



JAPANESE
INDUSTRIAL
STANDARD

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Japanese Standards Association

JIS K 5600-5-4 : 1999
(ISO/DIS 15184 : 1996)

**Testing methods for paints—
Part 5 : Mechanical property
of film—
Section 4 : Scratch hardness
(Pencil method)**

ICS 87.040

Descriptors : paints, film-forming capacity, cross-cut test, painting, membranes,
scratch hardness tests, mechanical testing, pencils

Reference number : JIS K 5600-5-4 : 1999 (E)

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Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of International Trade and Industry through deliberations at the Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law.

JIS K 5400 corresponding to this Standard will be withdrawn and replaced with this Standard in April 2002, at the time of three years passed after establishment of this Standard.

Consequently it is recommended to comply with this Standard:

JIS K 5600 consists of the following parts.

- JIS K 5600 Part 1 Section 1 to Section 8 *General rule*
- JIS K 5600 Part 2 Section 1 to Section 7 *Characteristics and stability of paints*
- JIS K 5600 Part 3 Section 1 to Section 6 *Film formability*
- JIS K 5600 Part 4 Section 1 to Section 7 *Visual characteristics of film*
- JIS K 5600 Part 5 Section 1 to Section 11 *Mechanical property of film*
- JIS K 5600 Part 6 Section 1 to Section 3 *Chemical property of film*
- JIS K 5600 Part 7 Section 1 to Section 8 *Long-period performance of film*
- JIS K 5600 Part 8 Section 1 to Section 6 *Evaluation of degradation of paint coatings*

JIS K 5600-5 consists of the following sections under the title of "Testing methods for paints—Part 5 : Mechanical property of film".

- JIS K 5600 Part 5 Section 1 *Bend test (cylindrical mandrel)*
- JIS K 5600 Part 5 Section 2 *Cupping test*
- JIS K 5600 Part 5 Section 3 *Falling-weight test*
- JIS K 5600 Part 5 Section 4 *Scratch hardness (Pencil method)*
- JIS K 5600 Part 5 Section 5 *Scratch hardness (Stylus method)*
- JIS K 5600 Part 5 Section 6 *Adhesion test (Cross-cut test)*
- JIS K 5600 Part 5 Section 7 *Adhesion test (Pull-off methods)*
- JIS K 5600 Part 5 Section 8 *Abrasion resistance (Rotating abrasive-paper-covered wheel method)*
- JIS K 5600 Part 5 Section 9 *Abrasion resistance (Rotating abrasive rubber wheel method)*
- JIS K 5600 Part 5 Section 10 *Abrasion resistance (Reciprocating test panel method)*
- JIS K 5600 Part 5 Section 11 *Washability*

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the original JIS is to be the final authority.

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**Testing methods for paints—
Part 5 : Mechanical property of film—
Section 4 : Scratch hardness
(Pencil method)**

Introduction This Japanese Industrial Standard has been prepared based on ISO/DIS 15184 *Paints and varnishes—Determination of film hardness by pencil test* issued in 1996 without changing the technical contents.

The portions underlined with dots in this Standard are not stated in the original International Standard.

1 Scope

1.1 This Standard is one of a series of standards dealing with the sampling and testing of paints, varnishes and related products. It specifies a method for determining the film hardness by pushing pencils of known hardness over the film.

The test can be performed on a single coating of a paint, varnish or related product, or on the upper layer of a multicoat system.

1.2 This rapid, inexpensive test has been found to be useful in comparing the pencil hardness of different coatings.

It is more useful in providing relative ratings for a series of coated panels exhibiting significant differences in pencil hardness.

The method is applicable only to smooth surfaces.

2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Standard are encouraged to investigate the possibility of applying the most recent editions (including the amendment) of the standards indicated below.

JIS K 5600-1-2 Testing methods for paints—Part 1 : General rule—Section 2 : Sampling of products

Remarks : ISO 1512 : 1991 *Paints and varnishes—Sampling of products in liquid or paste form* is identical with the said standard.

JIS K 5600-1-3 Testing methods for paints—Part 1 : General rule—Section 3 : Examination and preparation of samples for testing

Remarks : ISO 1513 : 1992 *Paints and varnishes—Examination and preparation of samples for testing* is identical with the said standard.

JIS K 5600-1-4 Testing methods for paints—Part 1 : General rule—Section 4 : Standard panels for testing

Remarks : ISO 1514 : 1993 *Paints and varnishes—Standard panels for testing* is identical with the said standard.