



**SLOVENSKI STANDARD**  
**oSIST prEN ISO 1518-2:2018**  
**01-oktober-2018**

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**Barve in laki - Ugotavljanje odpornosti proti razenju - 2. del: Metoda s stopnjevano obremenitvijo (ISO/DIS 1518-2:2018)**

Paints and varnishes - Determination of scratch resistance - Part 2: Variable-loading method (ISO/DIS 1518-2:2018)

Beschichtungsstoffe - Bestimmung der Kratzbeständigkeit - Teil 2: Verfahren mit kontinuierlich ansteigender Last (ISO/DIS 1518-2:2018)

Peintures et vernis - Détermination de la résistance à la rayure - Partie 2: Méthode à charge variable (ISO/DIS 1518-2:2018)

**Ta slovenski standard je istoveten z: prEN ISO 1518-2**

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**ICS:**

87.040

Barve in laki

Paints and varnishes

**oSIST prEN ISO 1518-2:2018**

**en,fr,de**



# DRAFT INTERNATIONAL STANDARD

## ISO/DIS 1518-2

ISO/TC 35/SC 9

Secretariat: BSI

Voting begins on:  
2018-08-02Voting terminates on:  
2018-10-25

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## Paints and varnishes — Determination of scratch resistance —

### Part 2: Variable-loading method

*Peintures et vernis — Détermination de la résistance à la rayure —  
Partie 2: Méthode à charge variable*

ICS: 87.040

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Published in Switzerland

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## ISO/DIS 1518-2:2018(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.

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 on 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 the following URL: [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*.

This second edition cancels and replaces the first edition (ISO 1518-2:2011), which has been technically revised. The main changes are:

- a general normative reference to ISO 4618 has been added to the terms and definitions clause
- the texts of ISO 1518-1 and ISO 1518-2 have been aligned in [clauses 7](#) and [11](#).

A list of all parts in the ISO 1518- series can be found on the ISO website.

# Paints and varnishes — Determination of scratch resistance —

## Part 2: Variable-loading method

### 1 Scope

This part of ISO 1518 specifies a method for determining, using a pointed stylus loaded with a continuously increasing load, the scratch resistance of a single coating of a paint, varnish or related product, or the upper layer of a multicoat system.

This test has been found to be useful in comparing the scratch resistance of different coatings. It is most useful in providing relative ratings for a series of coated panels exhibiting significant differences in scratch resistance.

Neither this part of ISO 1518 nor ISO 1518-1 specifies a method using a curved stylus, which is specified in ISO 12137. The choice between the three methods will depend on the particular practical problem.

### 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 4618-29014, *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 and the following apply.

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

#### 3.1

##### **scratch**

cut or gouge through the surface of the coating from contact with a sharp object

[SOURCE: ISO 4618:2014, definition 2,223]

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### 4 Principle

The product or system under test is applied at uniform thickness to flat panels of uniform surface texture. After drying/curing, the scratch resistance is determined using an automatic instrument which pushes the panels beneath a pointed stylus mounted so that it presses down perpendicularly on the surface of the test panel. The load on the test panel is increased continuously until the coating is scratched.

### 5 Apparatus

#### 5.1 Instrument for determining scratch resistance.

A suitable instrument<sup>1)</sup> is shown in Figure 1. It consists principally of a counterbalanced beam with, mounted at one end, a pointed stylus. The test panel is placed on a sliding table which is motor-driven to move under the stylus at a speed of 10 mm/s. A continuous-loading weight mounted over the beam acts on the beam in such a way that, as the test panel passes under the stylus, the load on the stylus is continuously increased.

The stylus-loading range can be varied by changing the continuous-loading weight (weights giving loading ranges of 0 g to 50 g, 0 g to 100 g and 0 g to 200 g are available, for instance). Mounted over the stylus itself is a small scale pan on which weights can be placed to expand the stylus-loading range (adding a weight of 100 g, for instance, changes a 0 g to 200 g loading range to one of 100 g to 300 g).

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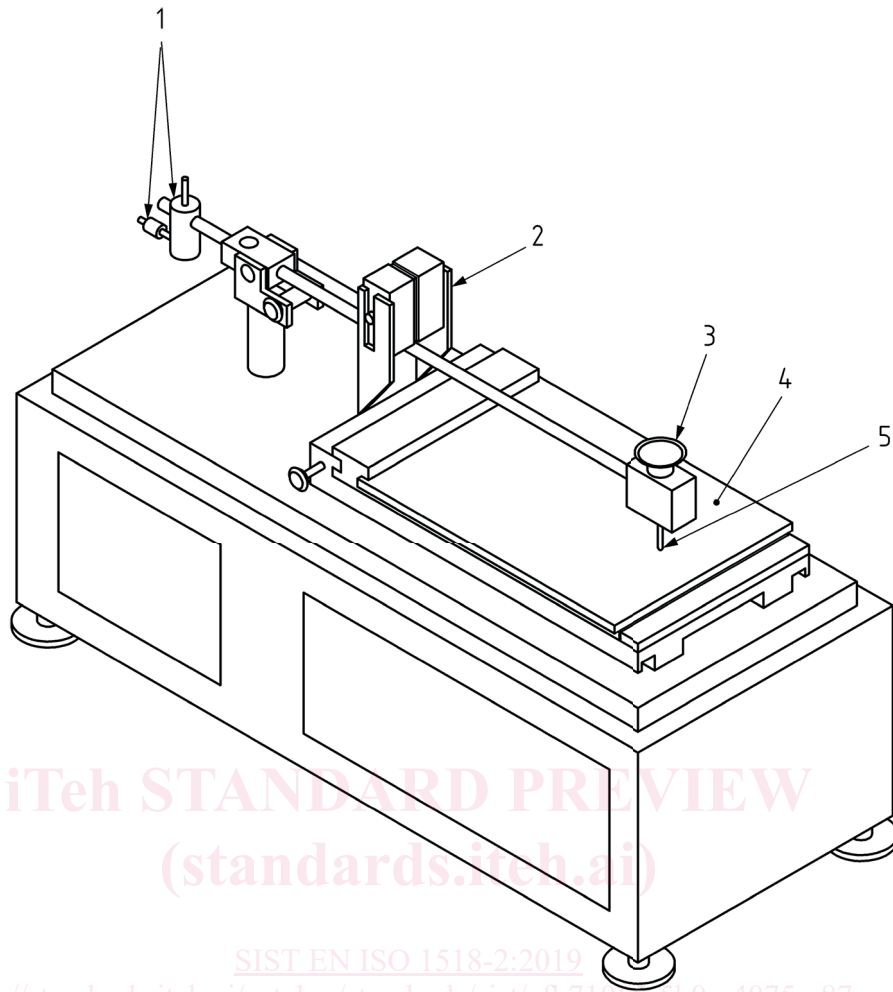
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1) This apparatus is available from Shinto Scientific Co., Ltd, 27 Kanda-higashikonyacho, Chiyoda-ku, Tokyo 101-0034, Japan. This information is given for the convenience of users of this part of ISO 1518 and does not constitute endorsement by ISO of the apparatus shown. Other types of scratch tester may be used if they can be shown to give similar relative ratings.





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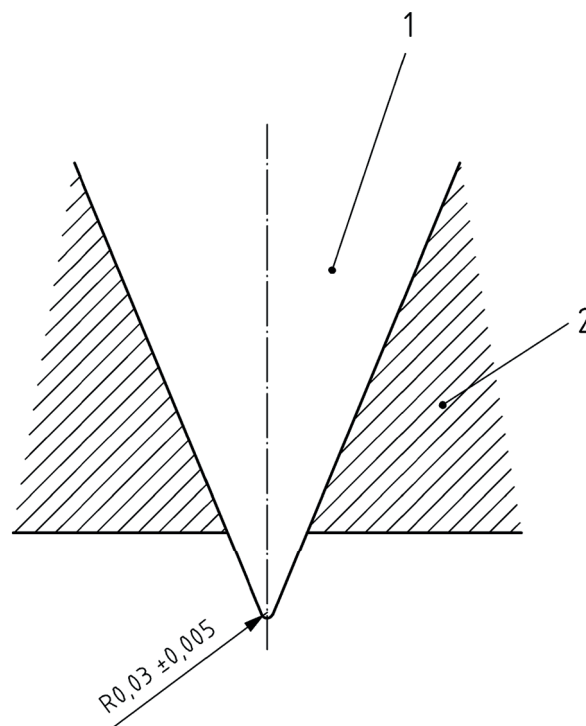
**Key**

- 1 cylindrical counterweight
- 2 continuous-loading weight
- 3 scale pan
- 4 sliding table
- 5 stylus

**Figure 1 — Scratch instrument with pointed stylus**

**5.2 Stylus**, preferably tipped with a conical sapphire or diamond, the point of which is rounded to a radius of  $(0,03 \pm 0,005)$  mm (see Figure 2).

Dimensions in millimetres

**Key**

- 1 conical sapphire or diamond
- 2 stylus

**Figure 2 — Stylus tipped with conical sapphire or diamond**

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**5.3 Microscope**, preferably with a magnification range extending up to  $\times 100$ , required to examine the stylus. It may also be used to inspect the scratched coating.

**6 Sampling**

Take a representative sample of the product to be tested (or of each product in the case of a multicoat system), as specified in ISO 15528.

Examine and prepare each sample for testing, as specified in ISO 1513.

**7 Test panels****7.1 Substrate**

Select the substrate from one of those specified in ISO 1514 and, where possible, in accordance with the desired practical application. The panels shall be plane and free from distortion, with a maximum thickness of about 12 mm, and 100 mm to 400 mm wide and long.

**7.2 Preparation and coating**

Prepare each test panel in accordance with ISO 1514 and then coat it by the specified method with the product or system under test.

The method of application of the coating shall be as specified by the manufacturer or agreed between the interested parties and shall be included in the test report [see [Clause 11](#), item c) 2)]