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BUREAU OF INDIAN STANDARDS

Draft Indian Standard

Measurement of Radioactivity — Determination of Beta Emitters Activities — Test Method Using Liquid Scintillation Counting

भारतीय मानक मसौदा

रेडियोधर्मिता का मापन - बीटा उत्सर्जकों की गतिविधियों का निर्धारण - द्रव प्रस्फुरण गणना का उपयोग करने वाली परीक्षण विधि

(ICS 17.240)

Nuclear Energy for Peaceful Applications Sectional Committee, CHD 30	**Last Date for Comments**: **31st October 2025**

Nuclear Energy for Peaceful Applications Sectional Committee, CHD 30

NATIONAL FOREWORD

(Formal clause will be added later)

In the context of increasing use of radiation and radioactive substances across multiple sectors, there is rising concern about health risks and public perception. These concerns underscore the importance of continuously monitoring radiation exposures, evaluating trends, and assessing their relative impacts on both the public and workers.

To ensure that radioactivity monitoring data are reliable, comparable, and fit for their intended purposes, it is essential to agree upon standardized methods for sampling, handling, preparation, and measurement. Such standards help maintain measurement consistency over time and enable laboratories to demonstrate technical competence, particularly in proficiency tests and accreditation processes.

This document outlines a method for determining the activity concentration of beta-emitting radionuclides using liquid scintillation counting (LSC). The technique involves preparing a scintillation source by combining the test sample with a scintillation cocktail, enabling the detection of beta radiation through light emissions. Test samples may be in various forms, including liquids (aqueous or organic) or solids (such as particles, filters, or planchets).

It also addresses the need to isolate the radionuclide of interest through separation or extraction if other alpha, beta, or gamma emitters are present, to prevent measurement interference.

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 5667-1 Water quality — Sampling — Part 1: Guidance on the design of sampling programmes and sampling techniques	IS 17614 (Part 1):2025/ISO 5667-1:2023 Water Quality Sampling Part 1 Guidance on the Design of Sampling Programmes and Sampling Techniques (*first revision*)	Identical
ISO 5667-3 Water quality — Sampling — Part 3: Preservation and handling of water samples	IS 17614 (Part 3):2024/ISO 5667-3: 2024 Water Quality Sampling Part 3 Preservation and Handling of Water Samples (*first revision*)	Identical

The technical committee has also reviewed the provisions of the following International Standards/ documents referred in this adopted standard and has decided that they are acceptable for use in conjunction with this Standard:

International Standards/ documents	*Title*
ISO 18589-2	Measurement of radioactivity in the environment — Soil — Part 2 Guidance for the selection of the sampling strategy, sampling and pre-treatment of samples
ISO 80000-10	Quantities and units — Part 10 Atomic and nuclear physics
ISO/IEC Guide 98-3	Uncertainty of measurement — Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)
ISO/IEC Guide 99,	International vocabulary of metrology — Basic and general concepts and associated terms (VIM)

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 19361: 2025

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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