

European standard

French standard

NF EN ISO 3248
May 2001

Classification index: **T 30-059**

ICS: 87.040

Paints and varnishes

Determination of the effect of heat

F : Peintures et vernis — Détermination des effets de la chaleur

D : Beschichtungsstoffe — Bestimmung der Auswirkung von Wärme

French standard approved

by decision of the Director General of AFNOR on April 20, 2001 taking effect on May 20, 2001.

Replaces the published document NF T 30-059 dated October 1974.

Correspondence

The European standard EN ISO 3248:2000 has the status of French standard. It reproduces in full the international standard ISO 3248:1998.

Analysis

This document describes a general method for determining the resistance of coatings (single coats or multi-ply systems of paint, varnish or similar products) to changes in sheen and/or colour, bubbling, cracking and/or unpeeling from the material applied under moderately high temperatures.

Descriptors

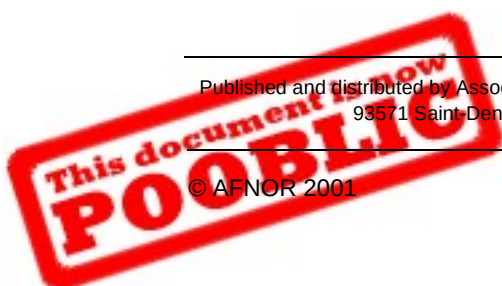
Technical International Thesaurus: paints, varnishes, tests, thermal tests, thermal resistance, sampling, procedure.

Modifications

With respect to the document replaced, adoption of the European standard.

Corrections

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National foreword

References to French standards

The correspondence between the standards figuring in the clause "Normative references" and the identical French standards is as follows:

<i>ISO 1512 :</i>	<i>NF EN 21512 (classification index: T 30-048)</i>
<i>ISO 1513 :</i>	<i>NF EN ISO 1513 (classification index: T 30-066)</i>
<i>ISO 1514 :</i>	<i>NF EN ISO 1514 (classification index: T 30-101)</i>
<i>ISO 1518 :</i>	<i>NF EN ISO 1518 (classification index: T 30-088)</i>
<i>ISO 1519 :</i>	<i>NF EN ISO 1519 (classification index: T 30-040)</i>
<i>ISO 1520 :</i>	<i>NF EN ISO 1520 (classification index: T 30-019)</i>
<i>ISO 2808 :</i>	<i>NF EN ISO 2808 (classification index: T 30-124)</i>
<i>ISO 6272 :</i>	<i>NF EN ISO 6272 (classification index: T 30-017)</i>



EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 3248

March 2000

ICS 87.040

English version

Paints and varnishes - Determination of the effect of heat (ISO
3248:1998)

Peintures et vernis - Détermination des effets de la chaleur
(ISO 3248:1998)

Beschichtungsstoffe - Bestimmung der Auswirkung von
Wärme (ISO 3248:1998)

This European Standard was approved by CEN on 1 March 2000.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



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Foreword

The text of the International Standard from Technical Committee ISO/TC 35 "Paints and varnishes" of the International Organization for Standardization (ISO) has been taken over as an European Standard by Technical Committee CEN/TC 139 "Paints and varnishes", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2000, and conflicting national standards shall be withdrawn at the latest by September 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 3248:1998 has been approved by CEN as a European Standard without any modification.

NOTE: Normative references to International Standards are listed in annex ZA (normative).

Annex ZA (normative)
Normative references to international publications
with their relevant European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN</u>	<u>Year</u>
ISO 1512	1992	Paints and varnishes - Sampling of products in liquid or paste form	EN 21512	1994
ISO 1513	1992	Paints and varnishes - Examination and preparation of samples for testing	EN ISO 1513	1994
ISO 1514	1993	Paints and varnishes - Standard panels for testing	EN ISO 1514	1997
ISO 1519	1973	Paints and varnishes - Bend test (cylindrical mandrel)	EN ISO 1519	1995
ISO 1520	1973	Paints and varnishes - Cupping test	EN ISO 1520	1995
ISO 6272	1993	Paints and varnishes - Falling-weight test	EN ISO 6272	1994
ISO 2808	1997	Paints and varnishes - Determination of film thickness	EN ISO 2808	1999



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.*

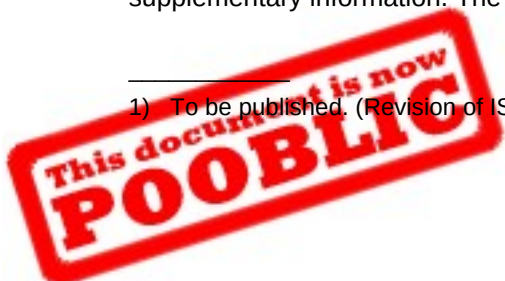
ISO 2808:1997, *Paints and varnishes — Determination of film thickness.*

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

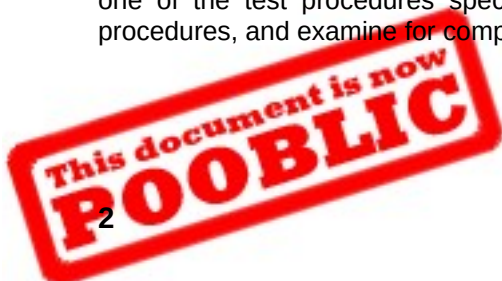
Carry out the test procedure at $(125 \pm 2)^\circ\text{C}$ for a period of 24 h, unless otherwise agreed.

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.



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.

