



SLOVENSKI STANDARD
SIST-TS CEN ISO/TS 18090-1:2019

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**Radiološka zaščita - Značilnosti referenčnega impulznega sevanja - 1. del:
Fotonsko sevanje (ISO/TS 18090-1:2015)**

Radiological protection - Characteristics of reference pulsed radiation - Part 1: Photon radiation (ISO/TS 18090-1:2015)

Strahlenschutz - Eigenschaften gepulster Referenzstrahlung - Teil 1: Photonenstrahlung (ISO/TS 18090-1:2015)

Radioprotection - Caractéristiques des champs de rayonnement pulsés de référence - Partie 1: Radiation de photons (ISO/TS 18090-1:2015)

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Ta slovenski standard je istoveten z: CEN ISO/TS 18090-1:2019

ICS:

13.280 Varstvo pred sevanjem Radiation protection

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CEN ISO/TS 18090-1

September 2019

ICS 13.280

English Version

**Radiological protection - Characteristics of reference
pulsed radiation - Part 1: Photon radiation (ISO/TS 18090-
1:2015)**

Radioprotection - Caractéristiques des champs de
rayonnement pulsés de référence - Partie 1: Radiation
de photons (ISO/TS 18090-1:2015)

Strahlenschutz - Eigenschaften gepulster
Referenzstrahlung - Teil 1: Photonenstrahlung (ISO/TS
18090-1:2015)

This Technical Specification (CEN/TS) was approved by CEN on 12 August 2019 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

The text of ISO/TS 18090-1:2015 has been prepared by Technical Committee ISO/TC 85 "Nuclear energy, nuclear technologies, and radiological protection" of the International Organization for Standardization (ISO) and has been taken over as CEN ISO/TS 18090-1:2019 by Technical Committee CEN/TC 430 "Nuclear energy, nuclear technologies, and radiological protection" the secretariat of which is held by AFNOR.

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

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO/TS 18090-1:2015 has been approved by CEN as CEN ISO/TS 18090-1:2019 without any modification.

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TECHNICAL
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ISO/TS
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**Radiological protection —
Characteristics of reference pulsed
radiation —**

**Part 1:
Photon radiation**

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*Radioprotection — Caractéristiques des champs de rayonnement
pulsés de référence —
Partie 1: Radiation de photons*

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 85, *Nuclear energy, nuclear technologies, and radiological protection*, Subcommittee SC 2, *Radiological protection*.

ISO/TS 18090 consists of the following parts, under the general title *Radiological protection — Characteristics of reference pulsed radiation*:

— *Part 1: Photon radiation*

Introduction

The specification and determination of the special characteristics required for radiation protection dosimeters to be used in pulsed fields of ionizing radiation have been excluded from all International Standards for personal and environmental dosimeters issued so far. Due to the increased use of pulsed radiation in medicine and industry, such International Standards are currently under development. A prerequisite for such International Standards is the availability of the required reference fields for pulsed radiation. This Technical Specification provides the necessary information for such reference fields.

The concept is based on the existing standards for radiation qualities defined in ISO and IEC standards. It only adds the parameters of the pulsed field and gives some guidance for their determination. Therefore, no new radiation qualities are defined, only the link between the parameters for pulsed radiation and the parameters for continuous radiation are given. The main required parameters for pulsed radiation fields are the following:

- radiation pulse duration, t_{pulse} ;
- radiation pulse air kerma rate, $\dot{K}_{\text{a,pulse}}$;
- air kerma per radiation pulse, $K_{\text{a,pulse}}$;
- for repeated pulses, their repetition frequency, f_{pulse} .

The pulse parameters were determined by using an equivalent trapezoidal radiation pulse, which is equivalent with respect to air kerma and air kerma rate. Reference pulsed radiation is characterized by specified maximum deviations of the given pulse from the equivalent trapezoidal radiation pulse and by requirements concerning the change of radiation quality during the given radiation pulse.

The pulse parameters with respect to the phantom related quantities were determined using conversion coefficients according to ISO 4037 (all parts).

This publication contains information for which worldwide experience is not available at the date of its development. Therefore, it was decided to publish it as a Technical Specification. It is expected that within the following years, experience will be gained and the maintenance of this Technical Specification could lead to an International Standard.