
International Standard



6270

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Paints and varnishes — Determination of resistance to humidity (continuous condensation)

Peintures et vernis — Détermination de la résistance à l'humidité (par condensation continue)

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 6270 was developed by Technical Committee ISO/TC 35, *Paints and varnishes*, and was circulated to the member bodies in May 1978.

It has been approved by the member bodies of the following countries :

Australia	Iran	Poland
Austria	Israel	Romania
Brazil	Italy	South Africa, Rep. of
Bulgaria	Kenya	Sweden
Canada	Korea, Rep. of	Switzerland
Egypt, Arab Rep. of	Mexico	Turkey
France	Netherlands	United Kingdom
Germany, F. R.	New Zealand	USSR
India	Norway	

No member body expressed disapproval of the document.

Paints and varnishes — Determination of resistance to humidity (continuous condensation)

0 Introduction

This International Standard is one of a series of standards dealing with the sampling and testing of paints, varnishes and related products. It should be read in conjunction with ISO 1512, ISO 1513, ISO 1514, ISO 2808 and ISO 3270.

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

- a) Material, thickness and surface preparation of substrate.
- b) Method of application of test coating and details of sealing of edges and backs of the test panels (if required).
- c) Thickness, in micrometres, of the dry coating, including method of measurement and whether it is a single coating or a multicoat system.
- d) Duration and conditions of drying of coated test panels (or conditions of stoving and ageing, if applicable) before testing.
- e) Duration of test period, including whether the test period is to be interrupted at intervals (for example during weekends).
- f) When inspection of the test coating is to be carried out, including details of recovery period if applicable.
- g) What characteristics of the test coating and substrate are to be considered in evaluating the resistance properties of the coating.

1 Scope and field of application

1.1 This International Standard specifies a method for determining the resistance of paint films, paints systems and allied products to conditions of high humidity.

1.2 The method is applicable to coatings both on porous substrates such as wood, plaster and plasterboard, and on non-porous substrates such as metal. It provides an indication of performance likely to be obtained under severe conditions of

exposure where continuous condensation occurs on the surface.

1.3 The procedure may reveal failures of the coating (including blistering, staining, softening, wrinkling and embrittlement) and deterioration of the substrate.

2 References

ISO 1512, *Paints and varnishes — Sampling.*

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

ISO 1514, *Paints and varnishes — Standard panels for testing.*

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

ISO 3270, *Paints and varnishes and their raw materials — Atmospheres for conditioning and testing.*

3 Apparatus

3.1 The apparatus consists essentially of an electrically heated water bath, so constructed that the cover is formed by the blanking panels (see 3.5) or the test panels, the upper faces of which are exposed to the environment (see 3.2). It is preferable for the apparatus to be so designed that it will accommodate test panels of size 150 mm × 100 mm.

The apparatus shall be constructed of chemically inert material.

3.2 The water in the bath shall be maintained at 40 ± 2 °C and the apparatus shall be operated in a draught-free environment maintained at 23 ± 2 °C.

3.3 The sides of the water bath shall be suitably insulated to ensure that the temperature in the air-space, measured 25 mm below the test panels, is uniform, constant to within ± 2 °C and not lower than 35 °C.

3.4 The top of the bath shall be so constructed that the test panels are held at an angle of $15 \pm 5^\circ$ to the horizontal to permit drainage of condensed water, but shall be such that water draining from one panel does not come into contact with another.

3.5 Suitable inert blanking panels (for example opaque glass panels) shall be provided for use in setting up the apparatus and if the number of test panels is insufficient to form a complete cover.

NOTE — A schematic diagram of a suitable apparatus is shown in the figure.

4 Sampling

Take a representative sample of the product to be tested (or of each product in the case of a multicoat system) as specified in ISO 1512.

Examine and prepare the sample for testing as specified in ISO 1513.

5 Test panels

5.1 Material *and dimensions*

The test panels shall be of the specified material complying, if appropriate, with ISO 1514. Unless otherwise specified, the test panels shall be of size 150 mm × 100 mm.

NOTE — As the results can be significantly affected by the thickness of the substrate, it is important to ensure that the dimensions of the panels are appropriate to the end use for which the coating is being tested.

5.2 Preparation and coating

Prepare the test panels as specified, in accordance with ISO 1514 if appropriate. Coat them by the specified method with the product or system under test and dry (or stove and age them) for the specified period. Unless otherwise agreed, dry the panels, with free circulation of air, in a vertical position in the standard atmosphere in accordance with ISO 3270 [23 ± 2 °C and (50 ± 5) % relative humidity].

For many purposes, it is sufficient to coat only one face of the test panel. However, it is necessary to specify whether the back and/or edges are to be sealed and, if so, whether it should be with the product or system under test or with a suitable sealant.

5.3 Thickness of coating

Determine the thickness, in micrometres, of the dry coating by the method specified, using one of the procedures specified in ISO 2808, but avoiding destructive methods which cut through the film.

6 Procedure

6.1 Set up the apparatus with blanking panels in position. When the conditions specified in 3.2 and 3.3 are attained,

swiftly replace the blanking panels with the test panels so that the test surface faces the water.

In order to prevent a galvanic couple, the test panels shall not be allowed to come into contact with each other or with other metallic material. Non-metallic filler strips shall be used between the panels.

6.2 Continue the test for the specified period, if appropriate removing the test panels from the apparatus for any periods of interruption, immediately substituting blanking panels. During such periods, keep the test panels in the standard atmosphere in accordance with ISO 3270. Unless the apparatus automatically maintains the level of the water, adjust this by regular addition.

6.3 For interim inspections during the test period, if specified, remove the panels from the apparatus, blot them with absorbent paper, examine them for signs of deterioration and then immediately return them to the apparatus. If a longer examination is needed, put a blanking panel at the place of the test panel.

6.4 At the end of the specified test period, remove the panels from the apparatus, blot them with absorbent paper and immediately examine the test surfaces for signs of deterioration. If required, keep the panels in the standard atmosphere in accordance with ISO 3270 for the specified recovery period and again examine the test surfaces for deterioration.

If it is required to examine the substrate for signs of attack, remove the coating by an appropriate method.

7 Test report

The test report shall contain at least the following information :

- a) the type and identification of the product tested;
- b) a reference to this International Standard or to a corresponding national standard;
- c) the items of supplementary information referred to in the introduction to this International Standard;
- d) the national standard or other document supplying the information referred to in c) above;
- e) any deviation, by agreement or otherwise, from the test procedure described;
- f) the results of the test, in terms of the stated requirements;
- g) the date of the test.

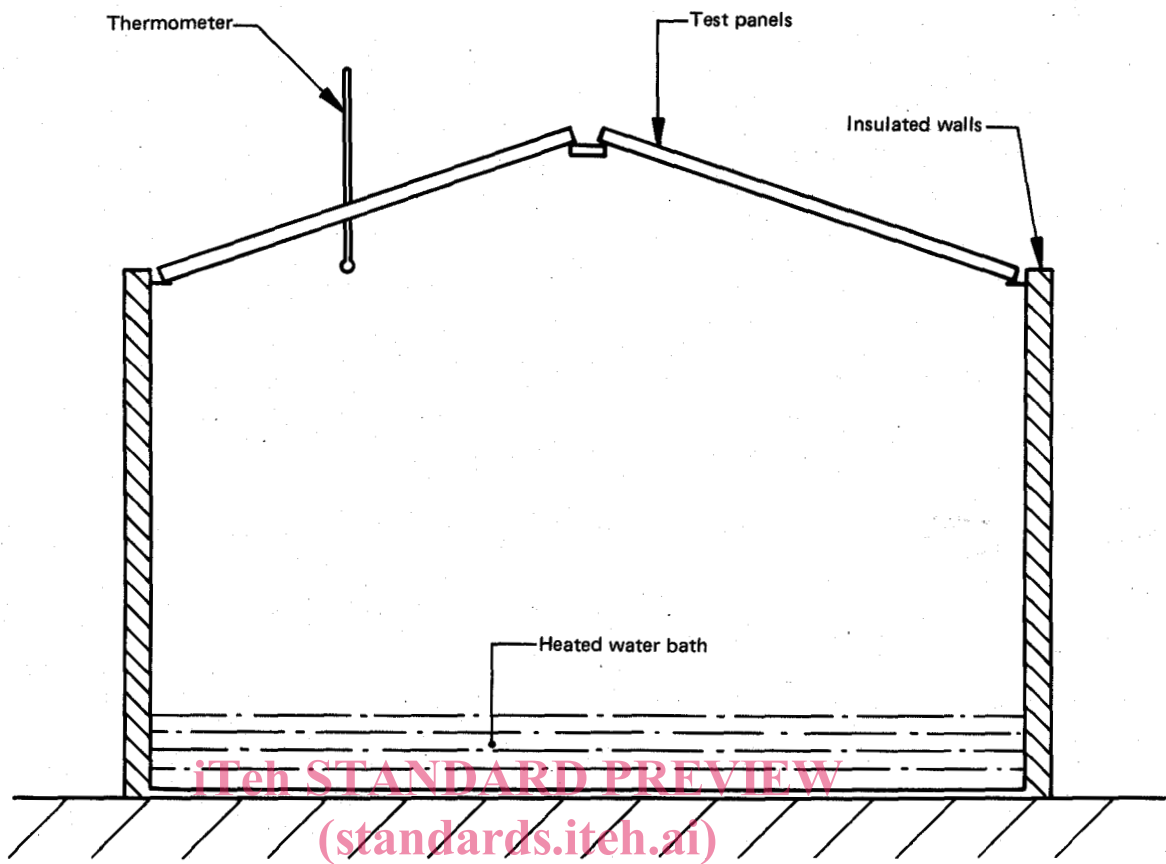


Figure — General arrangement of a suitable apparatus for determination of resistance to humidity
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