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Measurement of radioactivity — Gamma ray and beta emitting radionuclides — Test method to assess the ease of decontamination of surface materials

*Mesurage de la radioactivité — Radionucléides émetteurs gamma et
bêta — Méthode d'essai pour évaluer l'aptitude à la décontamination
des matériaux de surface*



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Foreword

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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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For an explanation on 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 the following URL: 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 2, *Radiological protection*.

This second edition cancels and replaces the first edition (ISO 8690:1988), which has been technically revised. The main changes compared to the previous edition are as follows:

- title was changed and adapted to measurement of radioactivity (or gamma ray and beta emitting radionuclides);
- opening to further applications;
- adding of symbols of the used measurands;
- improvement in readability;
- adaption to current standards;
- insert preparation of contaminant solution using neutron activation;
- adding a new annex with calculations using neutron activation.

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.

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Introduction

Wherever radioactivity is used, there is a risk that surfaces can become contaminated through contact with radioactivity in solution or airborne radioactivity. It is normally necessary to remove this surface contamination to reduce the risk to staff from accidental ingestion of the radioactivity on the surface. The ease of decontaminating surface materials is therefore an important parameter to consider when selecting materials to use, e.g. for facilities in the nuclear industry, in radionuclide laboratories or nuclear medicine facilities.

This document defines a quantitative method under objective conditions for testing the ease of decontamination of surface materials. The method enables the comparison of different surface materials to support decisions on materials to use for different applications.

For the test, radioactive solutions are deposited onto a sample of the material being studied. The solutions contain radionuclides commonly found in the nuclear industry (^{60}Co , ^{137}Cs or ^{134}Cs) and are in aqueous form. The surface is then cleaned and the residual activity on the surface is measured to give a quantitative measure of the ease of decontamination.

The results of the tests on different materials therefore help the user select the best surface material for the application being considered.