ICS 13.280 SLOVENSKÁ TECHNICKÁ NORMA Júl 2026

STN	**Prístroje na ochranu pred žiarením Meranie osobných dávkových ekvivalentov pre röntgenové, gama, neutrónové a beta žiarenie Aktívne osobné dozimetre**	**STN EN IEC 61526** 35 6607

Radiation protection instrumentation - Measurement of personal dose equivalents for X, gamma, neutron and beta radiations - Active personal dosemeters

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. 06/26

Obsahuje: EN IEC 61526:2026, IEC 61526:2024

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EN IEC 61526

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English Version

Radiation protection instrumentation - Measurement of personal dose equivalents for X, gamma, neutron and beta radiations - Active personal dosemeters (IEC 61526:2024)

Instrumentation pour la radioprotection - Mesure des équivalents de dose individuels pour les rayonnements X, gamma, neutron et bêta - Dosimètres individuels actifs (IEC 61526:2024)

Strahlenschutz-Messgeräte - Messung der Personen-Äquivalentdosen für Röntgen-, Gamma-, Neutronen- und Betastrahlung - Direkt ablesbare Personendosimeter (IEC 61526:2024)

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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 61526:2026 E

European foreword

This document (EN IEC 61526:2026) consists of the text of IEC 61526:2024 prepared by IEC/SC 45B “Radiation protection instrumentation” of IEC/TC 45 "Nuclear instrumentation".

The following dates are fixed:

• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2027-04-30
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2029-04-30

This document supersedes EN 61526:2013 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

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Endorsement notice

The text of the International Standard IEC 61526:2024 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 60846-1	NOTE	Approved as EN 60846-1

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
IEC 60050-395	2014	International Electrotechnical Vocabulary - Part 395: Nuclear instrumentation: Physical phenomena, basic concepts, instruments, systems, equipment and detectors	-	-
+ A1	2016		-	-
+ A2	2020		-	-
IEC 60068-2-31	2008	Environmental testing - Part 2-31: Tests - Test Ec: Rough handling shocks, primarily for equipment-type specimens	EN 60068-2-31	2008
IEC 60086-1	2021	Primary batteries - Part 1: General	EN IEC 60086-1	2021
IEC 60086-2	2021	Primary batteries - Part 2: Physical and electrical specifications	EN IEC 60086-2	2021
IEC 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529	1991
-	-		+ AC	1993
+ A1	1999		+ A1	2000
+ A2	2013		+ A2	2013
IEC 60904-3	-	Photovoltaic devices - Part 3: Measurement principles for terrestrial photovoltaic (PV) solar devices with reference spectral irradiance data	EN IEC 60904-3	-
IEC 61000-4-2	-	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	EN IEC 61000-4-2	-
IEC 61000-4-3	-	Electromagnetic compatibility (EMC) - Part 4-3 : Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test	EN IEC 61000-4-3	-
IEC 61000-4-4	-	Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test	EN 61000-4-4	-

EN IEC 61526:2026 (E)

Publication	Year	Title	EN/HD	Year
IEC 61000-4-5	-	Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test	EN 61000-4-5	-
IEC 61000-4-6	-	Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields	EN IEC 61000-4-6	-
IEC 61000-4-8	-	Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test	EN 61000-4-8	-
IEC 61000-4-11	-	Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 16 A per phase	EN IEC 61000-4-11	-
IEC 61000-6-2	-	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments	EN IEC 61000-6-2	-
IEC 61187	1993	Electrical and electronic measuring equipment - Documentation	-	-
IEC 62387	2020	Radiation protection instrumentation - Dosimetry systems with integrating passive detectors for individual, workplace and environmental monitoring of photon and beta radiation	EN IEC 62387	2022
IEC/TR 62461	2015	Radiation protection instrumentation - Determination of uncertainty in measurement	CLC IEC/TR 62461	2019
ISO/IEC Guide 98-3	2008	Uncertainty of measurement - Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)	-	-
ISO/IEC Guide 98-3:2008/Suppl.1	2008	Propagation of distributions using a Monte Carlo method and Corr.1 (2009)	-	-
ISO 4037-1	2019	Radiological protection - X and gamma reference radiation for calibrating dosemeters and doserate meters and for determining their response as a function of photon energy - Part 1: Radiation characteristics and production methods	EN ISO 4037-1	2021
ISO 4037-2	2019	Radiological protection - X and gamma reference radiation for calibrating dosemeters and doserate meters and for determining their response as a function of photon energy - Part 2: Dosimetry for radiation protection over the energy ranges from 8 keV to 1,3 MeV and 4 MeV to 9 MeV	EN ISO 4037-2	2021

Publication	Year	Title	EN/HD	Year
ISO 4037-3	2019	Radiological protection - X and gamma reference radiation for calibrating dosemeters and doserate meters and for determining their response as a function of photon energy - Part 3: Calibration of area and personal dosemeters and the measurement of their response as a function of energy and angle of incidence	EN ISO 4037-3	2021
ISO 4037-4	2019	Radiological protection - X and gamma reference radiation for calibrating dosemeters and doserate meters and for determining their response as a function of photon energy - Part 4: Calibration of area and personal dosemeters in low energy X reference radiation fields	EN ISO 4037-4	2021
ISO 6980-1	2023	Nuclear energy - Reference beta-particle radiation - Part 1: Methods of production	EN ISO 6980-1	2025
ISO 6980-2	2023	Nuclear energy - Reference beta-particle radiation - Part 2: Calibration fundamentals related to basic quantities characterizing the radiation field	EN ISO 6980-2	2025
ISO 6980-3	2023	Nuclear energy - Reference beta-particle radiation – Part 3: Calibration of area and personal dosemeters and the determination of their response as a function of beta radiation energy and angle of incidence	EN ISO 6980-3	2025
ISO 8529-1	2021	Neutron reference radiations fields - Part 1: Characteristics and methods of production	EN ISO 8529-1	2023
ISO 8529-2	2000	Reference neutron radiations - Part 2: Calibration fundamentals of radiation protection devices related to the basic quantities characterizing the radiation field	-	-
ISO 8529-3	2023	Neutron reference radiation fields - Part 3: Calibration of area and personal dosemeters and determination of their response as a function of neutron energy and angle of incidence	EN ISO 8529-3	2024
ISO 12789-1	-	Reference radiation fields - Simulated workplace neutron fields - Part 1: Characteristics and methods of production	-	-
ISO 12789-2	-	Reference radiation fields - Simulated workplace neutron fields - Part 2: Calibration fundamentals related to the basic quantities	-	-
ISO 21909-1	2021	Passive neutron dosimetry systems - Part 1: Performance and test requirements for personal dosimetry	EN ISO 21909-1	2023
ISO 80000-10	2019	Quantities and units - Part 10: Atomic and nuclear physics	EN ISO 80000-10	2019

EN IEC 61526:2026 (E)

Publication	Year	Title	EN/HD	Year
ICRU Report 51	-	Quantities and units in radiation protection dosimetry	-	-
ANSI N42.17A	-	American national standard for performance specifications for health physics instrumentation - Portable instrumentation for use in normal environmental conditions	-	-

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Edition 4.0 2024-03

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Radiation protection instrumentation – Measurement of personal dose equivalents for X, gamma, neutron and beta radiations – Active personal dosemeters

Instrumentation pour la radioprotection – Mesure des équivalents de dose individuels pour les rayonnements X, gamma, neutron et bêta – Dosimètres individuels actifs

IEC 61526:2024-03(en-fr)

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

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RADIATION PROTECTION INSTRUMENTATION – MEASUREMENT OF PERSONAL DOSE EQUIVALENTS FOR X, GAMMA, NEUTRON AND BETA RADIATIONS – ACTIVE PERSONAL DOSEMETERS

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 61526 has been prepared by subcommittee 45B: Radiation protection instrumentation, of IEC technical committee 45: Nuclear instrumentation. It is an International Standard.

This fourth edition cancels and replaces the third edition published in 2010. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) Modification of the title;
b) Inclusion of the measurement quantity for the dose in the lens of the eye, $H_p(3)$;
c) Inclusion of measurement quantity for dose in the skin and extremities, $H_p(0{,}07)$;

d) Inclusion of dosemeters between active and passive: "hybrid dosemeters";

e) Inclusion of software requirements;

f) Harmonization of requirements for linearity to IEC 62387;

g) Revised neutron energy response requirements.

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

Draft	Report on voting
45B/1047/FDIS	45B/1049/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.

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.

IMPORTANT – The "colour inside" logo on the cover page of this document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This document applies to active, (direct reading or hybrid) personal dosemeters and monitors used for measuring personal dose equivalents $H_p(10)$, $H_p(3)$, and $H_p(0,07)$, for X, gamma, neutron, and beta radiations.

For personal dose equivalent $H_p(10)$ and for X and gamma radiation, two minimum rated ranges for the photon energy are given. The first from 20 keV to 150 keV is for workplaces where low energy X-rays are used, e.g., in diagnostic medicine, the second from 80 keV to 1,25 MeV is for workplaces where high energy X-rays and/or gamma sources are used, e.g., in industry. For neutron radiation the minimum rated range of neutron energy is from 0,025 eV (thermal neutrons) to 10 MeV. The rated ranges can be extended to all energies covered by the respective standards for reference radiation fields.

For personal dose equivalent $H_p(3)$ and for X and gamma radiation, a minimum rated range for photon energy from 30 keV to 250 keV is given. For personal dose equivalent $H_p(0,07)$ a range of 30 keV to 1250 keV or, for workplaces where low energy X-rays are used, 20 keV to 150 keV, is given. For beta radiation for both quantities, the minimal rated range is from 0,24 MeV to 0,8 MeV (mean beta particle energy). The rated ranges can be extended to all energies covered by the respective standards for reference radiation fields.

In some applications, for example, at a nuclear reactor installation where 6 MeV photon radiation is present, measurement of personal dose equivalent (rate) $H_p(10)$ for photon energies up to 10 MeV should be required. In some other applications, measurement of $H_p(10)$ down to 10 keV should be required.

For personal dosemeters, requirements for measuring the dose quantities $H_p(10)$, $H_p(3)$, and $H_p(0,07)$, and for monitoring of the respective dose rate quantities are given. The measurement of these dose rate quantities is an option for personal dosemeters.

Establishments in some countries may be permitted to use this type of personal dosemeter as the dosemeter to provide the dose of record by an approved dosimetry service.

RADIATION PROTECTION INSTRUMENTATION – MEASUREMENT OF PERSONAL DOSE EQUIVALENTS FOR X, GAMMA, NEUTRON AND BETA RADIATIONS – ACTIVE PERSONAL DOSEMETERS

1 Scope

This document applies to personal dosemeters with the following characteristics:

a) They are worn on the trunk, close to the eye, or on the extremities.

b) They measure the personal dose equivalents $H_p(10)$, $H_p(3)$, and $H_p(0,07)$, from external X and gamma, neutron (not for $H_p(3)$), and beta radiations, and may measure the respective personal dose equivalent rates for the same radiations (for alarming purposes).

c) They have a digital indication. This indication may or may not be attached.

d) They have alarm functions for the personal dose equivalents or personal dose equivalent rates except for hybrid dosemeters. For hybrid dosemeters an alarm function for the personal dose equivalents shall be implemented in the associated readout system.

NOTE 1 When reference is made in this document to "dose", this is meant to indicate personal dose equivalent, unless otherwise stated.

NOTE 2 When reference is made in this document to "dosemeter", this is meant to include all personal dosemeters, unless otherwise stated.

NOTE 3 This document does not cover neutron dosemeters for the $H_p(3)$ measurements up to now.

This document specifies requirements for the dosemeter and, if supplied, for its associated readout system.

Usually, a dosemeter is not able to measure all quantities given above. Thus, the dosemeter is only tested with regard to those quantities and types of radiation it is intended to be used for. Other types of radiation are considered as influence quantities which also may have requirements.

This document specifies, for the dosemeters described above, general characteristics, general test procedures, radiation characteristics as well as electrical, mechanical, safety and environmental characteristics. The only requirements specified for associated readout systems are those which affect its accuracy of readout of the personal dose equivalent and alarm settings, and those which concern the influence of the reader on the dosemeter.

This document does not cover special requirements for accident or emergency dosimetry, although the dosemeters may be used for this purpose.

This document does not apply to dosemeters used for measurement of pulsed radiation, such as radiation emanating from many medical diagnostic X-ray facilities, linear accelerators or similar equipment.

NOTE 4 Requirements and testing procedure for dosemeters used in pulsed field of ionizing radiation can be found in IEC TS 63050 or IEC TS 62743.

This document does not apply for dosemeters to measure ambient or directional dose equivalent.

NOTE 5 Requirements for ambient or directional dose equivalent meters can be found e.g. in: IEC 60846-1; IEC 62387, IEC 61017 or IEC 60532.

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.

IEC 60050-395:2014, *International Electrotechnical Vocabulary (IEV) – Part 395: Nuclear instrumentation – Physical phenomena, basic concepts, instruments, systems, equipment and detectors*
IEC 60050-395:2014/AMD1:2016
IEC 60050-395:2014/AMD2:2020

IEC 60068-2-31:2008, *Environmental testing – Part 2-31: Tests – Test Ec: Rough handling shocks, primarily for equipment-type specimens*

IEC 60086-1:2021, *Primary batteries – Part 1: General*

IEC 60086-2:2021, *Primary batteries – Part 2: Physical and electrical specifications*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*
IEC 60529:1989/AMD1:1999
IEC 60529:1989/AMD2:2013

IEC 60904-3, *Photovoltaic devices – Part 3: Measurement principles for terrestrial photovoltaic (PV) solar devices with reference spectral irradiance data*

IEC 61000-4-2, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*

IEC 61000-4-3, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*

IEC 61000-4-4, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*

IEC 61000-4-5, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*

IEC 61000-4-6, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*

IEC 61000-4-8, *Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test*

IEC 61000-4-11, *Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 16 A per phase*

IEC 61000-6-2, *Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments*

IEC 61187:1993, *Electrical and electronic measuring equipment – Documentation*

IEC 62387:2020, *Radiation protection instrumentation – Dosimetry systems with integrating passive detectors for individual, workplace and environmental monitoring of photon and beta radiation*

IEC TR 62461:2015, *Radiation protection instrumentation – Determination of uncertainty in measurement*

ISO/IEC Guide 98-3:2008, *Uncertainty of measurement – Part 3: Guide to the expression of uncertainty in measurement* (GUM:1995)

ISO/IEC Guide 98-3:2008/Suppl.1:2008, *Propagation of distributions using a Monte Carlo method and Corr.1 (2009)*

ISO 4037-1:2019, *Radiological protection – X and gamma reference radiation for calibrating dosemeters and doserate meters and for determining their response as a function of photon energy – Part 1: Radiation characteristics and production methods*

ISO 4037-2:2019, *Radiological protection – X and gamma reference radiation for calibrating dosemeters and doserate meters and for determining their response as a function of photon energy – Part 2: Dosimetry for radiation protection over the energy ranges from 8 keV to 1,3 MeV and 4 MeV to 9 MeV*

ISO 4037-3:2019, *Radiological protection – X and gamma reference radiation for calibrating dosemeters and doserate meters and for determining their response as a function of photon energy – Part 3: Calibration of area and personal dosemeters and the measurement of their response as a function of energy and angle of incidence*

ISO 4037-4:2019, *Radiological protection – X and gamma reference radiation for calibrating dosemeters and doserate meters and for determining their response as a function of photon energy – Part 4: Calibration of area and personal dosemeters in low energy X reference radiation fields*

ISO 6980-1:2023, *Nuclear energy – Reference beta-particle radiation – Part 1: Methods of production*

ISO 6980-2:2023, *Nuclear energy – Reference beta-particle radiation – Part 2: Calibration fundamentals related to basic quantities characterizing the radiation field*

ISO 6980-3:2023, *Nuclear energy – Reference beta-particle radiation –Part 3: Calibration of area and personal dosemeters and the determination of their response as a function of beta radiation energy and angle of incidence*

ISO 8529-1:2021, *Reference neutron radiations – Part 1: Characteristics and methods of production*

ISO 8529-2:2000, *Reference neutron radiations – Part 2: Calibration fundamentals of radiation protection devices related to the basic quantities characterizing the radiation field*

ISO 8529-3:2023, *Neutron reference radiation fields – Part 3: Calibration of area and personal dosemeters and determination of their response as a function of neutron energy and angle of incidence*

ISO 12789-1, *Reference radiation fields – Simulated workplace neutron fields – Part 1: Characteristics and methods of production*

ISO 12789-2, *Reference radiation fields – Simulated workplace neutron fields – Part 2: Calibration fundamentals related to the basic quantities*

ISO 21909-1:2021, *Passive neutron dosimetry systems – Part 1: Performance and test requirements for personal dosimetry*

ISO 80000-10:2019, *Quantities and units – Part 10: Atomic and nuclear physics*

ICRU Report 51:1993, *Quantities and units in radiation protection dosimetry*

ANSI N42.17A, *American National Standard For Performance Specifications For Health Physics Instrumentation – Portable Instrumentation For Use In Normal Environmental Conditions*