

SINGAPORE STANDARD

Methods of test for paints, varnishes and related materials

– Part F2 : Scratch test

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– Part F2 : Scratch test

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This Singapore Standard was approved by the Chemical Standards Committee on behalf of the Singapore Standards Council on 20 December 2013

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The Chemical Standards Committee, appointed by the Standards Council, consists of the following members:

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SS 5 : Part F2 : 2013 (2018)

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*Served till April 2013.

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The organisations in which the experts of the Working Group are involved are:

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Housing & Development Board
Nippon Paint (Singapore) Co Pte Ltd
Pidilite Innovation Centre Pte Ltd
Setsco Services Pte Ltd
TUV SUD PSB Pte Ltd*

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National Foreword

This Singapore Standard was prepared by the Working Group on the Review of Singapore Standard SS 5 Methods of Test for Paints, Varnishes and Related Materials appointed by the Technical Committee on Surface Coatings under the direction of the Chemical Standards Committee.

This is a revision of SS 5 : Part F2 : 2003 'Methods of test for paints, varnishes and related materials – Scratch test'. It is a modified adoption of the International Standard ISO 1518-1 : 2011 'Paints and varnishes – Determination of scratch resistance – Part 1: Constant-loading method', published by the International Organization for Standardization.

To facilitate identification, the affected text of the International Standard which is to be changed is indicated by a left margin bar adjacent to it.

The deviations are as follows:

<u>Subclauses</u>	<u>Modification</u>
6.3 and 7.1	<i>Replace</i> “(23 ± 2) °C and a relative humidity of (50 ± 5) %” with “(27 ± 2)°C and a relative humidity of (80 ± 5) %”
	<i>Explanation: To reflect the local climatic conditions.</i>

Where appropriate, the words 'International Standard' in ISO 1518-1 : 2011, shall be read as 'Singapore Standard'. The references to International Standards shall be replaced by the following Singapore Standards:

International Standard	Corresponding Singapore Standard
ISO 1518-1	SS 5 : Part F2
ISO 15528	SS 5 : Part A1
ISO 1513	SS 5 : Part A2
ISO 1514	SS 5 : Part A3
ISO 3270	SS 5 : Part A4
ISO 2808	SS 5 : Part B1

For an overview of other parts to Singapore Standard 5, it is recommended to read the information in SS 5 : Part 0 'General introduction' which is issued separately.

Acknowledgment is made for the use of information from the above reference.

Attention is drawn to the possibility that some of the elements of this Singapore Standard may be the subject of patent rights. Enterprise Singapore shall not be held responsible for identifying any or all of such patent rights.

NOTE

1. Singapore Standards (SSs) and Technical References (TRs) are reviewed periodically to keep abreast of technical changes, technological developments and industry practices. The changes are documented through the issue of either amendments or revisions.
2. An SS or TR is voluntary in nature except when it is made mandatory by a regulatory authority. It can also be cited in contracts making its application a business necessity. Users are advised to assess and determine whether the SS or TR is suitable for their intended use or purpose. If required, they should refer to the relevant professionals or experts for advice on the use of the document. Enterprise Singapore shall not be liable for any damages whether directly or indirectly suffered by anyone or any organisation as a result of the use of any SS or TR.
3. Compliance with a SS or TR does not exempt users from any legal obligations.

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

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.

ISO 1518-1 was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 9, *General test methods for paints and varnishes*.

It cancels and replaces ISO 1518:1992, which has been technically revised. The main changes are:

- (a) the number of the standard has been changed from ISO 1518 to ISO 1518-1;
- (b) a principle clause has been added;
- (c) two versions of the test apparatus are now described;
- (d) the minimum length of the scratch has been reduced from 60 mm to 40 mm;
- (e) the magnification of the lens used to examine the scratch has been specified as at least $\times 4$;
- (f) the supplementary test conditions (formerly Annex A) have been integrated in the test report;
- (g) a clause on precision has been added;
- (h) Annex B specifying a procedure for re-tipping scratch-test needles has been deleted.

ISO 1518 consists of the following parts, under the general title *Paints and varnishes — Determination of scratch resistance*:

- *Part 1: Constant-loading method*
- *Part 2: Variable-loading method*

Methods of test for paints, varnishes and related materials – Part F2 : Scratch test

1 Scope

This standard specifies a test method for determining under defined conditions the resistance of a single coating or a multi-coat system of paint, varnish or related product to penetration by scratching with a scratch stylus loaded with a specified load. Penetration of the stylus is to the substrate, except in the case of a multi-coat system, in which case the stylus can penetrate either to the substrate or to an intermediate coat.

The method specified can be carried out

- (a) either as a “pass/fail” test, by testing with a single specified load applied to the stylus to assess compliance with a particular specification;
- (b) or by applying increasing loads to the stylus to determine the minimum load at which the coating is penetrated.

2 Normative references

The following referenced documents are indispensable for the application 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 15528, *Paints, varnishes and raw materials for paints and varnishes — Sampling*