

---

# INTERNATIONAL STANDARD



# 2809

---

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

---

## Paints and varnishes — Determination of light fastness of paints for interior use

*Peintures et vernis — Détermination de la solidité à la lumière des peintures d'intérieur*

First edition — 1976-09-01

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[ISO 2809:1976](https://standards.iteh.ai/catalog/standards/sist/b8e838f5-fd60-47e4-8ee1-ad6152004948/iso-2809-1976)

<https://standards.iteh.ai/catalog/standards/sist/b8e838f5-fd60-47e4-8ee1-ad6152004948/iso-2809-1976>

---

UDC 667.613.75 : 620.193.6

Ref. No. ISO 2809-1976 (E)

**Descriptors** : paints, varnishes, tests, ageing tests (materials), artificial light tests, determination, colourfastness, test equipment, test specimen conditioning.

Price based on 3 pages

## 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 2809 was drawn up by Technical Committee ISO/TC 35, *Paints and varnishes*, and was circulated to the Member Bodies in April 1975.

It has been approved by the Member Bodies of the following countries :

Austria	Italy	Sweden
Denmark	New Zealand	Switzerland
France	Poland	Turkey
Germany	Portugal	United Kingdom
Iran	Romania	Yugoslavia
Ireland	Spain	

The Member Body of the following country expressed disapproval of the document on technical grounds :

South Africa, Rep. of

# Paints and varnishes – Determination of light fastness of paints for interior use

## 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 3668.

This International Standard specifies a method for operating laboratory equipment for the determination of light fastness of interior paints.

It does not attempt to define either the minimum acceptable standard of light fastness or the precise techniques to be adopted for the test; these are to be the subject of agreement between the interested parties. The possible forms which the test requirement may take, as stated in the product specification, include the following :

- 1) The test material shall be at least as lightfast as a specified wool scale pattern exposed simultaneously.
- 2) The test material shall be at least as lightfast as an agreed paint sample exposed simultaneously.
- 3) The test material shall show no greater change within a specified period than a previously exposed reference sample.
- 4) The test material shall not change colour beyond an agreed limit within a specified period. The limit may be defined in terms of a national standard, a Munsell reference or an agreed reference panel.
- 5) The test material shall be visually acceptable after a specified period of exposure.

NOTE – Of the criteria listed above, 1) and 2) offer the greatest precision, as they take into account any variation in the severity of the test resulting from ageing of the lamp or filters.

The method of test described below requires to be completed, for any particular application, by the following supplementary information.

This information shall be derived from the national standard or other document for the product under test or, where appropriate, shall be the subject of agreement between the interested parties.

- a) Material and surface preparation of the substrate.
- b) Method of application of the test coating to the substrate.

c) 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 multicoat system.

d) Duration and conditions of drying of the coated panel (or conditions of stoving and ageing if applicable) before testing.

e) Full details of the duration of test and conditions of test if varied from standard by agreement.

f) Any particular test requirements [see examples 1) to 5) above] and the agreed limit of colour change for the assessment of light fastness.

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for assessing the light fastness of interior paints by exposure to light from artificial sources, under prescribed conditions which have been shown to correlate acceptably with exposure to daylight through glass. For critical applications the user should generally satisfy himself that the degree of correlation is acceptable for this purpose.

## 2 REFERENCES

ISO/R 105/1, *Tests for colour fastness of textiles – First series.*

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 3668, *Paints and varnishes – Visual comparison of the colour of paints.*

## 3 APPARATUS

Apparatus embodying either a xenon lamp or a carbon arc may be used.

### 3.1 Test chamber

The test chamber shall consist essentially of a ventilated enclosure at the centre of which the source of radiation

shall be situated. The test panels shall be held on a suitable rack arranged symmetrically around the source so that the irradiance falling on any part of the panels does not vary from the mean value by more than  $\pm 10\%$ . The panel rack may be rotated continuously around the radiation source to improve the even distribution of the light.

The enclosure shall be so constructed that any ozone produced by the radiation source does not come into contact with the test panels.

The conditions in the test chamber shall be as follows :

- Air temperature :  $35 \pm 5^\circ\text{C}$
- Black panel temperature :  $50 \pm 5^\circ\text{C}$
- Relative humidity :  $65 \pm 15\%$

### 3.2 Radiation source

The radiation source shall consist of a suitable xenon lamp or carbon arc, together with an appropriate filter system which does not significantly alter the visible output of the arc. The irradiance on the panels shall be  $100 \pm 25\text{ W/m}^2$  in the range 310 to 400 nm. The irradiance at wavelengths shorter than 310 nm shall not exceed  $0,5\text{ W/m}^2$ .

#### NOTES

1 If there is doubt as to whether a particular type of equipment is in accordance with this International Standard, this shall be established by the user, by the manufacturer of the equipment, or by an independent test authority.

2 In view of the short-term fluctuations of the output of the carbon arc, it is essential that the average for the irradiance shall be taken over a period of not less than 5 h.

3.3 The following items are also required.

3.3.1 Cover sheet, of aluminium foil.

3.3.2 Colour matching cabinet, as described in ISO 3668.

3.3.3 Calibration standards, for example wool scale patterns complying with ISO/R 105/I.

3.3.4 Cardboard, of thickness approximately 0,5 mm and of rigid quality for mounting the dyed wool calibration standards.

3.3.5 Geometric grey scale, complying with ISO/R 105/I.

## 4 SAMPLING

A representative sample of the product to be tested shall be taken as described in ISO 1512. The sample shall then be examined and prepared for testing as described in ISO 1513.

## 5 PREPARATION AND COATING OF TEST PANEL

5.1 Unless otherwise agreed, use a panel of hard aluminium as described in ISO 1514 and coat it with a pre-treatment primer. The dimensions of the panel shall be suitable for the apparatus being used but shall not in any case be smaller than 60 mm x 40 mm.

5.2 Coat the panel with the product under test by the specified method and allow it to dry (or stove) and age in the specified manner and for the specified time. If normal drying conditions are specified, these shall be interpreted as a temperature of  $23 \pm 2^\circ\text{C}$  and a relative humidity of  $50 \pm 5\%$  with free circulation of air and no exposure to direct sunlight.

## 6 PROCEDURE

6.1 Cover half of the test panel and, where appropriate, the calibration standard (3.3.3) with the cover sheet (3.3.1) and expose it in the apparatus for the specified period.

This procedure advocates the use of an unexposed area adjacent to the exposed area for comparison, which is useful for checking the progress of the exposure. Comparisons, however, shall be based on contrast with a reference sample or other agreed standard.

6.2 At regular intervals, remove the test panel from the apparatus, remove the cover sheet and observe the degree of colour change on the test panel and standard.

The comparison shall be carried out in the colour matching cabinet (3.3.2). If agreed, the colour change may be determined instrumentally.

Use may be made of the geometric grey scale (3.3.5) in recording the degree of colour change. If the test is to be continued, carefully replace the cover sheet in its original position.

6.3 Assess the degree of light fastness of the test panel in terms of the specified or agreed requirements.

## 7 MONITORING

7.1 The irradiance is specified in 3.2 but is liable to fall during operation owing to progressive ageing of the lamps and filters, inefficient cleaning, or incorrect operation. The user shall, therefore, carry out regular and frequent checks on the output of the radiation source.

7.2 The checking procedure is not specified in this International Standard. The principles on which a suitable method may be based include the following :

- a) measurement of the spectral energy distribution by means of a suitable spectrophotometer;
- b) measurement of irradiance in wave-bands using a photoelectric device with suitable filters;
- c) chemical actinometry with suitable filters;
- d) measurement of actinic effect, for example by means of blue wool standards or photosensitive polymers.

**7.3** Should the check procedure indicate that the irradiance has fallen outside the specified limits, action shall be taken to restore the radiation to its original level. This may entail renewal of the lamp, cleaning or renewal of the filters or attention to the operating conditions.

## **8 TEST REPORT**

The test report shall include at least the following information :

- a) a reference to this International Standard or to a corresponding national standard;
- b) the type and identification of the product tested;

c) the items of supplementary information referred to in the introduction to this International Standard;

d) a reference to the national standard or other document supplying the information referred to in c) above;

e) the type of apparatus (xenon lamp or carbon arc) used for the test;

f) the result of the test;

g) any deviation, by agreement or otherwise, from the procedure specified;

h) the date of the test.

# **iTeh STANDARD PREVIEW** **(standards.iteh.ai)**

ISO 2809:1976

<https://standards.iteh.ai/catalog/standards/sist/b8e838f5-fd60-47e4-8ee1-ad6152004948/iso-2809-1976>

## iTeh STANDARD PREVIEW

This page intentionally left blank  
(standards.iteh.ai)

ISO 2809:1976

<https://standards.iteh.ai/catalog/standards/sist/b8e838f5-fd60-47e4-8ee1-ad6152004948/iso-2809-1976>

## iTeh STANDARD PREVIEW

This page intentionally left blank  
(standards.iteh.ai)

ISO 2809:1976

<https://standards.iteh.ai/catalog/standards/sist/b8e838f5-fd60-47e4-8ee1-ad6152004948/iso-2809-1976>

## iTeh STANDARD PREVIEW

This page intentionally left blank  
(standards.iteh.ai)

ISO 2809:1976

<https://standards.iteh.ai/catalog/standards/sist/b8e838f5-fd60-47e4-8ee1-ad6152004948/iso-2809-1976>