



JAPANESE
INDUSTRIAL
STANDARD

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Japanese Standards Association

JIS K 5600-7-3 : 1999
(ISO 11503 : 1995)

**Testing methods for paints—
Part 7 : Long-period performance
of film—
Section 3 : Resistance to humidity
(Intermittent condensation)**

ICS 87.040

Descriptors : paints, painting, membranes, chemical analysis and testing, durability,
endurance testing, water-vapour tests, condensation

Reference number : JIS K 5600-7-3 : 1999 (E)

K 5600-7-3 : 1999 (ISO 11503 : 1995)

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JIS K 5400 corresponding to this Standard will be withdrawn and replaced with this Standard in April 2002, at the time of three years passed after establishment of this Standard.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 5600-7 consists of the following sections under the title of "Testing methods for paints—Part 7 : Long-period performance of film".

JIS K 5600 Part 7 Section 1	<i>Resistance to neutral spray</i>
JIS K 5600 Part 7 Section 2	<i>Resistance to humidity (Continuous condensation)</i>
JIS K 5600 Part 7 Section 3	<i>Resistance to humidity (Intermittent condensation)</i>
JIS K 5600 Part 7 Section 4	<i>Humidity and cool-heat cycling test</i>
JIS K 5600 Part 7 Section 5	<i>Light fastness of film</i>
JIS K 5600 Part 7 Section 6	<i>Natural weathering test</i>
JIS K 5600 Part 7 Section 7	<i>Accelerated weathering (Exposure to filtered xenon-arc radiation)</i>
JIS K 5600 Part 7 Section 8	<i>Accelerated weathering (Exposure to fluorescent UV lamps)</i>

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Testing methods for paints—

Part 7 : Long-period performance of film—

Section 3 : Resistance to humidity

(Intermittent condensation)

Introduction This Japanese Industrial Standard has been prepared based on ISO 11503 *Paints and varnishes—Determination of resistance to humidity (intermittent condensation)* issued in 1995 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 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 determining under standard conditions the resistance of a single coat or a multi-coat system of paint or related material to intermittent water condensation. The method includes the testing of coatings on non-porous and on porous substrates.

2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. If the indication of the year of coming into effect is given to these referred standards, only the edition of indicated year constitutes the provision of this Standard but the revision and amendment made thereafter are not applied. The normative references without the indication of the year of coming into effect apply limiting only to the most recent edition (including the amendment).

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/DIS 2808**, *Paints and varnishes—Determination of film thickness* is equivalent to the said standard.

JIS K 5600-8-2 Testing methods for paints—Part 8 : Evaluation of degradation of paint coatings—Section 2 : Designation of degree of blistering

Remarks : **ISO 4628-2 : 1982**, *Paints and varnishes—Evaluation of degradation of paint coatings—Designation of intensity, quantity and size of common types of defect—Part 2 : Designation of degree of blistering* is identical with the said standard.

ISO 3696 : 1987 *Water for analytical laboratory use—Specification and test methods*

ISO 8335 : 1987 *Cement-bonded particleboards—Boards of equivalent cement reinforced with fibrous wood particles*

3 Principle Coated specimens are placed in a cabinet or chamber containing a heated, saturated mixture of air and water vapour. The temperature of the cabinet or chamber is maintained at $(40 \pm 3) ^\circ\text{C}$. At 98 % to 100 % relative humidity, the very small temperature difference between the specimen and the surrounding vapour causes the formation of condensation on the specimens. This is an intermittent condensation test and after a period of time under these conditions the conditions in the cabinet or chamber are cycled to give $(23 \pm 5) ^\circ\text{C}$ and $(50 \pm 20) \%$ relative humidity, i.e. dry conditions. Water permeates the coating at rates that are dependent upon the characteristics of the coating. Any effects such as colour change, blistering, loss of adhesion, softening or embrittlement are observed and reported using criteria previously agreed between the interested parties, these criteria usually being of a subjective nature.

4 Required supplementary information For any particular application, the test method specified in this Standard needs to be completed by supplementary information. The items of supplementary information are given in Annex A.

5 Apparatus An airtight laboratory cabinet of capacity 300 litres as specified in 5.1 or a larger chamber of capacity 1 m³ or 2 m³ up to a walk-in chamber as specified in 5.2 shall be used.

5.1 Airtight cabinet Capacity (300 ± 10) litres, in the base of which is a watertight trough fitted with a means of heating the water to meet the requirements of 8.4. The dimensions and design of the cabinet are not critical, provided the requirements of 5.3 are met. It shall be constructed of an inert material and have a roof which prevents condensed moisture dripping on to the test specimens. The cabinet shall be provided with a means of relieving excess pressure.

The cabinet shall also be provided with a means of controlling the temperature, which shall be measured in the space above the test specimens.

Note 1 Alternative designs of apparatus may be fitted with a door or a removable hood. Suitable designs of apparatus are shown in Figs. 1 and 2.