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Radiation protection — Sealed radioactive sources — Leakage test methods

*Radioprotection — Sources radioactives scellées — Méthodes d'essai
d'étanchéité*



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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.

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.

International Standard ISO 9978 was prepared by Technical Committee ISO/TC 85, *Nuclear energy*, Sub-Committee SC 2, *Radiation protection*.

Annex A forms an integral part of this International Standard. Annex B is for information only.

Introduction

The use of sealed radioactive sources has become so widespread that standards to guide the user, manufacturer and regulatory agency are necessary. When establishing these standards, radiation protection is the prime consideration.

Leakage test methods for sealed radioactive sources were published in ISO/TR 4826¹⁾ and the experience acquired since this date has permitted the elaboration of this International Standard.

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1) ISO/TR 4826:1979, *Sealed radioactive sources — Leak test methods*

Radiation protection — Sealed radioactive sources — Leakage test methods

1 Scope

This International Standard specifies the different leakage test methods for sealed radioactive sources. It gives a comprehensive set of procedures using radioactive and non-radioactive means.

This International Standard applies to the following controls:

- quality control allowing validation of required tests for determining the classification of a prototype sealed radioactive source according to ISO 2919,
- production control of sealed radioactive sources;
- periodic inspections of the sealed radioactive sources performed at regular intervals, during the working life.

Annex A of this International Standard gives recommendations to guide the user in his choice of the most suitable method(s) according to control and source type.

It is recognized that there may be special circumstances where special tests, not described in this International Standard, may be required.

It is emphasized, however, that insofar as production, use, storage and transport of sealed radioactive sources are concerned, compliance with this International Standard is no substitute for complying with the requirements of the relevant IAEA regulations and other relevant national regulations.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encour-

aged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 2919:1980, *Sealed radioactive sources — Classification*.

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 sealed radioactive source: Radioactive material permanently sealed in one or several capsules and/or associated with a material to which it is closely bonded. This (these) capsule(s) and/or material shall be strong enough to maintain leak tightness of the sealed source under the conditions of use and wear for which it was designed.

NOTE 1 In the text of this International Standard, the term "sealed source" is used instead of "sealed radioactive source" for brevity.

3.2 leaktight: Term applied to sealed sources which, after undergoing leakage testing, meet the limiting values given in table 1.

3.3 capsule: Protective envelope, usually made of metal, used to prevent leakage of radioactive material.

3.4 dummy sealed source: Facsimile of a sealed source, the capsule of which has the same construction and is made with exactly the same materials as those of the sealed source that it represents but containing, in place of the radioactive material, a substance resembling it as closely as possible in physical and chemical properties.

3.5 simulated sealed source: Facsimile of a sealed source, the capsule of which has the same construction and is made with exactly the same materials as those of the sealed source that it