INTERNATIONAL STANDARD

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Paints and varnishes — Determination of resistance to liquids —

Part 1: General methods

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Peintures et vernis — Détermination de la résistance aux liquides — Partie 1: Méthodes générales

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Reference number
ISO 2812-1:1993(E)

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.

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.

International Standard ISO 2812-1 was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Sub-Committee SC 9, *General test methods for paints and varnishes*.

ISO 2812 consists of the following parts, under the general title *Paints and varnishes — Determination of resistance to liquids*:

— *Part 1: General methods*

— *Part 2: Water immersion method*

This part of ISO 2812 cancels and replaces ISO 2812:1974, of which it constitutes an editorial and minor technical revision.

Annex A forms an integral part of this part of ISO 2812.

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Paints and varnishes — Determination of resistance to liquids —

Part 1:
General methods

1 Scope

1.1 This part of ISO 2812 is one of a series of standards dealing with the sampling and testing of paints, varnishes and related products.

It specifies general methods for determining the resistance of a single-coat film or a multi-coat system of paints or related products to the action of liquids.

Three methods of test are specified. The method to be used depends on the particular requirements of the test material. Method 1 is intended for more resistant coatings requiring longer periods of exposure than those which may be tested by method 2 or method 3.

1.2 The methods enable the effect of the test liquid on the coating and, where necessary, deterioration of the substrate, to be assessed.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 2812. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 2812 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1512:1991, *Paints and varnishes — Sampling of products in liquid or paste form.*

ISO 1513:1992, *Paints and varnishes — Examination and preparation of samples for testing.*

ISO 1514:—[1], *Paints and varnishes — Standard panels for testing.*

ISO 2808:1991, *Paints and varnishes — Determination of film thickness.*

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.*

3 Principle

A coated test panel is exposed to a liquid by one of three specified methods, as appropriate, and the effects of exposure are evaluated by criteria agreed in advance between the interested parties, these criteria usually being of a subjective nature.

4 Required supplementary information

For any particular application, the test methods specified in this part of ISO 2812 need to be completed by supplementary information. The items of supplementary information are given in annex A.

1) To be published. (Revision of ISO 1514:1984)

5 Sampling

Take a representative sample of the product to be tested (or of each product in the case of a multi-coat system), as described in ISO 1512.

Examine and prepare each sample for testing, as described in ISO 1513.

6 Test pieces

6.1 Materials and dimensions

6.1.1 Panels

Unless otherwise specified or agreed, the test panels shall be of steel, tinplate, aluminium or glass complying with ISO 1514, and of approximate dimensions 150 mm × 100 mm × (0,75 to 1,25) mm.

6.1.2 **Rods** (for method 1 only)

One end of each rod shall be rounded to approximately the radius of the rod itself. Unless otherwise specified, the rod shall be of steel.

NOTES

1 Suitable dimensions for the rods are 150 mm long × 15 mm in diameter.

2 The use of rods for method 1 is to eliminate edge effects.

6.2 Preparation and coating

6.2.1 Test panels

Unless otherwise specified, prepare each test panel in accordance with ISO 1514 and then coat it by the specified method with the product or system under test.

NOTE 3 For method 1, it is normally preferable to paint both faces of the panel and to protect the edges. It will be necessary to specify whether the back of the panel is to be coated with a suitable protective paint or whether both sides of the panel are to be coated with the product or system under test.

If specified, seal the edges of the test panel by suitable means, after coating with the product or system under test.

6.2.2 Rods

Prepare each rod as specified and then coat it by the specified method with the product or system under test.

6.3 Drying

Dry (or stove) and age (if applicable) each coated test piece for the specified time and, unless otherwise specified, condition them at a temperature of (23 ± 2) °C and a relative humidity of (50 ± 5) % for at least 16 h. The appropriate test procedure shall then be carried out as soon as possible.

6.4 Thickness of coating

Determine the thickness, in micrometres, of the dried coating by one of the procedures specified in ISO 2808.

7 Method 1 (immersion method)

7.1 Materials required

7.1.1 Test liquid, as specified.

7.2 Temperature of test

Carry out the test at a temperature of (23 ± 2) °C, unless otherwise agreed.

7.3 Precautions to be taken

It is preferable to immerse the test pieces individually in the test liquid, particularly when using liquids of high electrical conductivity in which electrolytic effects could be of some importance. If immersion of several test pieces in a single tank is more convenient, the nature of the test pieces shall be identical and every precaution shall be taken to ensure that the test liquid is unaffected by the test pieces.

The test pieces shall be at least 30 mm from the sides of the tank and, if several pieces are immersed in the same tank, they shall be at least 30 mm apart. The test pieces shall be electrically insulated from their supports.

7.4 Procedure A (using a single-phase liquid)

Carry out the procedure in triplicate, unless otherwise agreed.

7.4.1 Place a sufficient amount of the test liquid (7.1.1) in a suitable vessel to immerse completely or partially the test piece (rod or panel) as specified. Keep the test piece in an approximately vertical position using suitable supports if necessary.

7.4.2 Cover the container for the duration of the test to minimize loss of liquid by evaporation or splashing.

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