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BUREAU OF INDIAN STANDARDS

DRAFT FOR COMMENTS ONLY
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Draft Indian Standard

Measurement of Radioactivity — Alpha-, Beta- and Photon Emitting Radionuclides — Reference Measurement Standard Specifications for the Calibration of Surface Contamination Monitors

(*Second Revision of IS 16693*)

(ICS 17.240)

Nuclear Energy for Peaceful Applications Sectional Committee, CHD 30	**Last Date for Comments**: **7th November 2025**

Nuclear Energy for Peaceful Applications Sectional Committee, CHD 30

NATIONAL FOREWORD

(Formal clauses will be added later)

This document specifies the specifications for reference measurement standards used to calibrate surface contamination monitors that detect alpha-, beta-, and photon-emitting radionuclides. It ensures accuracy and consistency in measuring radioactive surface contamination. This document relates to alpha-emitters, beta-emitters, and photon emitters of maximum photon energy not greater than 1.5 MeV.

This standard was first published in 2018 by adopting ISO 8769:2010 under a dual numbering system. It was first revised in 2021 to align with the latest version of ISO 8769:2016.

During the subsequent review of IS 16693, the committee observed that ISO 8769 :2016 had been further updated to ISO 8769:2020 and considered it suitable for adoption. Accordingly, this revision has been brought out in order to align the standard with the latest version of ISO 8769:2020.

The following changes in the revision are as follows:

a) In order to maintain consistency with terms described in the International Vocabulary of Metrology or ISO/IEC 17025, “reference measurement standard”, “working measurement standard” and “transfer measurement device” were adopted respectively instead of a “reference source”, “working source” and “reference transfer instrument”.
b) 5.1 b): “a surface layer of thickness equal to the saturation layer thickness” was modified to “a surface layer of thickness equal to or less than the saturation layer thickness”.
c) 5.2.3 and 5.3.3: The statement of “minus its relative standard uncertainty” was removed.
d) 5.4.3: Requirement for the re-measurement of uniformity was added as follows; “In case that significant change not due to half-life is found on the re-calibration of surface emission rate, re measurement of uniformity is required.”

The text of ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions and terminologies are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words `International Standard' appear referring to this standard, they should be read as `Indian Standard'.

b) Comma (,) has been used as a decimal marker in the International Standard, while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards, which are to be substituted in their respective places, are listed below along with their degree of equivalence for the editions indicated:

International Standards/documents	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 12749-2 Nuclear energy, nuclear technologies, and radiological protection — Vocabulary — Part 2: Radiological protection	IS 16902 (Part 2):2023/ISO 12749-2 : 2022 Nuclear energy, nuclear technologies and radiological protection - Vocabulary : Part 2 radiological protection (*first revision*)	Identical
IEC 60050-395 International Electrotechnical Vocabulary — Part 395: Nuclear instrumentation: Physical phenomena, basic concepts, instruments, systems, equipment and detectors	IS 1885 (Part 14):2023/IEC 60050-395: 2014 Electrotechnical Vocabulary Part 14 Nuclear Power Plants	Identical

In this adopted standard, reference appears to certain International Standards/documents where the standard atmospheric conditions to be observed are stipulated which are not applicable to tropical/subtropical countries. The applicable standard atmospheric conditions for Indian conditions are (27 ± 2) ℃ and (65 ± 5) percent relative humidity and shall be observed while using this standard.

In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 2022 'Rules for rounding off numerical values *(second revision*)'.

FOR COMPLETE TEXT OF THE DOCUMENT, KINDLY REFER ISO 8769:2020

Note: The technical content of the document has not been enclosed as these are identical with the corresponding ISO Standard. For obtaining the copy of the complete ISO Standard, please contact:

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