

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
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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

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

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EUROPEAN STANDARD

EN IEC 60068-2-87

NORME EUROPÉENNE

EUROPÄISCHE NORM

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)

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Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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

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:

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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

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

EN IEC 60068-2-87:2024 (E)**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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
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**

**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**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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 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.

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- 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*

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