

INTERNATIONAL STANDARD

**Radiation protection instrumentation - Radon and radon decay product
measuring instruments -
Part 6: Passive integrating radon measurement system using solid-state
nuclear track detectors**

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CONTENTS

INTRODUCTION.....	5
1 Scope.....	6
2 Normative references	6
3 Terms and definitions, quantities and units	6
3.1 Terms and definitions.....	6
3.2 Quantities and units	9
4 Principle of measurement	9
4.1 Solid-state nuclear track detector (SSNTD).....	9
4.2 Diffusion chamber	10
4.3 Visualization and analysis of particle tracks	10
4.4 Basic measures to assuring the quality of measurements	11
4.4.1 Storage and handling of the plastic for SSNTDs	11
4.4.2 Background detection	11
4.4.3 Calibration factor	11
4.4.4 Excluding of non-controlled exposures from passive radon devices	12
4.4.5 Influence of environmental conditions	12
4.4.6 Quality assurance and quality control	12
5 Technical components of the passive integrating measurement system	12
5.1 General.....	12
5.2 Passive radon device	13
5.3 Etching equipment	13
5.4 Image processing and track detection unit	13
5.5 Data analysis and reporting unit.....	14
5.6 Power supply	14
6 General test requirements	14
6.1 Test atmosphere	14
6.2 Standard test and reference conditions	14
6.3 Execution of tests	15
6.4 Periodic tests	15
7 Requirements and test methods for passive radon devices	15
7.1 Measurement accuracy	15
7.1.1 Requirements	15
7.1.2 Test method	15
7.2 Statistical fluctuation.....	16
7.2.1 Requirements	16
7.2.2 Test method	16
7.3 Linearity of response	16
7.3.1 Requirements	16
7.3.2 Test method	17
7.4 Cross-interference to thoron	17
7.4.1 Requirements	17
7.4.2 Test method	17
7.5 Ambient temperature	17
7.5.1 Requirements	17
7.5.2 Test method	17
7.6 Relative humidity	18

7.6.1	Requirements	18
7.6.2	Test method	18
8	Quality control requirements for SSNTD processing	19
8.1	General.....	19
8.2	Exposure of SSNTDs for quality control	19
8.3	Stability of etching temperature.....	20
8.3.1	Chemical etching	20
8.3.2	Electrochemical etching.....	20
8.4	Stability of image processing and track detection	20
9	Documentation	20
9.1	Operation and maintenance instructions	20
9.2	Technical records and test report.....	20
	Bibliography.....	22
	Figure 1 – Etched alpha particle tracks in various plastics observed under an optical microscope with identical magnification	11
	Table 1 – Reference conditions and standard test conditions	14
	Table 2 – Test protocols [9]	16

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

Draft	Report on voting
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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.

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INTRODUCTION

Radon is a radioactive gas produced by the decay of ^{226}Ra , ^{223}Ra and ^{224}Ra , respectively decay products of ^{238}U , ^{235}U and ^{232}Th , which are present in the earth's crust. By decay, radon isotopes (i.e. ^{222}Rn , ^{219}Rn , ^{220}Rn) produce three decay chains ending in a stable lead isotope.

In normal conditions, due to the very short half-life of ^{219}Rn , its activity and the activity of its Radon Decay Products (RnDP)¹ are considered negligible compared to the activity of the two other series. Its health effects are therefore not important. Thus, in this document ^{219}Rn and its decay products are not considered.

Radon isotopes and their corresponding short-lived RnDP (i.e. ^{218}Po , ^{214}Pb , ^{214}Bi , ^{214}Po for ^{222}Rn , and ^{216}Po , ^{212}Pb , ^{212}Bi , ^{212}Po , ^{208}Tl for ^{220}Rn) are of considerable importance, as they constitute the major part of the radiological exposure to natural radioactivity for the general public and workers. In some workplaces, for instance in underground mines, spas and waterworks, the workers can be exposed to very significant levels of RnDP. The conformity of the technical characteristics of radon measuring devices with specific requirements contributes to a harmonized quality level of the measurements and thus supports the confidence in the measurement results and the acceptance of the decisions made.

Remark:

In order to facilitate its use, the IEC 61577 series is divided into the following different parts:

IEC 61577-1: This emphasizes the terminology and units of the specific field of radon and radon decay products (RnDP) measurement techniques and presents briefly the concept of System for Test Atmospheres with Radon (STAR) used for test and calibration of radon and RnDP measuring devices.

IEC 61577-2 [1]²: This part is dedicated to the tests of ^{222}Rn and ^{220}Rn measuring instruments.

IEC 61577-3 [2]: This part is dedicated to the tests of RnDP₂₂₂ and RnDP₂₂₀ measuring instruments.

IEC 61577-4 [3]: This part details how a STAR is constructed and how it can be used for testing.

IEC TR 61577-5 [4]: This part provides basic data and technical information to support the design of measuring instruments for ^{222}Rn , ^{220}Rn and their decay products and practical application of the instruments for the measurement.

IEC 61577-6: This part is dedicated to the tests of passive integrating ^{222}Rn measurement systems.

¹ RnDP is the acronym of Radon Decay Products and it is equivalent to Radon Progeny.

² Numbers in square brackets refer to the Bibliography.