



SLOVENSKI STANDARD SIST EN ISO 9697:2017

01-december-2017

Kakovost vode - Skupna beta aktivnost v neslanih vodah - Preskusna metoda robustnega vira (ISO 9697:2015)

Water quality - Gross beta activity in non-saline water - Test method using thick source (ISO 9697:2015)

Wasserbeschaffenheit - Bestimmung der Gesamt-Beta-Aktivität in nicht-salzhaltigem Wasser - Dickschichtverfahren (ISO 9697:2015)

Qualité de l'eau - Activité bêta globale des eaux non salines - Méthode d'essai par source concentrée (ISO 9697:2015)

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Ta slovenski standard je istoveten z: **EN ISO 9697:2017**

ICS:

13.060.60	Preiskava fizikalnih lastnosti vode	Examination of physical properties of water
17.240	Merjenje sevanja	Radiation measurements

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EUROPEAN STANDARD

EN ISO 9697

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2017

ICS 13.280; 13.060.60

English Version

Water quality - Gross beta activity in non-saline water - Test method using thick source (ISO 9697:2015)

Qualité de l'eau - Activité bêta globale des eaux non
salines - Méthode d'essai par source concentrée (ISO
9697:2015)

Wasserbeschaffenheit - Bestimmung der Gesamt-Beta-
Aktivität in nicht-salzhaltigem Wasser -
Dickschichtverfahren (ISO 9697:2015)

This European Standard was approved by CEN on 27 May 2016.

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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 CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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European foreword

The text of ISO 9697:2015 has been prepared by Technical Committee ISO/TC 147 “Water quality” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 9697:2017 by Technical Committee CEN/TC 230 “Water analysis” the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2017, and conflicting national standards shall be withdrawn at the latest by December 2017.

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

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INTERNATIONAL
STANDARD

ISO
9697

Third edition
2015-04-01

**Water quality — Gross beta activity
in non-saline water — Test method
using thick source**

*Qualité de l'eau — Activité bêta globale des eaux non salines —
Méthode d'essai par source concentrée*

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ISO 9697:2015(E)

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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 147, *Water quality*, Subcommittee SC 3, *Radioactivity measurements*.

This third edition cancels and replaces the second edition (ISO 9697:2008), which has been technically revised.

Introduction

Radioactivity from several naturally occurring and anthropogenic sources is present throughout the environment. Thus, water bodies (e.g. surface water, groundwater, seawater) can contain the following radionuclides of natural or human-made origins:

- natural radionuclides, including potassium-40 and those originating from the thorium and uranium decay series, particularly radium-226, radium-228, uranium-234, uranium-238, and lead-210, can be found in water for natural reasons (e.g. desorption from the soil and wash-off by rain water) or can be released from technological processes involving naturally occurring radioactive materials (e.g. the mining and processing of mineral sands or the production and use of phosphate fertilizer);
- human-made radionuclides, such as transuranium elements (americium, plutonium, neptunium, curium), tritium, carbon-14, strontium-90, and some gamma-emitting radionuclides, can also be found in natural waters as a result of authorized routine releases into the environment in small quantities of the effluent discharged from nuclear fuel cycle facilities. They are also released into the environment following their use in unsealed form for medical and industrial applications. They are also found in the water as a result of past fallout contamination resulting from the explosion in the atmosphere of nuclear devices and accidents such as those that occurred in Chernobyl and Fukushima.

Drinking water can thus contain radionuclides at activity concentrations which could present a risk to human health. In order to assess the quality of drinking water (including mineral waters and spring waters), with respect to its radionuclide content and to provide guidance on reducing health risks by taking measures to decrease radionuclide activity concentrations, water resources (groundwater, river, lake, sea, etc.) and drinking water are monitored for their radioactivity content as recommended by the World Health Organization (WHO) and can be required by some national authorities.

An International Standard on a test method for gross beta activity in water samples is justified for test laboratories carrying out these measurements, required sometimes by national authorities, as laboratories might have to obtain a specific accreditation for radionuclide measurement in drinking water samples.

The screening level for gross beta activity in drinking water, as recommended by WHO, is 1 Bq l⁻¹.^[1] If this value is not exceeded, an effective dose of 0,1 mSv year⁻¹ should not be exceeded. In case that gross beta screening level is exceeded, it is recommended that the specific radionuclides should be identified and their individual activity concentrations measured. Gross beta measurements based on the evaporation method include a contribution from potassium-40, a naturally occurring beta emitter in a fixed ratio to stable potassium. If the screening level of 1 Bq l⁻¹ for gross beta is exceeded, a separate determination of total potassium in water should be performed to subtract the contribution of potassium-40 to beta activity. The factor of 27,6 Bq g⁻¹ of beta activity to total potassium should be used to calculate the potassium-40 contribution.^[1]

NOTE The screening level is determined based on the activity concentration with an intake of 2 l day⁻¹ of drinking water for 1 year that results in an effective dose of less than 0,1 mSv year⁻¹ for members of the public, an effective dose that represents a very low level of risk that is not expected to give rise to any detectable adverse health effect.

This International Standard is one of a set of International Standards on test methods dealing with the measurement of gross activity of radionuclides in water samples. Other related standards include

- ISO 9696,
- ISO 10704, and
- ISO 11704.