

**Färg och lack – Bedömning av fel på
beläggningar genom bildanalys –
Del 3: Bedömning av delaminering och korrosion vid
repa (ISO 21227-3:2007)**

**Paints and varnishes – Evaluation of defects on
coated surfaces using optical imaging –
Part 3: Evaluation of delamination and corrosion
around a scribe (ISO 21227-3:2007)**

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Paints and varnishes - Evaluation of defects on coated surfaces
using optical imaging - Part 3: Evaluation of delamination and
corrosion around a scribe (ISO 21227-3:2007)

Peintures et vernis - Évaluation par imagerie optique des
défauts des surfaces revêtues - Partie 3: Évaluation du
décollement et de la corrosion autour d'une rayure (ISO
21227-3:2007)

Beschichtungsstoffe - Beurteilung von
Beschichtungsschäden mittels digitaler Bildverarbeitung -
Teil 3: Auswertung der von einem Ritz ausgehenden
Enthftung und Korrosion (ISO 21227-3:2007)

This European Standard was approved by CEN on 31 March 2007.

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Foreword

This document (EN ISO 21227-3:2007) has been prepared by Technical Committee ISO/TC 35 "Paints and varnishes" in collaboration with 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of an identical text or by endorsement, at the latest by October 2007, and conflicting national standards shall be withdrawn at the latest by October 2007.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Endorsement notice

The text of ISO 21227-3:2007 has been approved by CEN as EN ISO 21227-3:2007 without any modifications.

Introduction

The conventional ISO test methods for evaluating surface defects and changes in appearance often utilize pictorial standards which depict particular types of surface deterioration and require human visual evaluation. The technology and procedures described in this part of ISO 21227 can yield more objective, accurate, quantitative and reproducible results when compared to the human visual evaluation techniques.

Paints and varnishes — Evaluation of defects on coated surfaces using optical imaging —

Part 3: Evaluation of delamination and corrosion around a scribe

1 Scope

This part of ISO 21227 specifies a method for evaluating delamination and corrosion around a scribe by means of digital optical imaging. The damaged surface can be produced in accordance with ISO 9227, ISO 11997-1 or ISO 11997-2.

2 Normative references

The following referenced documents are indispensable for the application 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.

ISO 4628-8, *Paints and varnishes — Evaluation of degradation of coatings — Designation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 8: Assessment of degree of delamination and corrosion around a scribe*

ISO 21227-1, *Paints and varnishes — Evaluation of defects on coated surfaces using optical imaging — Part 1: General guidance*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 21227-1 and the following apply.

3.1

delaminated area

area from which a paint or paint system has detached

3.2

corroded area

substrate area from which a paint or paint system has detached and which has subsequently been attacked by corrosion

4 Principle

A grey scale or colour image is produced from the digital optical image of a surface damaged by delamination or corrosion around a scribe. In the simplest case, this image is converted into a binary image (thresholding). The damaged area is measured and the mean and maximum width of delamination or corrosion is determined.

In addition, the shape of the zone affected by delamination or corrosion around a scribe can be identified using digital optical imaging.

5 Requirements

5.1 General

The assessment shall be carried out under the conditions specified in ISO 21227-1.

5.2 Illumination

The illumination shall be such that the damaged areas can be clearly distinguished from the undamaged areas. Because of the high contrast, corrosion can be easily recognized under diffused reflection illumination after stripping the coating. When detecting delamination without previously removing the coating, directional reflection illumination can be of advantage because of the low contrast.

5.3 Resolution

The minimum resolution shall be 6 pixels per millimetre.

NOTE Different resolutions, in particular in the case of damage involving a large number of fissures, can lead to different values for the damaged areas.

If a resolution deviating from the resolution specified above is used, this shall be stated in the test report.

6 Calibration

By adjusting the optical imaging system, it is possible to digitize a damaged area. By calibrating the scale in both X and Y directions (e.g. with graph paper graduated in millimetres), the previously generated binary image can be measured with sufficient accuracy to obtain the width of the delamination or corrosion.

When using a reference scale based on pictorial standards, calibration should be performed with these images. In this case, an interlaboratory test should be conducted to determine the correlation between visual assessment and digital optical imaging.

7 Procedure

Prepare the test panels for digital evaluation following the procedure given in ISO 4628-8.

Using the previously calibrated digital optical imaging system, take a picture of the test panel area containing the scribe and of the adjacent damaged area. After suitable threshold setting and detection, the digital image delivers a value for the damaged area including the area of the scribe. The scribe length on the assessed area shall also be determined. The start and end of the scribe and the corresponding damaged area are not assessed.

If the test panel contains several scribes or zones to be assessed (e.g. two intersecting scribes), they may be treated as sections of a single scribe, and the relevant areas and scribe lengths may be added to one another. The area of intersection is not assessed.

If the scribe width is not known, it shall be measured. If the scribe width cannot be measured, it shall be set to the same value (preferably zero) for all comparative samples, and this value shall be quoted in the test report.