



International
Standard

ISO 22785-4

**Paints and varnishes — Coatings on
plastics and composites —**

**Part 4:
Abrasion and scratch testing**

*Peintures et vernis — Revêtements sur plastiques et
composites —*

Partie 4: Essais d'abrasion et de rayure

**First edition
2026-08**

Sample Document

get full document from standards.iteh.ai



COPYRIGHT PROTECTED DOCUMENT

© ISO 2026

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Sample composition and preparation	2
4.1 Samples	2
4.2 Influence of substrate	2
4.3 Surface condition	2
4.4 Conditioning	2
4.5 Ageing	2
5 Overview of test methods	3
5.1 Linear abrasion method — linear abrasion tester	3
5.1.1 General	3
5.1.2 Test environment	3
5.1.3 General technical characteristics	3
5.2 Hand abrasion tester	4
5.2.1 General	4
5.2.2 General technical characteristics	4
5.2.3 Particularities	5
5.2.4 Possible sources of error	5
5.3 Scratch tests	5
5.3.1 Manual scratch tests	5
5.3.2 Automatic scratch tests	7
5.4 Rotating abrasion method	8
5.4.1 Taber test	8
5.4.2 Wash scratch resistance	9
5.4.3 Martindale test	10
6 Methods for the evaluation after testing	11
6.1 General	11
6.2 Visual methods	11
6.3 Colour measurement	11
6.4 Gloss measurement	11
6.5 Haze measurement	12
6.6 Gravimetric methods	12
Bibliography	13

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 document 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).

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. 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.

This document was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 9, *General test methods for paints and varnishes*.

A list of all parts in the ISO 22785 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.

Introduction

The ISO 22785 series explains the characteristics of plastics and the differences between plastics substrates and metallic substrates.

Sample Document

get full document from standards.iteh.ai

Sample Document

get full document from standards.iteh.ai

Paints and varnishes — Coatings on plastics and composites —

Part 4: Abrasion and scratch testing

1 Scope

This document specifies the abrasion and scratch tests of coatings on plastics, plastics composites, and similar substrates, hereinafter collectively referred to as plastics.

This document shows the potential effect of plastics on the behaviour of the coating during abrasion and scratch testing.

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 22785-1, *Paints and varnishes — Coatings on plastics and composites — Part 1: General introduction*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4618, ISO 22785-1 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 abrasion resistance

resistance of solid surfaces to mechanical stress, in particular friction

Note 1 to entry: The abrasion resistance is determined by the surface characteristics of the substances involved, such as roughness and hardness.

3.2 abrasion test

test method which serves for the determination of the *abrasion resistance* (3.1)

Note 1 to entry: Abrasion can be tested together with various stresses, e.g. media. The stress is normally applied in parallel and can be applied in different ways. The evaluation is specified respectively, since there are different evaluation methods (optical change of colour, gloss, transmission/haze, loss of mass).