INTERNATIONAL STANDARD

ISO 2812-2

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Paints and varnishes — Determination of resistance to liquids —

Part 2:
Water immersion method

Peintures et vernis — Détermination de la résistance aux liquides — Partie 2: Méthode par immersion dans l'eau

Reference number
ISO 2812-2:1993(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 2812-2 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 1521:1973, 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 2:
Water immersion method

1 Scope

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 a method for determining the resistance of a single-coat film or multi-coat system of paints or related products to the action of water by immersion.

The method gives an indication of the results likely to be obtained when painted articles are stored under conditions where prolonged condensation but not an extremely corrosive atmosphere may be produced. It is not intended to reproduce any particular condition of condensation.

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

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 immersed in water and the effects of immersion 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 method specified in this part of ISO 2812 needs to be completed by supplementary information. The items of supplementary information are given in annex A.

5 Apparatus

All parts of the apparatus in contact with water shall be made from inert materials.

5.1 Tank, of suitable size (a convenient size of tank is 700 mm × 400 mm × 400 mm), fitted with a cover, a heater and thermostatic control.

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

5.2 System for circulation and aeration of water, or a means for stirring, used in conjunction with a source of dry, oil-free, pressurized air.

If a pump is used, it shall be of a suitable capacity to agitate the whole contents of the tank.

5.3 Support for the test panels, made from electrically non-conducting material and arranged so that the panels are maintained at an angle of 15° to 20° to the vertical, with the test surface uppermost, and with their plane parallel to the direction of the flow of water in the tank.

The panels shall be at least 30 mm apart, at least 30 mm from the bottom of the tank and at least 30 mm from the walls of the tank. Their positions shall be changed periodically, either mechanically or by hand.

6 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.

7 Test panels

7.1 Materials and dimensions

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

7.2 Preparation and coating

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.

Coat the back and edges of the panel with a good quality protective paint not containing zinc chromate or any similarly water-soluble pigment.

7.3 Drying

Dry (or stove) and age (if applicable) each coated test panel for the specified time and under the specified conditions and, unless otherwise specified, condition them at a temperature of (23 ± 2) °C and relative humidity of (50 ± 5) % for at least 16 h, with free circulation of air and not exposed to direct sunlight. The appropriate test procedure shall then be carried out as soon as possible.

7.4 Thickness of coating

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

8 Procedure

Carry out the test in triplicate, unless otherwise agreed.

8.1 Immersion procedure

Add to the tank (5.1) sufficient water of grade 2 purity, as specified in ISO 3696, such that the test panels, when placed in position on the support (5.3), are immersed for three-quarters of their length. Commence the circulation and aeration of the water (5.2) in the tank, adjust the temperature of the water to (40 ± 1) °C and maintain this temperature throughout the test.

Place the test panels in the tank for the specified period, rearranging them at regular intervals of not more than 3 days. Replace the test water if at any time during the test it becomes turbid or coloured or its conductivity exceeds 2 mS/m.

8.2 Interim inspections

For interim inspections during the test period, if specified, remove each panel from the tank, blot the panels with absorbent paper, examine them within 1 min for blistering, in accordance with ISO 4628-2, or other signs of deterioration, and immediately return them to the tank.

8.3 Final inspection

At the end of the specified test period, remove each panel from the tank, blot the panels with absorbent paper, and immediately examine the whole test surface of each panel for blistering, in accordance with ISO 4628-2, or other signs of deterioration of the coating. Allow the panels to stand at room temperature for 24 h and examine the test surface again for loss of adhesion, rust staining, change of colour, embrittlement or other characteristics which may be specified.

If specified, carefully remove a 150 mm × 50 mm strip from the test surface with a non-corrosive paint remover and examine the exposed metal for signs of corrosion. For reference purposes, protect the exposed area by a suitable transparent lacquer.

9 Precision

Precision data are irrelevant for this part of ISO 2812 (see clause 3).