ICS 19.040 SLOVENSKÁ TECHNICKÁ NORMA Marec 2025

STN	**Skúšanie vplyvu prostredia Časť 2-87: Skúšky Ožarovanie materiálov a komponentov UV-C žiarením na simuláciu germicídneho ultrafialového žiarenia alebo iných aplikácií**	**STN EN IEC 60068-2-87 34 5791**

Environmental testing - Part 2-87: Tests - UV-C exposure of materials and components to simulate ultraviolet germicidal Irradiation or other applications

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 02/25

Obsahuje: EN IEC 60068-2-87:2024, IEC 60068-2-87:2024

140118

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 60068-2-87

November 2024

ICS 19.040

English Version

Environmental testing - Part 2-87: Tests - UV-C exposure of materials and components to simulate ultraviolet germicidal Irradiation or other applications (IEC 60068-2-87:2024)

Essais d'environnement - Partie 2-87: Essais - Exposition des matériaux et composants aux UV-C pour simuler l'irradiation germicide aux ultraviolets ou d'autres applications
(IEC 60068-2-87:2024)

Umgebungseinflüsse - Teil 2-87: Prüfverfahren - Prüfung xx: UV-C-Exposition von Materialien und Komponenten zur Nachbildung keimtötender ultravioletter Strahlung oder entsprechende Anwendungen
(IEC 60068-2-87:2024)

This European Standard was approved by CENELEC on 2024-11-19. CENELEC 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.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN IEC 60068-2-87:2024 E

European foreword

The text of document 104/1067/FDIS, future edition 1 of IEC 60068-2-87, prepared by TC 104 "Environmental conditions, classification and methods of test" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60068-2-87:2024.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2025-11-30
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2027-11-30

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Endorsement notice

The text of the International Standard IEC 60068-2-87:2024 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standard indicated:

IEC 60335-1:2020	NOTE Approved as EN IEC 60335-1:2023 (not modified) +A11:2023
IEC 62471	NOTE Approved as EN 62471
ISO 105-A02	NOTE Approved as EN 20105-A02
ISO 105-A05	NOTE Approved as EN ISO 105-A05
ISO 4892-3	NOTE Approved as EN ISO 4892-3
ISO 178	NOTE Approved as EN ISO 178
ISO 179-1	NOTE Approved as EN ISO 179-1
ISO 179-2	NOTE Approved as EN ISO 179-2
ISO 2813	NOTE Approved as EN ISO 2813
ISO 3668	NOTE Approved as EN ISO 3668
ISO 4628-4	NOTE Approved as EN ISO 4628-4
ISO 4628-5	NOTE Approved as EN ISO 4628-5
ISO 4628-6	NOTE Approved as EN ISO 4628-6
ISO 4628-7	NOTE Approved as EN ISO 4628-7

ISO 4892-3	NOTE Approved as EN ISO 4892-3
ISO 13468-1	NOTE Approved as EN ISO 13468-1
ISO 13468-2	NOTE Approved as EN ISO 13468-2

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cencenelec.eu.

Publication	Year	Title	EN/HD	Year
ISO 4892-1	-	Plastics - Methods of exposure to laboratory light sources - Part 1: General guidance	EN ISO 4892-1	-
ISO 9370	2017	Plastics - Instrumental determination of radiant exposure in weathering tests - General guidance and basic test method	-	-
ASTM G130	-	Standard Test Method for Calibration of Narrow- and Broad-Band Ultraviolet Radiometers Using a Spectroradiometer	-	-

IEC 60068-2-87

Edition 1.0 2024-10

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Environmental testing – Part 2-87: Tests – UV-C exposure of materials and components to simulate ultraviolet germicidal Irradiation or other applications

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IEC 60068-2-87:2024-10(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

ICS 19.040

ISBN 978-2-8322-9871-8

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ENVIRONMENTAL TESTING –

Part 2-87: Tests – UV-C exposure of materials and components to simulate ultraviolet germicidal irradiation or other applications

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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IEC 60068-2-87 has been prepared by IEC technical committee 104: Environmental conditions, classification and methods of test. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
104/1067/FDIS	104/1073/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 60068 series, published under the general title *Environmental testing*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION

UV-C radiation (with wavelength ranging from 100 nm to 280 nm) emitted by the sun is known to destroy DNA and RNA in living cells, but it is filtered entirely by the atmosphere, so that none reaches Earth's surface. Because of its effects on cells, artificial light sources that emit UV-C radiation are used to kill or deactivate pathogens in air, water, and on material surfaces, a process known as ultra-violet germicidal irradiation (UVGI). Although UVGI systems for disinfection of water have been in use for decades, the technology's use on surfaces and in air has become common more recently and has accelerated in response to the COVID-19 pandemic.

UV-C radiation is potentially harmful to polymers, textiles, and other materials. Consequently, UVGI treatments can degrade material properties, especially when frequently performed.

The test procedure set out in this document is intended as a standardized method of evaluating the effects of UVGI on either samples of material or components, subsystems or complete systems of electrical equipment.

The severities are listed in order from lowest to highest expected UV-C radiation dose. A low severity environment represents materials exposed to UVGI treatments infrequently. Higher severity environments represent materials with more frequent exposures, including materials used within a UVGI system's components.

The majority of UVGI systems in use rely on low pressure mercury lamps, which emit most of their output at a single wavelength of 254 nm. This type of lamp is available in several power levels and in many physical configurations, but the spectral output is the same regardless of these factors. Other light sources are used in some UVGI systems, including excimer lamps with output at 222 nm and LEDs with output at 265 nm.

This document will be limited to applications using low pressure mercury lamps because the technology is very well known and commercial testing equipment using it is available.

ENVIRONMENTAL TESTING –

Part 2-87: Tests – UV-C exposure of materials and components to simulate ultraviolet germicidal irradiation or other applications

1 Scope

This part of IEC 60068 describes exposures of materials and components to UV-C radiation during ultraviolet germicidal irradiation (UVGI) treatments or other processes that require UV-C exposure and test procedures to simulate those environments. Severities representing various frequencies and intensities of UV-C exposures are described. Test conditions are described and limited to devices that utilize low pressure mercury lamps which emit most of their radiation at a single spectral line at 254 nm.

NOTE A more precise characterization of the wavelength of the spectral line is 253,7 nm. The ability for a laboratory to determine the wavelength to this resolution is rare. Therefore, this spectral line is often quantified to the resolution of 1 nm.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 4892-1, *Plastics – Methods of exposure to laboratory light sources – Part 1: General guidance*

ISO 9370:2017, *Plastics – Instrumental determination of radiant exposure in weathering tests – General guidance and basic test method*

ASTM G130, *Standard Test Method for Calibration of Narrow and Broad-Band Ultraviolet Radiometers Using a Spectroradiometer*