

This is a preview of "ISO 21238:2007". [Click here to purchase the full version from the ANSI store.](#)

First edition  
2007-04-15

---

---

## **Nuclear energy — Nuclear fuel technology — Scaling factor method to determine the radioactivity of low- and intermediate-level radioactive waste packages generated at nuclear power plants**

*Énergie nucléaire — Technologie du combustible nucléaire — Méthode  
des ratios pour déterminer la radioactivité des colis de déchets de faible  
et moyenne activité produits par les centrales nucléaires*



Reference number  
ISO 21238:2007(E)

© ISO 2007

This is a preview of "ISO 21238:2007". [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](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

This is a preview of "ISO 21238:2007". [Click here to purchase the full version from the ANSI store.](#)

## Contents

Page

<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Terms and definitions</b> .....	<b>1</b>
<b>3 Principle</b> .....	<b>3</b>
<b>4 Sampling</b> .....	<b>3</b>
<b>5 Evaluation methodology for scaling factor</b> .....	<b>4</b>
<b>Annex A (informative) Practices and examples of application of scaling-factor method</b> .....	<b>8</b>
<b>Bibliography</b> .....	<b>23</b>

This is a preview of "ISO 21238:2007". [Click here to purchase the full version from the ANSI store.](#)

## 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 21238 was prepared by Technical Committee ISO/TC 85, *Nuclear energy*, Subcommittee SC 5, *Nuclear fuel technology*.

This is a preview of "ISO 21238:2007". [Click here to purchase the full version from the ANSI store.](#)

## Introduction

Burial disposal of low- and intermediate-level radioactive waste has been practiced in several countries. Before disposal, the radioactivity of specific nuclides in waste packages have to be declared in accordance with limits and criteria derived from safety assessment of the disposal facility. Some of these nuclides are difficult to measure from the outside of the waste packages, because they are beta or alpha emitting nuclides.

There are a number of activity determination methods. The scaling-factor method is widely applied in order to evaluate these difficult-to-measure nuclides. The scaling-factor method is based on a correlation between easily measurable gamma emitting nuclides and difficult-to-measure nuclides. This International Standard presents guidelines on the empirical scaling-factor method for evaluating the radioactivity of nuclear power plant's low and intermediate level waste.