of the coatings are thus very important for the service lifetime of the coating and wood substrate.

1 Scope

This document specifies a method for determining the tensile properties of free coating films, specifically for exterior wood applications. Typical tensile properties of interest are the modulus of elasticity, the tensile strength and the elongation at break during stretching of a free coating film at constant test speed. The test methods specified in this document are applicable to coatings from which free films can be made.

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 927-1:2013, *Paints and varnishes - Coating materials and coating systems for exterior wood - Part 1: Classification and selection*

EN ISO 527-1:2019, *Plastics - Determination of tensile properties - Part 1: General principles (ISO 527-1:2019)*

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

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

EN ISO 15528, *Paints, varnishes and raw materials for paints and varnishes - Sampling (ISO 15528)*

3 Terms and definitions

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

ISO and IEC maintain terminology 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

4 Principle

Tensile test specimens are prepared from free coating films and subjected to a tensile test under defined conditions until they fail. During this procedure, the load sustained by the specimen and the elongation behaviour are recorded.

This document is similar to EN ISO 527-3 and ISO 37 for the testing of plastic and rubber materials but focusses on the specimen preparation and specific testing of free dry coating films made from liquid paints and varnishes intended for application on exterior wooden substrates.

5 Apparatus and materials

5.1 Film application device

Coating films can be prepared by casting the liquid coating material in moulds or by applying it to a suitable non-adhering substrate by a manual procedure or an automatic film applicator; see 6.2.

NOTE Automatic application devices are preferred as they move at constant speed and deliver a more uniform final coating film.