

Paints and varnishes - Evaluation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 3: Assessment of degree of rusting (ISO 4628-3:2024)

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>See Eesti standard EVS-EN ISO 4628-3:2024 sisaldab Euroopa standardi EN ISO 4628-3:2024 ingliskeelset teksti.</p> <p>Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 27.11.2024.</p> <p>Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.</p>	<p>This Estonian standard EVS-EN ISO 4628-3:2024 consists of the English text of the European standard EN ISO 4628-3:2024.</p> <p>This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.</p> <p>Date of Availability of the European standard is 27.11.2024.</p> <p>The standard is available from the Estonian Centre for Standardisation and Accreditation.</p>
--	---

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

ICS 87.040

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardimis- ja Akrediteerimiskeskusele. Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardimis- ja Akrediteerimiskeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardimis- ja Akrediteerimiskeskusega: Koduleht [www.evs.ee](http://www.evs.ee); telefon 605 5050; e-post [info@evs.ee](mailto:info@evs.ee)

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation and Accreditation. No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation and Accreditation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation and Accreditation: Homepage [www.evs.ee](http://www.evs.ee); phone +372 605 5050; e-mail [info@evs.ee](mailto:info@evs.ee)

EUROPEAN STANDARD

EN ISO 4628-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2024

ICS 87.040

Supersedes EN ISO 4628-3:2016

English Version

Paints and varnishes - Evaluation of quantity and size of defects, and of intensity of uniform changes in appearance  
- Part 3: Assessment of degree of rusting (ISO 4628-3:2024)

Peintures et vernis - Évaluation de la quantité et de la dimension des défauts, et de l'intensité des changements uniformes d'aspect - Partie 3: Évaluation du degré d'enrouillement (ISO 4628-3:2024)

Beschichtungsstoffe - Beurteilung der Menge und der Größe von Schäden und der Intensität von gleichmäßigen Veränderungen im Aussehen - Teil 3: Bewertung des Rostgrades (ISO 4628-3:2024)

This European Standard was approved by CEN on 22 November 2024.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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

## European foreword

This document (EN ISO 4628-3:2024) 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 May 2025, and conflicting national standards shall be withdrawn at the latest by May 2025.

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 ISO 4628-3:2016.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

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, 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.

## Endorsement notice

The text of ISO 4628-3:2024 has been approved by CEN as EN ISO 4628-3:2024 without any modification.

# Contents

	Page
<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>vi</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Symbols and abbreviations</b> .....	<b>2</b>
<b>5 Assessment of red rust</b> .....	<b>2</b>
5.1 Method 1: Assessment of the degree of red rust by comparison with pictorial standards (R <sub>i</sub> ).....	2
5.2 Method 2: Assessment of the degree of red rust by estimating the corroded area in per cent (R%).....	8
<b>6 Assessment of white rust</b> .....	<b>8</b>
6.1 Method 1: Assessment of the degree of white rust by comparison with pictorial standards (WR <sub>i</sub> ).....	8
6.2 Method 2: Assessment of the degree of white rust by estimating the corroded area in per cent (WR%).....	13
<b>7 Expression of results</b> .....	<b>14</b>
<b>8 Test report</b> .....	<b>14</b>
<b>Annex A (normative) Calibration images</b> .....	<b>15</b>
<b>Annex B (informative) Example for degree of rusting after performing the NSS salt spray test</b> .....	<b>20</b>
<b>Annex C (informative) Correlation between the ISO rating system specified in this document and other systems</b> .....	<b>21</b>
<b>Bibliography</b> .....	<b>22</b>

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents). ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 9, *General test methods for paints and varnishes*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 139, *Paints and varnishes*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fourth edition cancels and replaces the third edition (ISO 4628-3:2016), which has been technically revised.

The main changes are as follows:

- the title has been shortened;
- the normative references have been updated;
- term [3.1](#), “degree of rusting” has been deleted;
- new terms [3.1](#) “red rust”, [3.2](#) “white rust” and [3.3](#) “rust traces” have been added;
- [Clause 4](#) on symbols and abbreviations has been added;
- “rusted area” has been changed to “corroded area” in the entire text;
- a note on the original size of the figures has been added to the former [Clause 4](#), which now is [Clause 5](#);
- [Table 1](#) for designating the size of rusting has been added;
- the percentage of the corroded area in [Figure A.5](#) has been corrected;
- the assessment of white rust together with new pictorial standards has been added;
- the assessment of the degree of rusting by estimating the corroded area in per cent has been added;
- point “d) the method of assessment (method 1 or method 2) which was used;” has been added to the test report in [Clause 8](#);

- a new Annex B has been added, showing an example for a test panel after the NSS salt spray test specified in ISO 9227 with a degree of rusting Ri 4;
- the former [Annex B](#) has become [Annex C](#);
- in [Annex C](#), the correlation with the ASTM rust scale has been adjusted to ASTM D610-08.

A list of all parts in the ISO 4628 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html)

## Introduction

ISO 4628-1 describes the system used for designating the quantity and size of defects and the intensity of changes in appearance of coatings, and it outlines the general principles of the system. This system is intended to be used, in particular, for defects caused by ageing and weathering, and for uniform changes such as colour changes, for example yellowing.

The pictorial standards for red rust have been selected from the “European rust scale” published by the European Confederation of Paint, Printing Ink and Artists' Colours Manufacturers' Associations (CEPE), Brussels. The correlation between the ISO scale and the “European rust scale” is given in [Table C.1](#).

The correlation between the ISO scale and the rating system of ASTM D610-08 is given in [Table C.2](#).

# Paints and varnishes — Evaluation of quantity and size of defects, and of intensity of uniform changes in appearance —

## Part 3: Assessment of degree of rusting

### 1 Scope

This document specifies methods for assessing the degree of rusting of surfaces coated with paints and varnishes (organic coatings), and metallic coating plus an organic coating (duplex system), by comparison with pictorial standards.

The pictorial standards provided in this document show surfaces which have deteriorated to different degrees by a combination of rust broken through the coating and visible under-rusting.

The assessment of the degree of rusting in this document is only an estimation of the affected area on specimen. Edges are not included.

### 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.

ISO 4618, *Paints and varnishes — Vocabulary*

ISO 13076, *Paints and varnishes — Lighting and procedure for visual assessments of coatings*

### 3 Terms and definitions

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

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

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

#### 3.1

##### **red rust**

corrosion products formed on ferrous substrates, such as iron or steel

Note 1 to entry: The red rust layer is generally porous, brittle and/or powdery.

#### 3.2

##### **white rust**

corrosion products formed on non-ferrous substrates, such as zinc or aluminium

Note 1 to entry: White rust results from the formation of metal hydroxides and oxides when exposed to moist or humid conditions.

Note 2 to entry: The white/grey products are generally porous, brittle and/or powdery.