
**Paints and varnishes — Determination of
the effect of heat**

Peintures et vernis — Détermination des effets de la chaleur



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 3248 was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 9, *General test methods for paints and varnishes*.

This second edition cancels and replaces the first edition (ISO 3248:1975) which has been redrafted to bring it into the form currently used for TC 35/SC 9 test method standards. In addition, the normative references have been updated and the reference to asbestos removed from subclause 4.2 (now 6.2).

Annex A forms an integral part of this International Standard.

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Paints and varnishes — Determination of the effect of heat

1 Scope

This International Standard is one of a series of standards dealing with the sampling and testing of paints, varnishes and related products.

It specifies a general procedure for determining the resistance of single coatings or multi-coat systems of paints, varnishes or related products to changes in gloss and/or colour, blistering, cracking and/or detachment from the substrate under conditions of moderately elevated temperature.

This procedure is applicable to products intended for use on domestic radiators or other articles likely to be subjected to similar temperatures.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard 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 1514:1993, *Paints and varnishes — Standard panels for testing.*

ISO 1518:1992, *Paints and varnishes — Scratch test.*

ISO 1519:1973, *Paints and varnishes — Bend test (cylindrical mandrel).*

ISO 1520:—¹⁾, *Paints and varnishes — Cupping test.*

ISO 2808:1997, *Paints and varnishes — Determination of film thickness.*

ISO 6272:1993, *Paints and varnishes — Falling-weight 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.

1) To be published. (Revision of ISO 1520:1973)

4 Sampling

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

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

5 Test panels

5.1 Substrate

Unless otherwise specified the test panels shall be of steel, tinplate, aluminium or glass as appropriate and shall comply with the requirements of ISO 1514. Unless otherwise specified, the panels shall be 150 mm × 100 mm.

5.2 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.

5.3 Drying and conditioning

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 at $(23 \pm 2)^\circ\text{C}$ and a relative humidity of $(50 \pm 5)\%$ for a minimum of 16 h. The test procedure shall then be carried out as soon as possible.

5.4 Thickness of coating

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

6 Procedure

6.1 Temperature and duration of test

Carry out the test procedure at $(125 \pm 2)^\circ\text{C}$ for a period of 24 h, unless otherwise agreed.

6.2 Determination

Place the panels in an oven with air circulation at the specified temperature, not less than 100 mm from the sides of the oven and not closer than 20 mm apart, and maintain them at that temperature for the specified time. The preferred method of ensuring even heating of the coated panels is to suspend them by means of fine wires. Alternatively, the panels may be supported in a rack made from suitable heat-resistant material or placed, paint side uppermost, on a piece of heat-resistant board resting on supports.

At the end of the specified time, remove the panels from the oven and allow them to cool to a temperature of $(23 \pm 2)^\circ\text{C}$. Examine the panels for change of colour or signs of other deterioration of the coating, by comparison with identically prepared, but unheated, panels.

When specified, subject both heated and unheated panels, not less than 16 h after completing the heating period, to one of the test procedures specified in ISO 1518, ISO 1519, ISO 1520 or ISO 6272, or to other agreed test procedures, and examine for compliance with the specified requirement.

7 Test report

The test report shall contain at least the following information:

- a) all details necessary to identify the product tested;
- b) a reference to this International Standard (ISO 3248);
- c) the items of supplementary information referred to in annex A;
- d) a reference to the international or national standard, product specification or other document supplying the information referred to in c);
- e) any deviation from the test method specified;
- f) the result of the test, in terms of the stated requirements;
- g) the date of the test.

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Annex A

(normative)

Required supplementary information

The items of supplementary information listed in this annex shall be supplied as appropriate to enable the method to be carried out.

The information required should preferably be agreed between the interested parties and may be derived, in part or totally, from an international or national standard or other document related to the product under test.

- a) Substrate material, substrate thickness and surface preparation of the substrate.
- b) Method of application of the test coating to the substrate, including duration and conditions of drying between coats in the case of a multi-coat system.
- c) Duration and conditions of drying (or stoving) and ageing (if applicable) of the coating before testing.
- d) Thickness, in micrometres, of the dry coating and method of measurement in accordance with ISO 2808, and whether it is a single coating or a multi-coat system.
- e) The properties of the test coating which are to be considered in evaluating the resistance of the coating to heat.

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