



SLOVENSKI STANDARD
SIST ISO 1522:1998

01-junij-1998

Barve in laki - Preskus z dušenjem nihanja

Paints and varnishes -- Pendulum damping test

Peintures et vernis -- Essai d'amortissement du pendule

Ta slovenski standard je istoveten z: ISO 1522:1998

[SIST ISO 1522:1998](https://standards.iteh.ai/catalog/standards/sist/c9f9b88e-3748-4512-ae42-919a9c14adcf/sist-iso-1522-1998)

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ICS:

87.040 Barve in laki Paints and varnishes

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INTERNATIONAL
STANDARD

ISO
1522

Second edition
1998-03-15

**Paints and varnishes — Pendulum damping
test**

Peintures et vernis — Essai d'amortissement du pendule

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Reference number
ISO 1522:1998(E)

ISO 1522:1998(E)

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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International Standard ISO 1522, was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 9, *General test methods for paints and varnishes*.

SIST ISO 1522:1998

This second edition cancels and replaces the first edition (ISO 1522:1973) in which, for both the König and the Persoz pendulum, the time for damping on a polished glass panel has been provided with upper and lower limits. In addition, the standard has been editorially revised.

Annexes A, B and C form an integral part of this International Standard.

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Introduction

Two test procedures have been considered in some detail, namely those of König and Persoz, which are specified respectively by DIN 53157:1987 and NF T 30-016:1991. The instruments embody the same principle — 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. One type of pendulum only must therefore be used in a given series of measurements of damping time.

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

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- a) On surfaces with a low coefficient of friction, the Persoz pendulum may skid, which would invalidate the results; however, this occurs only rarely in the field of 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 should therefore be conducted 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 International Standard is one of a series of standards dealing with the sampling and testing of paints, varnishes and related products.

It specifies standard conditions for carrying out a pendulum damping test on a single coating or a multicoat system of paint, varnish or related product.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1512:1991, *Paints and varnishes — Sampling of products in liquid or paste form.*

ISO 1513:1992, *Paints and varnishes — Examination and preparation of samples for testing.*

ISO 1514:1993, *Paints and varnishes — Standard panels for testing.*

ISO 2808:1997, *Paints and varnishes — Determination of film thickness.*

ISO 3270:1984, *Paints and varnishes and their raw materials — Temperatures and humidities for conditioning and testing.*

ASTM D 4366:1995, *Standard Test Methods for Hardness of Organic Coatings by Pendulum Damping Tests.*

3 Required supplementary information

For any particular application, the test method specified in this International Standard needs to be completed by supplementary information. The items of supplementary information are given in annex A.

4 Principle

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

5 Apparatus

5.1 Pendulum

Both the pendulums described below 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 shown in the description in 5.1.1 and 5.1.2.

The pendulum shall be used away from draughts and vibrations, and the use of a protective enclosure is recommended.

5.1.1 The König pendulum (see figure 1) rests on two ball bearings of $(5 \pm 0,005)$ mm diameter, $(30 \pm 0,2)$ mm apart and of hardness HRC¹⁾ (63 ± 3) or $(1\ 600 \pm 32)$ HV 30²⁾, and is counterpoised (to adjust the natural frequency of oscillation) by means of a weight sliding on a vertical rod attached to the cross-bar. On a polished plate-glass panel the period of oscillation shall be $(1,40 \pm 0,02)$ s and the time for damping from a 6° displacement to a 3° displacement shall be (250 ± 10) s. The total mass of the pendulum shall be $(200 \pm 0,2)$ g.

Dimensions in millimetres

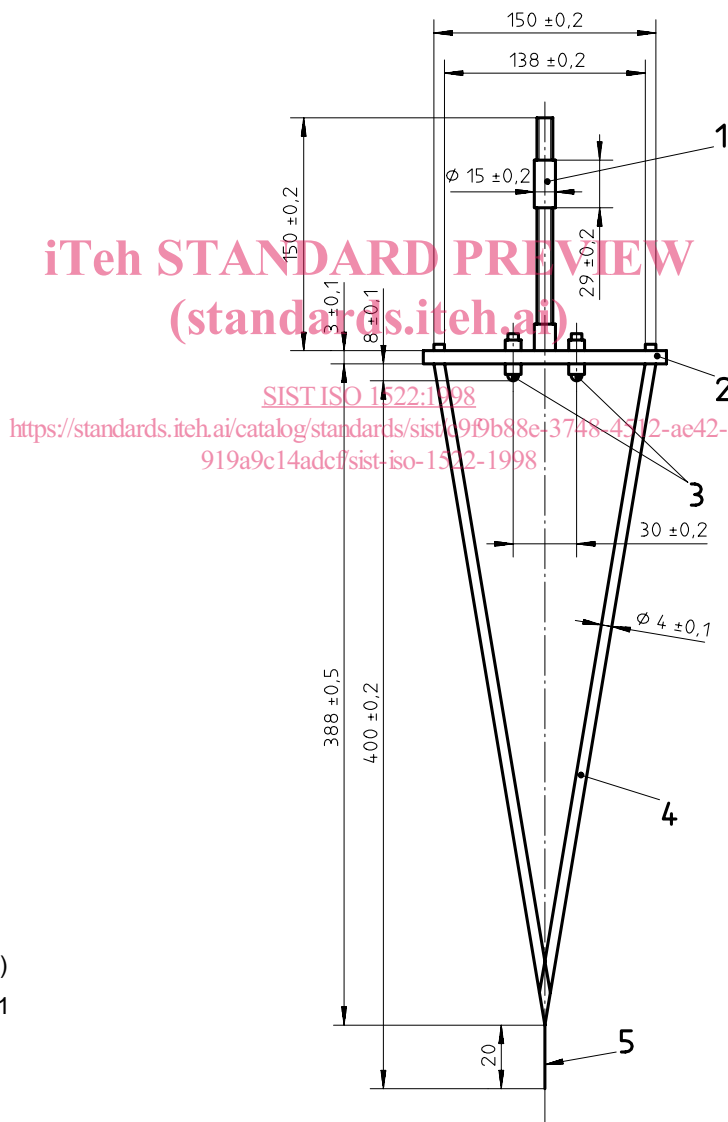


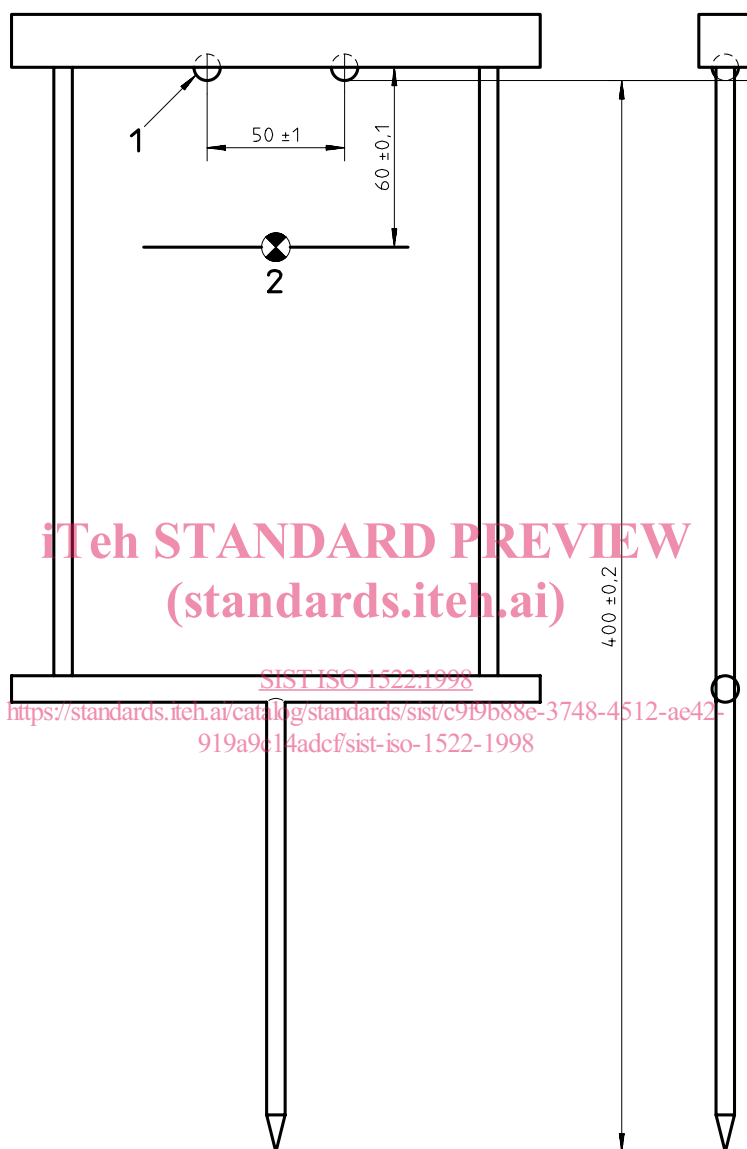
Figure 1 — König pendulum

1) HRC = Rockwell hardness

2) HV = Vickers hardness determined in accordance with DIN 50133

5.1.2 The Persoz pendulum (see figure 2) rests on two stainless-steel balls of $(8 \pm 0,005)$ mm diameter, of hardness HRC (59 ± 1) and (50 ± 1) mm apart. A counterpoise is not provided. On a polished plate-glass panel, the period of oscillation shall be $(1 \pm 0,001)$ s and the time for damping from a 12° displacement to a 4° displacement on the same substrate shall be (430 ± 10) s. The total mass of the pendulum shall be $(500 \pm 0,1)$ g and its centre of gravity at rest shall be $(60 \pm 0,1)$ mm below the plane of the fulcrum, the pointer tip being $(400 \pm 0,2)$ mm below the plane of the fulcrum.

Dimensions in millimetres



- 1 Ball, $\varnothing 0,8$
- 2 Centre of gravity

Figure 2 — Persoz pendulum

5.2 Instrument stand, for supporting test panel and pendulum.

The stand is common to both pendulums and comprises a heavy supported vertical rod to which is attached a horizontal table with a flat working surface, the dimensions of which may conveniently be $95 \text{ mm} \times 110 \text{ mm}$ and not less than 10 mm thick. The stand also carries a stirrup to support the pendulum away from the table and a mechanism for shock-free lowering of the pendulum on to the test panel.