



**International
Standard**

ISO 11932

**Activity measurements of solid
materials considered for recycling,
re-use or disposal as non-
radioactive waste**

*Mesures d'activité de matériaux solides considérés comme
déchets non radioactifs destinés à un recyclage, une réutilisation
ou une mise au rebut*

**Second edition
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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 document 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).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 85, *Nuclear energy, nuclear technologies, and radiological protection*, Subcommittee SC 5, *Nuclear installations, processes and technologies*.

This second edition cancels and replaces the first edition (ISO 11932:1996), which has been technically revised.

The main changes compared to the previous edition are as follows:

- this document provides overall update of normative references, terms and definitions following the newest international guidance and standards;
- this document provides the generic clearance levels for solid materials using surface contamination and activity concentration, guidance for the radiochemical analysis of difficult-to-measure radionuclides in solid materials, decomposition methods for solid materials samples, and detailed technical requirements of surface contamination measurements.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

During the operation and decommissioning of nuclear facilities, there are significant parts of solid materials that will be considered for recycling, re-use, or disposal as non-radioactive waste. Such solid materials to be cleared from regulatory control are required to satisfy the criteria of clearance specified in IAEA Safety Standards Series No. GSR Part 3^[1]. Recommendations on the application of clearance to solid materials are provided in IAEA General Safety Guide No. GSG-18^[2]. It is recommended in GSG-18^[2] that activity concentration and surface contamination clearance levels are applied for clearance of solid materials.

This document is needed to specify activity measurement of solid materials to show compliance with clearance limits as given in international standards or national standards.

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Activity measurements of solid materials considered for recycling, re-use or disposal as non-radioactive waste

1 Scope

This document specifies the basic guidance and methods for activity measurements of solid materials to be cleared for recycling, re-use or disposal as non-radioactive waste arising from the operation and decommissioning of nuclear facilities, in order to show compliance with required limits for generic clearance or specific clearance. It does not apply to ordinary radioactive waste characterization.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 4037 (all parts), *Radiological protection — X and gamma reference radiation for calibrating dosimeters and dose rate meters and for determining their response as a function of photon energy*

ISO 8769, *Measurement of radioactivity — Alpha-, beta- and photon emitting radionuclides — Reference measurement standard specifications for the calibration of surface contamination monitors*

ISO 12749-1, *Nuclear energy — Vocabulary — Part 1: General terminology*

ISO 12749-2, *Nuclear energy, nuclear technologies, and radiological protection — Vocabulary — Part 2: Radiological protection*

IEC 60846-1, *Radiation protection instrumentation — Ambient and/or directional dose equivalent (rate) meters and/or monitors for beta, X and gamma radiation — Part 1: Portable workplace and environmental meters and monitors*

IEC 61017, *Radiation protection instrumentation — Transportable, mobile or installed equipment to measure photon radiation for environmental monitoring*

IEC 60325, *Radiation protection instrumentation — Alpha, beta and alpha/beta (beta energy >60 keV) contamination meters and monitors*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12749-1, ISO 12749-2 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>