



JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS K 5600-5-6 : 1999
(ISO 2409 : 1992)

**Testing methods for paints—
Part 5 : Mechanical property
of film—
Section 6 : Adhesion test
(Cross-cut test)**

ICS 87.040

Descriptors : paints, film-forming capacity, cross-cut test, painting, membranes,
adhesive strength

Reference number : **JIS K 5600-5-6 : 1999 (E)**



Documents

Document Sharing Hub

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JIS K 5400 corresponding to this Standard will be withdrawn and replaced with this Standard in April 2002, at the time of three years passed after establishment of this Standard.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	<i>General rule</i>
JIS K 5600 Part 2 Section 1 to Section 7	<i>Characteristics and stability of paints</i>
JIS K 5600 Part 3 Section 1 to Section 6	<i>Film formability</i>
JIS K 5600 Part 4 Section 1 to Section 7	<i>Visual characteristics of film</i>
JIS K 5600 Part 5 Section 1 to Section 11	<i>Mechanical property of film</i>
JIS K 5600 Part 6 Section 1 to Section 3	<i>Chemical property of film</i>
JIS K 5600 Part 7 Section 1 to Section 8	<i>Long-period performance of film</i>
JIS K 5600 Part 8 Section 1 to Section 6	<i>Evaluation of degradation of paint coatings</i>

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

Date of Establishment: 1999-04-20

Date of Public Notice in Official Gazette: 1999-04-20

Investigated by: Japanese Industrial Standards Committee
Divisional Council on Chemical

JIS K 5600-5-6:1999, First English edition published in 2000-10

Translated and published by: Japanese Standards Association
4-1-24, Akasaka, Minato-ku, Tokyo, 107-8440 JAPAN

In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

© JSA 2000

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

Printed in Japan

Testing methods for paints—

Part 5 : Mechanical property of film—

Section 6 : Adhesion test (Cross-cut test)

Introduction This Japanese Industrial Standard has been prepared based on **ISO 2409 Paints and varnishes—Cross-cut test** issued in 1992 as the first edition 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 test method for assessing the resistance of paint coatings to separation from substrates when a right-angle lattice pattern is cut into the coating, penetrating through to the substrate. The property measured by this empirical test procedure depends, among other factors, on the adhesion of the coating to either the preceding coat or the substrate. This procedure is not to be regarded, however, as a means of measuring adhesion.

Where a measurement of adhesion is required, attention is drawn to the method described in **JIS K 5600-5-7**.

Note 1 Although the test is primarily intended for use in the laboratory, the test is also suitable for field testing.

1.2 The method described may be applied either as a pass/fail test or, where circumstances are appropriate, as a six-step classification test (see 8.3). When applied to a multi-coat system, assessment of the resistance to separation of individual layers of the coating from each other may be made.

1.3 The test may be carried out on finished objects and/or on specially prepared test specimens. Although the method is applicable to paint on hard (steel) and soft (wood and plaster) substrates, these different substrates need a different test procedure (see clause 7). The method is not suitable for coatings of total thickness greater than 250 μm or for textured coatings.

Notes 2 Coatings with a total thickness of over 250 μm may be tested by means of a single cross-cut.

3 The method, when applied to coatings designed to give a rough patterned surface, will give results which will show too much variation.

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 (included 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.

JIS K 5600-1-6 Testing methods for paints—Part 1 : General rule—Section 6 : Temperatures and humidities for conditioning and testing

Remarks : **ISO 3270** : 1984 *Paints and varnishes and their raw materials—Temperatures and humidities for conditioning and testing* is identical with the said standard.

JIS K 5600-1-7 Testing methods for paints—Part 1 : General rule—Section 7 : Determination of film thickness

Remarks : **ISO 2808** : 1997 *Paints and varnishes—Determination of film thickness* is equivalent to the said standard.

IEC 60454-2 : 1994 *Specification for pressure-sensitive adhesive tapes for electrical purposes—Part 2 : Methods of test*

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 Apparatus Ordinary laboratory apparatus, together with the following:

4.1 Cutting tool It is particularly important to ensure that the cutting tool has a defined shape and that the cutting edges are in good condition.

4.1.1 Suitable tools are listed below and shown in Figs. 1 a) and 1 b):

- a) single-blade cutting tool with 20° to 30° edge and other dimensions as specified in Fig. 1 a);
- b) multi-blade cutting tool with six cutting edges spaced 1 mm or 2 mm apart. The single-blade cutting tool is the preferred tool in all cases, i.e. with all kinds of coating on both hard and soft substrates. The multi-blade cutting tool is not suitable for thick (> 120 µm) or hard coatings or where the coating is applied over soft substrates.