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Paints and varnishes — Pendulum damping test

Peintures et vernis — Essai d'amortissement du pendule

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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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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 fourth edition cancels and replaces the third edition (ISO 1522:2006), which has been technically revised.

The main changes are as follows:

— Clause 3 “Terms and definitions” has been added.

— The recommendation of using metal or glass panels has been removed from 7.1 because the test method is also usable for other substrate materials, e.g. plastics.

— The precision statement of the König Pendulum in 10.1 has been corrected reflecting the test conditions and results of the interlaboratory comparison in 2006.

— In 5.1.3 and in B.3.2 the tolerance for the time for the amplitude of swing to decrease from 12° to 4° has been changed back to ±10 s, as it was in the second edition (ISO 1522:1998).

— The calibration of the pendulum has been added with a test for deformation.

— The text has been editorially revised and the normative references have been updated.

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.

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Introduction

This document considers in detail two test procedures for pendulum damping tests, König and Persoz. The instruments embody the same principle, i.e. that the amplitude of oscillation of a pendulum touching a surface decreases more rapidly the softer the surface, but differ in respect of dimensions, period and amplitude of oscillation.

The interaction between the pendulum and the paint film is complex, depending as it does on both elastic and viscoelastic properties, and it is not possible to establish a general relationship between results obtained by the two tests. Therefore, only one type of pendulum should be used in a given series of measurements of damping time.

The following considerations may serve as a guide when considering which pendulum may offer an advantage for a particular purpose.

a) On surfaces with a low coefficient of friction, the Persoz pendulum may skid, which would invalidate results; however, this occurs only rarely with paints and varnishes.

b) It should be noted that both instruments reflect the sensitivity of the physical properties of a paint to its environment, and the test therefore should be under controlled conditions of temperature and humidity and in the absence of draughts. The thickness of the paint film and the nature of the substrate may also affect the damping times.

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Paints and varnishes — Pendulum damping test

1 Scope

This document specifies two methods of carrying out a pendulum damping test on a coating of paint, varnish or other related products. It is applicable to single coatings and to multicoat systems.

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 1513, *Paints and varnishes — Examination and preparation of test samples*

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

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

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

ISO 15528, *Paints, varnishes and raw materials for paints and varnishes — Sampling*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4618 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/

4 Principle

A pendulum resting on a coating surface is set into oscillation and the time for the oscillation amplitude to decrease by an amount specified in this document is measured. The shorter the damping time, the lower the hardness.

5 Apparatus

5.1 Pendulum

5.1.1 Both the pendulums, as described in 5.1.2 and 5.1.3, comprise an open framework connected by a cross-bar on the under face of which two balls are inset to serve as the fulcrum, the lower end of the framework being formed into a pointer. The two pendulums differ in shape, mass, swinging time and other details, as described in 5.1.2 and 5.1.3.

The pendulum shall be used away from draughts and vibrations.

The use of a protective enclosure is recommended.

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