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INDUSTRIAL
STANDARD

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Japanese Standards Association

JIS K 5600-5-1 : 1999

(ISO 1519 : 1973)

**Testing methods for paints—
Part 5 : Mechanical property
of film—
Section 1 : Bend test (cylindrical
mandrel)**

ICS 87.040

Descriptors : paints, film-forming capacity, cross-cut test, painting, membranes,
cupping tests, cracking, adhesion, mechanical testing

Reference number : JIS K 5600-5-1 : 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JIS K 5400 corresponding to this Standard will be withdrawn and replaced with this Standard in April 2002, at the time of three years passed after establishment of this Standard.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 1 : Bend test (cylindrical mandrel)

Introduction This Japanese Industrial Standard has been prepared based on ISO 1519 *Paints and varnishes—Bend test (cylindrical mandrel)* issued in 1973 as the first edition without changing the technical contents.

This Standard is one of a series dealing with the sampling and testing of paints, varnishes and related products.

The method of test specified requires to be completed, for any particular application, by the following supplementary information. This information should be derived from the national standard or other document for the product under test or, where appropriate, should be the subject of agreement between the interested parties.

- a) Nature, thickness and surface preparation of substrate.
- b) Apparatus to be used (i.e. Type 1 or Type 2).
- c) Method of application of test coating to substrate.
- d) Thickness, in micrometres, of the dry coating, including method of measurement, and whether it is a single coating or a multicoat system.
- e) Duration and conditions of drying of the coated panel before testing (or conditions of stoving and ageing, if applicable).
- f) Specified size of mandrel, if applicable, to be used in the test.
- g) Temperature at which the test is to be carried out.

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

1 Scope

1.1 This Standard specifies an empirical test procedure for assessing the resistance of a coating of paint, varnish or related product to cracking and/or detachment from a metal substrate when subjected to bending round a cylindrical mandrel under standard conditions.

1.2 For a multicoat system, each coat may be tested separately or the complete system may be tested.

1.3 The method specified may be carried out either as a “go/no go” test, by carrying out the test with a single specified size of mandrel, to assess compliance with a particular requirement or by repeating the procedure using successively smaller mandrels to determine the diameter of the first mandrel over which the coating cracks and/or becomes detached from the substrate.

1.4 Two types of apparatus are specified, Type 1 being appropriate for use on test panels of thickness up to 0.3 mm, and Type 2 for use on test panels of thickness up