Paints and varnishes - Evaluation of properties of coating systems related to the spray application process - Part 3: Assessment of sagging, formation of bubbles, pinholing and hiding power (ISO 28199-3:2021)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 28199-3:2021 sisaldab Euroopa standardi EN ISO 28199-3:2021 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 28199-3:2021 consists of the English text of the European standard EN ISO 28199-3:2021.
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 30.06.2021.	Date of Availability of the European standard is 30.06.2021.
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.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 28199-3

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Supersedes EN ISO 28199-3:2009

English Version

Paints and varnishes - Evaluation of properties of coating systems related to the spray application process - Part 3: Assessment of sagging, formation of bubbles, pinholing and hiding power (ISO 28199-3:2021)

Peintures et vernis - Évaluation des propriétés des systèmes de revêtement liées au mode d'application par pulvérisation - Partie 3: Évaluation du festonnage, de la formation de bulles, des piqûres et du pouvoir masquant (ISO 28199-3:2021)

Beschichtungsstoffe - Beurteilung der durch Spritzapplikation bedingten Eigenschaften von Beschichtungssystemen - Teil 3: Visuelle Beurteilung von Ablaufneigung, Kocherbildung, Nadelstichbildung und Deckvermögen (ISO 28199 3:2021)

This European Standard was approved by CEN on 6 June 2021.

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.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN ISO 28199-3:2021 E

European foreword

This document (EN ISO 28199-3:2021) 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 December 2021, and conflicting national standards shall be withdrawn at the latest by December 2021.

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 28199-3:2009.

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, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 28199-3:2021 has been approved by CEN as EN ISO 28199-3:2021 without any modification.

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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).

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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*, 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 second edition cancels and replaces the first edition (ISO 28199-3:2009), which has been technically revised.

The main changes compared to the previous edition are as follows:

— the terms bubble formation limit and cratering have been moved from ISO 28199-1 to this document;

— assessment using measuring techniques was added for all evaluations;

— process hiding power (see Clause 7) was changed to hiding power;

— 3-D photographs and the associated profiles have been included for bubbles and pinholes;

— the normative references have been updated;

— the document has been editorially revised.

A list of all parts in the ISO 28199 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

In many areas (e.g. car manufacture, industrial coatings, coatings for plastics) the coating materials used are adapted to the specific application equipment and technologies of the particular user. A coating material is, therefore, to be understood as a semi-manufactured product that only receives its final form in combination with the specific application conditions. The adaptation to the application conditions is therefore decisive for the quality of the coated product.

The test methods specified in the ISO 28199 series are based on studies by a Working Group of the European Council for Automotive R&D (EUCAR).

They may be used for evaluation of coating materials in research, development and production with regard to their suitability and safety for industrial processes, and error analysis. The properties of coating materials and coatings to be evaluated depend on the film thickness, so a coating system of increasing thickness is applied to a test panel under defined conditions.

The following characteristics are measured (see ISO 28199-1):

— film thickness in accordance with ISO 2808;

— surface texture;

— colour in accordance with ISO 18314-1;

— mottling;

— gloss in accordance with ISO 2813.

The following properties are determined in combination with visual assessment or, if necessary, optical measurement techniques:

— colour stability/colour evaluation, process hiding power, re-dissolving, overspray absorption, wetting, surface texture and mottling (see ISO 28199-2);

— tendency to sagging, formation of bubbles, pinholing and hiding power (this document).

Paints and varnishes — Evaluation of properties of coating systems related to the spray application process —

Part 3: Assessment of sagging, formation of bubbles, pinholing and hiding power

IMPORTANT — The electronic file of this document contains colours which are considered to be useful for the correct understanding of the document. Users should therefore consider printing this document using a colour printer.

1 Scope

This document specifies visual methods for the assessment of tendency to sagging, formation of bubbles, pinholing and hiding power of coating materials applied to a test panel under defined conditions, using spray application process. Assessment using measuring techniques is also described for all evaluations.

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 6504-3, *Paints and varnishes — Determination of hiding power — Part 3: Determination of hiding power of paints for masonry, concrete and interior use*

ISO 28199-1:2021, *Paints and varnishes — Evaluation of properties of coating systems related to the spray application process — Part 1: Vocabulary and preparation of test panels*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 28199-1 and the following apply.

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

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

— IEC Electropedia: available at http://www.electropedia.org/

3.1
bubble formation limit
start of a number of bubbles, agreed between the interested parties, in a measurement field

Note 1 to entry: A single bubble does not define the bubble formation limit. Bubbles at the edge of the measuring area and in the perforated area of the panel (see Figure 1) should not be taken into account.

3.2
cratering
formation in a film or coating of small circular depressions that persist after drying/curing

Note 1 to entry: Craters can extend into deeper layers of a coating or into the substrate.