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Decontamination of radioactively contaminated surfaces — Method for testing and assessing the ease of decontamination

*Décontamination des surfaces contaminées par radioactivité — Méthode d'essai et de
détermination de l'aptitude à la décontamination*

Reference number
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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 approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8690 was prepared by Technical Committee ISO/TC 85, *Nuclear energy*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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0 Introduction

This International Standard aims to define objective conditions for testing the ease of decontamination of surfaces. The test method is designed to obtain data allowing the comparison of the ease of decontamination of different surface materials. The method can be used for comparative tests with any radionuclide in aqueous solution. An assessment of the results of a series of comparative tests can be made on the basis of the mean residual pulse rates. In order to allow the general qualifications of a surface material as a single product, this International Standard specifies a test and assessment method on the basis of contamination by solutions containing ^{60}Co and ^{137}Cs . These two radionuclides have been selected because they are the most important sources of contamination in the nuclear industry. The assessment of the result of a single test is made using an assessment table of final residual pulse rates based on round robin experiments.

Direct comparison of the results of this decontamination method with those obtained with other specifications or national standards is unlikely to be useful or relevant because of the different nature of the methods used.

Annexes A, B, C and D form part of this International Standard.

1 Scope and field of application

The specifications laid down in this International Standard apply to the testing of surfaces which may become contaminated by radioactive materials.

Decontaminability data obtained using this test method are not applicable to technical systems where layers of contaminating materials are formed as a result of long-term application of higher temperatures and pressures (for example primary circuits of nuclear reactors).

The purpose of the test is to assess the ease of decontamination of surfaces under laboratory conditions. In practical applications, it may be important to consider other qualities, such as chemical, mechanical and radiation resistance and long-term stability in the selection of the materials to be used. It should be recognized that further decontamination tests under simulated service conditions may be needed.

2 References

ISO 15, *Rolling bearings — Radial bearings — Boundary dimensions — General plan.*

ISO 273, *Fasteners — Clearance holes for bolts and screws.*

ISO 683-13, *Heat-treated steels, alloy steels and free-cutting steels — Part 13 : Wrought stainless steels.*

ISO 2009, *Slotted countersunk head screws (common head style) — Product grade A.*

ISO 2010, *Slotted raised countersunk head screws (common head style) — Product grade A.*

ISO 4762, *Hexagon socket head cap screws — Product grade A.*

3 Definitions

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

3.1 contamination : The unwanted presence of radionuclides on or at a shallow depth below surfaces.

3.2 decontamination : The total or partial removal of contamination, preferably without changing the characteristics of the surface.

3.3 specific pulse rate : The pulse rate caused in the measuring apparatus under given geometrical conditions by 1 ml of a contaminant solution.

It is expressed in pulses per minute per millilitre. Pulse rates are derived from count rates applying dead time and background corrections.

3.4 residual pulse rate : The pulse rate caused in the measuring apparatus under given geometrical conditions by the residual radionuclide on the tested side of the specimen after decontamination.

It is expressed in pulses per minute.