STANDARD 9271

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Decontamination of radioactively contaminated surfaces — Testing of decontamination agents for textiles

Décontamination des surfaces contaminées par la radioactivité — Essai des agents de décontamination pour les textiles

Reference number
ISO 9271:1992(E)

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 9271 was prepared by Technical Committee ISO/TC 85, *Nuclear energy*, Sub-Committee SC 2, *Radiation protection*.

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

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Introduction

The purpose of this International Standard is to define objective conditions for testing the effectiveness of decontamination agents for textiles. The test method is designed to obtain data which permits the comparison of the effectiveness of different decontamination agents.

Comparative tests can be carried out with all possible combinations of textile materials and radionuclides in homogeneous solutions. Inorganic or organic solutions can be used and they shall be based on a solvent which evaporates at room temperature. An assessment of the results of a series of comparative tests is made on the basis of the mean residual pulse rates.

In order to permit the general qualification of a decontamination agent as a single product, this International Standard specifies a test and assessment method on the basis of ^{60}Co and ^{137}Cs applied to internationally standardized cotton fabric. These two radionuclides were selected because they are the most important sources of contamination in the nuclear industry. The cotton fabric selected is the only reference material available in this field. The assessment of the result of a single test is made using an assessment table of final residual pulse rates based on inter-laboratory experiments.

Information obtained from the test method will enable the optimization of the choice of decontamination agents for textiles. This should result in lower demands for materials and water in laundry systems, with consequent savings in the cost of radioactive waste processing operations such as filtration, evaporation, solidification and disposal.

Decontamination of radioactively contaminated surfaces — Testing of decontamination agents for textiles

1 Scope

This International Standard specifies a test method to determine the effectiveness of decontamination agents in removing radionuclides from a textile.

It applies to the testing of detergents, which may be used in aqueous solutions for the purpose of cleaning radioactively contaminated textiles. It does not apply to the testing of the ability of detergents to remove non-radioactive dirt; this is considered to be satisfactory.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 15:1981, *Rolling bearings — Radial bearings — Boundary dimensions — General plan.*

ISO 273:1979, *Fasteners — Clearance holes for bolts and screws.*

ISO 1302:1978, *Technical drawings — Method of indicating surface texture on drawings.*

ISO 2009:1983, *Slotted countersunk head screws (common head style) — Product grade A.*

ISO 2010:1983, *Slotted raised countersunk head screws (common head style) — Product grade A.*

ISO 2174:1990, *Surface active agents — Preparation of water with known calcium hardness.*

ISO 2267:1986, *Surface active agents — Evaluation of certain effects of laundering — Methods of preparation and use of unsoiled cotton control cloth.*

ISO 3819:1985, *Laboratory glassware — Beakers.*

ISO 4762:1989, *Hexagon socket head cap screws — Product grade A.*

ISO 6330:1984, *Textiles — Domestic washing and drying procedures for textile testing.*

3 Definitions

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

3.1 contamination: Pollution of textiles with radioactive materials.

3.2 contaminated textile specimen: Pieces of textile reference materials which are contaminated in a specified manner and which are used to determine the efficiency of decontamination agents.

3.3 decontamination: Total or partial removal of radioactive contamination.

3.4 specific pulse rate: Pulse rate created in the measuring apparatus by 1 ml of a contaminant solution under given geometrical conditions. It is derived from the measurement of 50 µl of contaminant solution evaporated on a textile carrier and is expressed in pulses per minute.

3.5 residual pulse rate: Pulse rate caused in the measuring apparatus under given geometrical conditions by the residual radionuclide on the contamination carrier after decontamination. It is expressed in pulses per minute.

3.6 mean residual pulse rate: Arithmetic mean of the residual pulse rate values obtained for the five