



SLOVENSKI STANDARD

SIST EN 60861:2008

01-julij-2008

Oprema za spremljanje radionuklidov v odplakah in površinskih vodah (IEC 60861:2006, spremenjen)

Equipment for monitoring of radionuclides in liquid effluents and surface waters

Einrichtungen zur Überwachung von Radionukliden in flüssigen Ableitungen und Oberflächengewässern

Equipements pour la surveillance (des radionucléides dans les effluents liquides et les eaux de surface

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Ta slovenski standard je istoveten z: EN 60861:2008

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Radiation protection

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**Equipment for monitoring of radionuclides
in liquid effluents and surface waters
(IEC 60861:2006, modified)**

Equipements pour la surveillance
des radionucléides dans les effluents
liquides et les eaux de surface
(CEI 60861:2006, modifiée)

Einrichtungen zur Überwachung von
Radionukliden in flüssigen Ableitungen
und Oberflächengewässern
(IEC 60861:2006, modifiziert)

This European Standard was approved by CENELEC on 2008-02-01. 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.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of the International Standard IEC 60861:2006, prepared by SC 45B, Radiation protection instrumentation, of IEC TC 45, Nuclear instrumentation, together with the common modifications prepared by the Technical Committee CENELEC TC 45B, Radiation protection instrumentation, was submitted to the formal vote and was approved by CENELEC as EN 60861 on 2008-02-01.

The following dates were fixed :

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2009-02-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2011-02-01

Clauses, subclauses, notes, tables and figures which are additional to those in IEC 60861 are prefixed “Z”.

Annex ZA has been added by CENELEC.

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Endorsement notice

The text of International Standard IEC 60861:2006 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

1 Scope

In the first sentence of the fourth paragraph **replace** “continuous monitoring” with “continuous monitoring (including discrete sequential measurement)”.

In the last sentence of the fourth paragraph **replace** “extraction and laboratory analysis” with “extraction followed by laboratory analysis”.

2 Normative references

Add the following:

ISO 11929 (Series) Determination of the detection limit and decision threshold for ionizing radiation measurements

3 Terms and definitions

3.1 water monitor

Replace the definition with “equipment intended for monitoring of radionuclides in liquid effluents and surface waters”.

3.3 continuous measurement

Delete the whole definition.

3.5 discrete sequential measurement

Add the following note:

NOTE Z Immediately after collection of the sample the activity of the sample will be measured, during the time the next sample is collected. The time between taking each sample should be as short as possible.

3.11 total equivalent window thickness (density thickness)

Replace “medium measured” with “surface of the medium of deposition to be measured”.

Add at the end of the NOTE “... and the sample container (if any).”

3.16 decision threshold

Replace the first sentence of NOTE 1 with “The decision threshold is the critical value of a statistical test designed in such a way that the probability of wrongly rejecting the null hypothesis (H_0 : the physical effect is not present) (error of the first kind) is equal to a given value α .”.

3.25 sensitivity

Replace the first sentence with “for a given value of the measured quantity, the ratio of the observed indication to the corresponding conventionally true value of the measured quantity”.

Add the following note:

NOTE Z This definition is specific to this standard.

5 Equipment design

5.1 Measurement and indication characteristics

5.1.1 Measurement characteristics

Add the following note below the current text:

NOTE Z The decision threshold is calculated according to ISO 11929 series.

5.3 Sampling assembly

5.3.1 Sampling and exhaust pipes

Add “radioactive contamination” between “minimize” and “particle traps”.

6 Test procedures

6.5 Test sources

6.5.1 Reference sources

In the second paragraph **delete** “²⁰⁴Tl, or ¹³⁷Cs”,
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7 Radiation performance tests

7.3 Linearity

7.3.2 Requirements

In the last sentence **replace** “reference curve” with “reference straight line”.

7.12 Influence of materials in suspension in liquid on activity measurement

7.12.2 Test method

In the second sentence of the first paragraph **replace** “conductivity of the used solution shall” with “conductivity of the used solution should”.

Annex ZA
(normative)

**Normative references to international publications
with their corresponding European publications**

The following referenced documents are indispensable for the application 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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60038 (mod)	1983	IEC standard voltages ¹⁾	HD 472 S1	1989
A1	1994		+ corr. February	2002
+ A2	1997		A1	1995
IEC 60050-393	2003	International Electrotechnical Vocabulary - Part 393: Nuclear instrumentation - Physical phenomena and basic concepts	-	-
IEC 60050-394	1995	International Electrotechnical Vocabulary - Chapter 394: Nuclear instrumentation - Instruments	-	-
+ A1	1996			
+ A2	2000			
IEC 60068-2-38	1974	Environmental testing - Part 2: Tests - Test Z/AD: Composite temperature/humidity cyclic test	EN 60068-2-38	1999
IEC 61000-4-2	1995	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	EN 61000-4-2	1995
A1	1998		A1	1998
A2	2000		A2	2001
IEC 61000-4-3	2006	Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test	EN 61000-4-3	2006
IEC 61000-4-4	2004	Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test	EN 61000-4-4	2004
IEC 61000-4-5	2005	Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test	EN 61000-4-5	2006

1) The title of HD 472 S1 is "Nominal voltages for low-voltage public electricity supply systems".

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61000-4-6 + A1	2003 2004	Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields	EN 61000-4-6 ²⁾ + corr. August	2007 2007
IEC 61000-4-11	2004	Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests	EN 61000-4-11	2004
IEC 61000-4-12 A1	1995 2000	Electromagnetic compatibility (EMC) - Part 4-12: Testing and measurement techniques - Oscillatory waves immunity test	EN 61000-4-12 ³⁾ A1	1995 2001
IEC 61000-6-4 (mod)	1997	Electromagnetic compatibility (EMC) - Part 6: Generic standards – Section 4: Emission standard for industrial environments	EN 61000-6-4 ⁴⁾	2001
IEC 61010-1	2001	Safety requirements for electrical equipment for measurement, control, and laboratory use Part 1: General requirements	EN 61010-1 + corr. June	2001 2002
IEC 61187 (mod)	1993	Electrical and electronic measuring equipment - Documentation	EN 61187 + corr. March	1994 1995
ISO/IEC Guide 98	1995	Guide to the expression of uncertainty in measurement (GUM)	-	-
ISO 10012	2003	Measurement management systems - Requirements for measurement processes and measuring equipment	EN ISO 10012	2003

2) EN 61000-4-6 includes A1:2004 + A2:2006 to IEC 61000-4-6.

3) EN 61000-4-12 is superseded by EN 61000-4-18:2007, which is based on IEC 61000-4-18:2006.

4) EN 61000-6-4 is superseded by EN 61000-6-4:2007, which is based on IEC 61000-6-4:2006.

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INTERNATIONAL
STANDARD

CEI
IEC

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Deuxième édition
Second edition
2006-08

**Equipements pour la surveillance
des radionucléides dans les effluents liquides
et les eaux de surface**

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International Electrotechnical Commission, 3, rue de Varembe, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

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For price, see current catalogue*

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**EQUIPMENT FOR MONITORING OF RADIONUCLIDES
IN LIQUID EFFLUENTS AND SURFACE WATERS**

FOREWORD

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International Standard IEC 60861 has been prepared by subcommittee 45B: Radiation protection instrumentation, of IEC technical committee 45: Nuclear instrumentation.

This second edition cancels and replaces the first edition published in 1987 and the first edition of IEC 61311 published in 1995.

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

- a) taking into account of the main technological evolutions, notably the feasibility of continuous monitoring of alpha radioactivity in liquids;
- b) tests of electromagnetic compatibility.

The text of this standard is based on the following documents:

FDIS	Report on voting
45B/499/FDIS	45B/518/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

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