

Paints and varnishes - Determination of resistance to abrasion - Part 3: Method with abrasive-paper covered wheel and linearly reciprocating test specimen (ISO 7784-3:2022)

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 7784-3:2022 sisaldab Euroopa standardi EN ISO 7784-3:2022 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 7784-3:2022 consists of the English text of the European standard EN ISO 7784-3:2022.
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 16.11.2022.	Date of Availability of the European standard is 16.11.2022.
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](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 7784-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2022

ICS 87.040

Supersedes EN ISO 7784-3:2016

English Version

Paints and varnishes - Determination of resistance to abrasion - Part 3: Method with abrasive-paper covered wheel and linearly reciprocating test specimen (ISO 7784-3:2022)

Peintures et vernis - Détermination de la résistance à l'abrasion - Partie 3: Méthode utilisant une roue revêtue de papier abrasif et une éprouvette animée d'un mouvement de va-et-vient linéaire (ISO 7784-3:2022)

Beschichtungsstoffe - Bestimmung des Abriebwiderstandes - Teil 3: Verfahren mit schleifpapierbelegtem Rad und sich hin- und herbewegender Probe (ISO 7784-3:2022)

This European Standard was approved by CEN on 23 October 2022.

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 7784-3:2022) 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 2023, and conflicting national standards shall be withdrawn at the latest by May 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.

This document supersedes EN ISO 7784-3:2016.

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 7784-3:2022 has been approved by CEN as EN ISO 7784-3:2022 without any modification.

# Contents

Page

<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</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 Principle</b> .....	<b>2</b>
<b>5 Apparatus and materials</b> .....	<b>3</b>
<b>6 Test specimens</b> .....	<b>4</b>
6.1 Preparation of test specimens.....	4
6.2 Film thickness.....	5
6.3 Conditioning.....	5
<b>7 Procedure</b> .....	<b>5</b>
7.1 Agreements.....	5
7.2 Preparation of the abrasive wheel.....	5
7.3 Test conditions.....	5
7.4 Number of determinations.....	5
7.5 General test procedure.....	5
7.6 Procedure of the pre-test.....	6
7.7 Procedure of the main test.....	6
<b>8 Evaluation of the main test</b> .....	<b>6</b>
8.1 Loss in mass by abrasion.....	6
8.2 Abrasion resistance.....	7
<b>9 Precision</b> .....	<b>7</b>
9.1 General.....	7
9.2 Repeatability limit.....	7
9.3 Reproducibility limit.....	7
<b>10 Test report</b> .....	<b>8</b>
<b>Bibliography</b> .....	<b>9</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)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

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 third edition cancels and replaces the second edition (ISO 7784-3:2016), which has been technically revised.

The main changes are as follows:

- details of the materials for the precision data have been added in [Table 2](#);
- ISO 7823-1 has been moved from [Clause 2](#) to the Bibliography;
- the percentage of the repeatability and reproducibility limits have been removed from [9.2](#) and [9.3](#), respectively.

A list of all parts in the ISO 7784 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

This document is one of the three parts of the ISO 7784 series dealing with test methods for the determination of the resistance to abrasion of coatings using abrasive wheels. The characteristics and differences of these methods are summarized in [Table 1](#).

**Table 1 — Types of method**

Standard	Abrasive wheel		Test specimen movement
	Type	Degree of freedom	
ISO 7784-1	Abrasive paper on rubber wheel	Freely rotatable	Rotation
ISO 7784-2	Abrasive rubber wheel		
ISO 7784-3	Abrasive paper on metal wheel	Rigid – with stroke-dependent rotation <sup>a</sup>	Linear reciprocation

<sup>a</sup> A mechanism rotates the abrasive wheel by a small angle after each double stroke so that a new area of the abrasive paper is effective.

It is preferable that the methods using abrasive-paper covered wheels (ISO 7784-1 and ISO 7784-3) are applied.

# Paints and varnishes — Determination of resistance to abrasion —

## Part 3: Method with abrasive-paper covered wheel and linearly reciprocating test specimen

### 1 Scope

This document specifies a method for determining the resistance to abrasion of coatings, for which a loaded, rigid abrasive-paper covered wheel affects the coating of the linearly reciprocating test specimen.

### 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 1514, *Paints and varnishes — Standard panels for testing*

ISO 2808, *Paints and varnishes — Determination of film thickness*

ISO 3270, *Paints and varnishes and their raw materials — Temperatures and humidities for conditioning and testing*

ISO 4618, *Paints and varnishes — Terms and definitions*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given 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

##### **test specimen**

panel on which the test is to be carried out

[SOURCE: ISO 7784-1:2016, 3.1, modified — in the definition "specimen" has been replaced by "panel"]

#### 3.2

##### **double stroke**

##### **ds**

complete reciprocal movement made by the abrasive wheel