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BSI Standards Publication

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

Part 8: Determination of the adhesion on wood after water exposure by a double-X-cut test

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National foreword

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

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Paints and varnishes - Coating materials and coating systems for exterior wood - Part 8: Determination of the adhesion on wood after water exposure by a double-X-cut test

Peintures et vernis - Produits de peinture et systèmes de peinture pour le bois en extérieur - Partie 8 : Détermination de l'adhésion sur le bois après une exposition à l'eau lors d'un essai avec double incision en X

Beschichtungsstoffe - Beschichtungsstoffe und Beschichtungssysteme für Holz im Außenbereich - Teil 8: Bestimmung der Haftfestigkeit auf Holz durch Doppel-Kreuzschnittprüfung nach Wasserbeanspruchung

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European foreword

This document (CEN/TS 927-8:2020) has been prepared by Technical Committee CEN/TC 139 “Paints and varnishes”, the secretariat of which is held by DIN.

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Introduction

This Technical Specification (CEN/TS 927-8) is one of two methods for assessing the resistance of a coating system to removal by external forces provided by either double-X-cutting or direct pull-off (CEN/TS 927-9). Two existing ISO Standards (EN ISO 2409 and EN ISO 4624) specify test methods for dry substrates in general, but make no provision for wet conditions, where wood coatings are known to be particularly vulnerable. Both CEN methods (CEN/TS 927-8 and CEN/TS 927-9) take into account the special nature of wood as a substrate because as well wet conditions as the selection of the substrate are considered.

The adhesion of a coating system to a wood substrate can be reduced by high moisture content particularly at the wood/coating interface. Water can access this interface either from the outside because the coating film itself is permeable or through film defects. Water can also come from the wood substrate, and thus reach the coating film from the rear. The described method is applicable for testing the adhesion of a coating system to wood or wood based substrates under both dry and wet conditions.

1 Scope

This document describes the method for assessing the resistance of paint coatings to separation from substrates when a double-X pattern is cut into the coating, penetrating through to the substrate and using a tape.

Where a measurement of adhesion is required, the method described in CEN/TS 927-9 can be used.

The double X-cut pattern has been especially designed for wood and wood like substrates to minimize the effects from the incisions and at the same time provide a coating segment enclosed by four cuts.

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 ISO 2409, *Paints and varnishes — Cross-cut test (ISO 2409)*

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

CEN/TS 927-9, *Paints and varnishes — Coating materials and coating systems for exterior wood — Part 9: Determination of pull-off strength after water exposure*

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 http://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
film detachment
coating resistance to separation from a substrate or interface

4 Principle

A double-X-cut is made through the paint film onto the substrate. A piece of tape is attached to the surface and subsequently pulled off for the assessment of film detachment under dry conditions. After wetting of a fresh cut the same action results in the assessment of film detachment under wet conditions. The degree of film detachment is assessed according to a scale.

5 Apparatus and materials

5.1 Single blade cutting tool, according to EN ISO 2409.

5.2 Tape, with a width of 25 mm, an adhesive strength of 4 N to 6 N on the coating according to Annex A, not older than one year, stored according to the supplier's specifications.

A laboratory method to measure the adhesive strength of the tape on the coating surface is provided by EN ISO 29862:2019, method 1 (at (20 ± 2) °C and (65 ± 5) % RH).