



**SLOVENSKI STANDARD**  
**SIST EN ISO 13161:2016**

**01-februar-2016**

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**Kakovost vode - Merjenje koncentracije aktivnosti polonija Po-210 v vodi z alfa spektrometrijo (ISO 13161:2011)**

Water quality - Measurement of polonium 210 activity concentration in water by alpha spectrometry (ISO 13161:2011)

Wasserbeschaffenheit - Bestimmung der Aktivitätskonzentration von Polonium-210 in Wasser mittels Alphaspektrometrie (ISO 13161:2011)

Qualité de l'eau - Mesurage de l'activité du polonium 210 dans l'eau par spectrométrie alpha (ISO 13161:2011)

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**Ta slovenski standard je istoveten z: EN ISO 13161:2015**

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**ICS:**

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

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**en,fr,de**

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EUROPEAN STANDARD

EN ISO 13161

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2015

ICS 13.060.60; 17.240

English Version

## Water quality - Measurement of polonium 210 activity concentration in water by alpha spectrometry (ISO 13161:2011)

Qualité de l'eau - Mesurage de l'activité du polonium 210 dans l'eau par spectrométrie alpha (ISO 13161:2011)

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This European Standard was approved by CEN on 27 September 2015.

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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 COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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## European foreword

The text of ISO 13161:2011 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 13161:2015 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 April 2016, and conflicting national standards shall be withdrawn at the latest by April 2016.

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.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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INTERNATIONAL  
STANDARD

ISO  
13161

First edition  
2011-10-01

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**Water quality — Measurement of  
polonium 210 activity concentration in  
water by alpha spectrometry**

*Qualité de l'eau — Mesurage de l'activité du polonium 210 dans l'eau  
par spectrométrie alpha*

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## ISO 13161:2011(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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 13161 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 3, *Radiological methods*.

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## Introduction

There are different techniques to measure  $^{210}\text{Po}$  activity concentration in water: alpha spectrometry, liquid scintillation counting, alpha proportional counting.

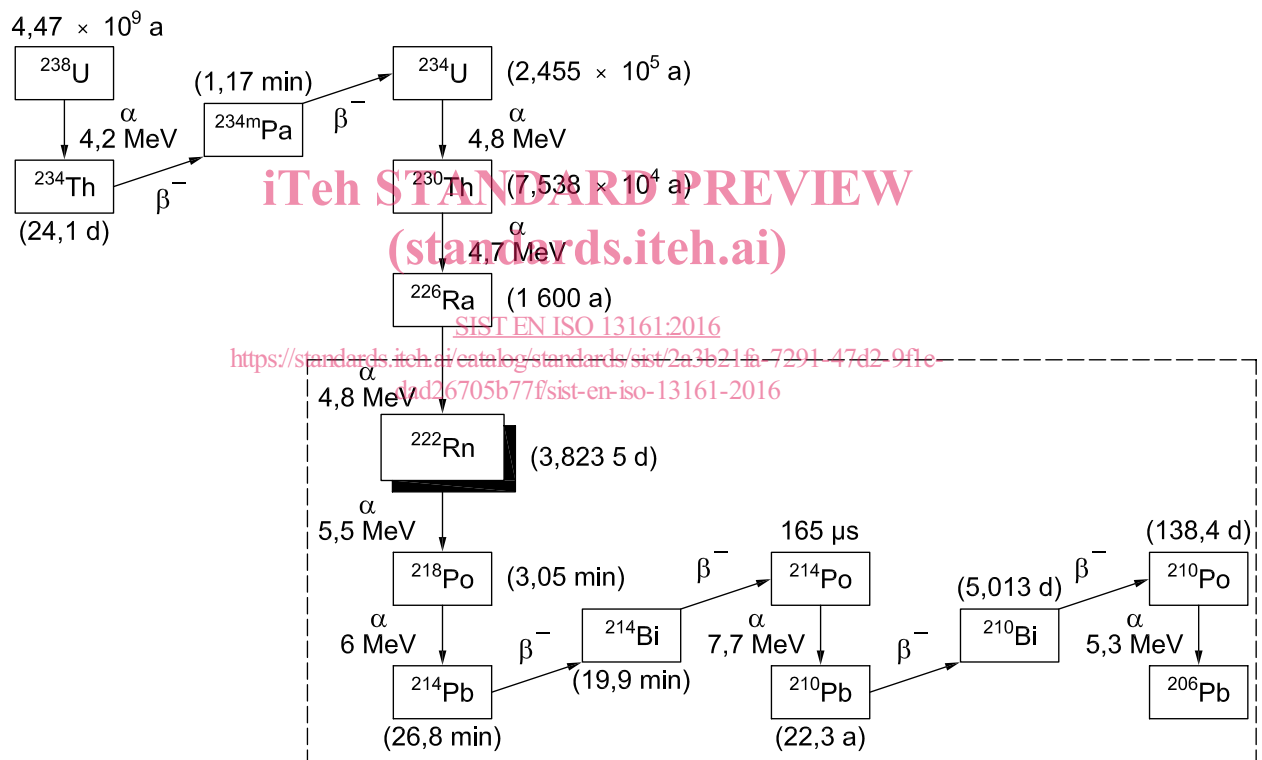
This International Standard describes a method for measuring  $^{210}\text{Po}$  activity concentration in natural waters by alpha spectrometry.

Polonium 210 ( $^{210}\text{Po}$ ) is a natural alpha-emitting radionuclide with a half-life of 138 d. It appears in the natural chain of uranium 238 ( $^{238}\text{U}$ ) (see Figure 1). It is a long-life decay product of radon 222 ( $^{222}\text{Rn}$ ) through lead 210 ( $^{210}\text{Pb}$ ) (see References [5] to [9]).

Precautions are required when manipulating radioactive materials such as polonium isotopes.

The activity concentration ranges of  $^{210}\text{Po}$ , in drinking waters for example, are generally very low, usually ranging from  $1 \text{ mBq l}^{-1}$  to  $30 \text{ mBq l}^{-1}$ .

This International Standard is applicable to all types of water, including sea water, and usually allows the measurement of  $^{210}\text{Po}$  activity concentrations greater or equal to  $5 \text{ mBq l}^{-1}$ .



NOTE  $^{206}\text{Pb}$  is stable.

Figure 1 — Uranium 238 and its decay products