

First edition
2007-12-01

Measurement of radioactivity in the environment — Soil —

Part 3: Measurement of gamma-emitting radionuclides

*Mesurage de la radioactivité dans l'environnement — Sol —
Partie 3: Mesurages des radionucléides émetteurs gamma*



Reference number
ISO 18589-3:2007(E)

This is a preview of "ISO 18589-3:2007". [Click here to purchase the full version from the ANSI store.](#)

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.



COPYRIGHT PROTECTED DOCUMENT

© ISO 2007

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

This is a preview of "ISO 18589-3:2007". Click here to purchase the full version from the ANSI store.

Contents

Page

Foreword.....	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms, definitions and symbols	2
4 Principle	3
5 Gamma-spectrometry equipment	3
6 Sample container	4
7 Procedure	4
7.1 Packaging of samples for measuring purposes.....	4
7.2 Laboratory background level	5
7.3 Calibration	5
7.4 Measurements of and corrections for natural radionuclides.....	6
8 Expression of results	6
8.1 Calculation of the activity per unit of mass	6
8.2 Standard uncertainty	8
8.3 Decision threshold.....	9
8.4 Detection limit	9
8.5 Confidence limits	10
8.6 Corrections for contributions from other radionuclides and background	10
9 Test report	12
Annex A (informative) Calculation of the activity per unit mass from a gamma spectrum using a linear background subtraction	13
Annex B (informative) Analysis of natural radionuclides in soil samples using gamma spectrometry	15
Bibliography	21

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 18589-3 was prepared by Technical Committee ISO/TC 85, *Nuclear energy*, Subcommittee SC 2, *Radiation protection*.

ISO 18589 consists of the following parts, under the general title *Measurement of radioactivity in the environment — Soil*:

- *Part 1: General guidelines and definitions*
- *Part 2: Guidance for the selection of the sampling strategy, sampling and pre-treatment of samples*
- *Part 3: Measurement of gamma-emitting radionuclides*
- *Part 4: Measurement of plutonium isotopes (plutonium 238 and plutonium 239 + 240) by alpha spectrometry*
- *Part 5: Measurement of strontium 90*
- *Part 6: Measurement of gross alpha and gross beta activities*

This is a preview of "ISO 18589-3:2007". [Click here to purchase the full version from the ANSI store.](#)

Introduction

This International Standard is published in several parts to be used jointly or separately according to needs. Parts 1 to 6, concerning the measurements of radioactivity in the soil, have been prepared simultaneously. These parts are complementary and are addressed to those responsible for determining the radioactivity present in soils. The first two parts are general in nature. Parts 3 to 5 deal with radionuclide-specific measurements and Part 6 with non-specific measurements of gross alpha or gross beta activities.

Additional parts may be added to ISO 18589 in the future if the standardization of the measurement of other radionuclides becomes necessary.