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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 23987.2-2026

Replacing GB/T 1865-2009

**Paints and varnishes - Methods of exposure to laboratory light
sources - Part 2: Xenon-arc lamps**

色漆和清漆 实验室光源曝露方法 第2部分：氙弧灯

(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is Part 2 of GB/T 23987 "Laboratory Light Source Exposure Methods for Paints and Varnishes", which has been published.

The following section.

---Part 2: Xenon Arc Lamp;

---Part 3: Fluorescent UV Lamp Compared with GB/T 1865-2009, the main technical changes in the "Shooting" standard, apart from structural adjustments and editorial modifications, are as follows.

- a) The scope has been changed (see Chapter 1, GB/T 1865-2009);
- b) The terms and definitions have been changed (see Chapter 3, Chapter 3 of GB/T 1865-2009);
- c) The principle has been changed (see Chapter 4 of GB/T 1865-2009);
- d) Required supplementary information has been removed (see Chapter 5 of GB/T 1865-2009);
- e) The instruments and equipment were modified (see Chapter 5, Chapter 6 of GB/T 1865-2009);
- f) Sampling has been removed (see Chapter 7 of GB/T 1865-2009);
- g) The preparation of test plates has been removed (see Chapter 8 of GB/T 1865-2009);
- h) Additional samples were added (see Chapter 6);
- i) The experimental conditions were increased (see Chapter 7);

- j) The procedure has been modified (see Chapter 8, Chapter 9 of GB/T 1865-2009);
- k) The assessment of aging results has been removed (see Chapter 10 of GB/T 1865-2009);
- l) The test report has been amended (see Chapter 9, Chapter 11 of GB/T 1865-2009);
- m) Information that needed to be supplemented has been deleted (see Appendix A of GB/T 1865-2009);
- n) More exposure cycles have been added (see Appendix B).

This document is equivalent to ISO 16474-2:2013 "Laboratory light source exposure methods for paints and varnishes - Part 2: Xenon arc lamps".

The following minimal editorial changes have been made to this document.

---Incorporates amendments to ISO 16474-2:2013/AMD.1.2022; the relevant clauses are indicated by vertical margins.

The double lines (||) are marked.

This document was proposed by the China Petroleum and Chemical Industry Federation.

This document is under the jurisdiction of the National Technical Committee on Standardization of Coatings and Pigments (SAC/TC5).

Introduction

To more quickly determine the effects of radiation, heat, and humidity on the physical, chemical, and optical properties of coatings, artificial stimulation using specific laboratory light sources is often employed.

Accelerated weathering or artificially accelerated radiation exposure tests. Exposure of the coating in laboratory equipment offers more controllable factors compared to natural environments.

These components are used to accelerate potential coating degradation and product failure.

The law is proposed to consist of four parts.

---Part 1: General Rules. This section aims to guide the selection and implementation of relevant exposure test methods, describing the exposure of paints and varnishes in practical applications.

General requirements for apparatus used under laboratory light sources.

---Part 2: Xenon Arc Lamp. The purpose is to regulate the controlled environmental conditions (temperature, humidity, and/or water) of material exposure and the filtered...

Xenon arc lamps, through different combinations of xenon arc lamps and filters, can meet different testing requirements.

---Part 3: Fluorescent UV Lamps. The purpose is to regulate the controlled environmental conditions (temperature, humidity, and/or water) and fluorescence of materials exposed to these lamps.

The types of ultraviolet lamps are selected to meet different experimental requirements.

---Part 4: Open-type carbon arc lamps. The purpose is to standardize the controlled environmental conditions (temperature, humidity, and/or water) of material exposure and...

The filtered carbon arc lamp, combined with a filter, can meet different testing requirements.

The laboratory light source used in this document is a xenon arc lamp, configured to simulate sunlight radiation or sunlight radiation transmitted through window glass, and equipped with one or more filters.

The optical array's spectral range includes ultraviolet, visible, and infrared light. Although the conditions for xenon arc lamp source exposure testing are controllable, they are still not...

It can simulate the exposure conditions of actual use, thereby obtaining the relative durability of the coating.

Laboratory light exposure methods for paints and varnishes Part 2: Xenon Arc Lamp

1 Scope

This document describes a test method for exposing samples to xenon arc lamps, heat, and humidity in a test setup to simulate the material's exposure to these conditions.

The aging effect that occurs when exposed to sunlight or sunlight through window glass in a real-world usage environment.

This document applies to laboratory artificial exposure of samples to a filtered xenon arc lamp under controlled environmental conditions (temperature, humidity, and/or wetting).

Accelerated climate aging testing can be achieved by combining different types of xenon arc lamps with filters to meet various testing requirements.

The general rules are given in ISO 16474-1.

Note: For the xenon arc lamp exposure test method for plastics, see ISO 4892-2.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

ISO 4618 Paints and varnishes - Vocabulary Note. GB/T 5206-2015 Paints and varnishes - Terms and definitions (ISO 4618:2014, IDT) ISO 9370 General principles and basic test methods for instrument determination of irradiance in plastics weathering tests (Plastics-Instrument-od) Note. GB/T 45183-2025 General principles and basic test methods for instrument determination of irradiance in climate aging tests of plastics (ISO 9370:2017) MOD) ISO 16474-1 Paints and varnishes - Laboratory exposure to light - Part 1: General principles

3 Terms and Definitions

The terms and definitions defined in ISO 4618 and the following terms and definitions apply to this document.

radiant exposure

The test plate has been exposed to a measure of radiation energy.

Note 1: Irradiation amount is derived from the formula $H = \int E \cdot dt$.

H --- Irradiance, measured in joules per square meter (J/m²);