BS ISO 7503-2:2016

BSI Standards Publication

# Measurement of radioactivity - Measurement and evaluation of surface contamination

## Part 2: Test method using wipe-test samples

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## National foreword

This British Standard is the UK implementation of ISO 7503-2:2016.

The UK participation in its preparation was entrusted to Technical Committee NCE/2, Radiation protection and measurement.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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# INTERNATIONAL STANDARD

# ISO 7503-2

Second edition
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# Measurement of radioactivity - Measurement and evaluation of surface contamination —

## Part 2: Test method using wipe-test samples

*Mesurage de la radioactivité — Mesurage et évaluation de la contamination de surface —*

*Partie 2: Méthode d'essai utilisant des échantillons d'essai de frottis*

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# Contents

Page

**Foreword** ... **iv**
**Introduction** ... **v**
**1 Scope** ... **1**
**2 Normative references** ... **1**
**3 Terms and definitions, symbols and abbreviations** ... **2**
3.1 Terms and definitions ... 2
3.2 Symbols and abbreviated terms ... 3
**4 Sources of surface contamination** ... **3**
**5 Objectives of the surface contamination evaluation** ... **4**
**6 Strategy** ... **4**
**7 Methods for evaluating surface contamination** ... **4**
**8 Wipe test material** ... **5**
**9 Instrumentation** ... **5**
9.1 General ... 5
9.2 Liquid scintillation counters ... 6
**10 Calibration** ... **6**
10.1 Calibration of installed instruments ... 6
10.2 Calibration of portable instruments ... 6
**11 Guidelines on wipe test sampling** ... **6**
11.1 General ... 6
11.2 Guidelines on sampling removable tritium contamination ... 7
**12 Measurement procedure** ... **7**
**13 Evaluation of measurement data** ... **8**
13.1 Calculation of the activity per unit area for measurement results of installed instruments 8
13.2 Calculation of the activity per unit area for measurement results of portable instruments 9
13.3 Application of ISO 11929 ... 9
**14 Wipe test uncertainties** ... **9**
**15 Test report** ... **9**
**Bibliography** ... **11**

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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 documents 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).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is Technical Committee ISO/TC 85, *Nuclear energy, nuclear technologies, and radiological protection*, Subcommittee SC 2, *Radiological protection*.

This second edition cancels and replaces the first edition (ISO 7503-2:1988), which has been technically revised.

ISO 7503 consists of the following parts, under the general title *Measurement of radioactivity — Measurement and evaluation of surface contamination*:

— *Part 1: General principles*

— *Part 2: Test method using wipe-test samples*

— *Part 3: Apparatus calibration*


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# Introduction

ISO 7503 gives guidance on the measurement of surface contamination. This International Standard is applicable to many situations where radioactive contamination can occur. Contamination arises from the release of radioactivity into the local environment. In most circumstances, the release is inadvertent but, on occasion, may be deliberate. Although the purpose and scope of the investigation may differ, the approaches taken to measure the levels and extent of the contamination are essentially similar.

Radioactive contamination can arise from a number of activities or events such as the following:

— routine laboratory use of radiochemicals;

— medical treatments;

— industrial applications;

— transport accidents;

— equipment malfunctions;

— malevolent incidents;

— nuclear accidents.

Without process knowledge or documentation, it is not always possible to identify or distinguish the different radionuclides constituting a surface contamination, and the evaluation of such contamination cannot be made on a quantitative basis. Instead of using instruments with nuclide specific calibrations, it may be necessary to use other instruments which are fit for such a purpose.

However, there may be cases (e.g. a contaminated fuel material transport container) where the radionuclide or the radionuclide mixture can be clearly characterized. A surface contamination evaluation exceeding a pure qualitative assessment of fixed and removable surface contamination may then be needed. Moreover, following requirements laid down in national regulations and in international conventions, a measured surface contamination activity per unit area has to be compared with surface contamination guideline values or surface contamination limits.

Surface contamination guideline values are radionuclide-specific and thus require complex radionuclide-specific calibrations of measurement equipment. Calibration quality assurance is crucial in order to avoid non-detection (i.e. type II decision errors) leading to incorrectly assuming compliance with given surface contamination guideline values or limits. Evaluation of surfaces contaminated by a mixture of radionuclides with known ratios requires respectively proportionated calibration factors.

ISO 7503 is concerned with the measurement and estimation of radioactivity levels. It does not provide advice on decommissioning, planning and surveillance techniques.

Surface contamination is specified in terms of activity per unit area and the limits are based on the recommendations by the International Commission on Radiological Protection (ICRP 103).

This part of ISO 7503 deals with the evaluation of surface contamination by indirect measurement using a wipe test.

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