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BUREAU OF INDIAN STANDARDS

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Draft Indian Standard

Nuclear Fuel Technology — Controlled-Potential Coulometric Measurement of Plutonium

(*First Revision of IS 17329*)

(ICS 27.120.30)

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)

The standard specifies an electrochemical (coulometric) method for measuring plutonium in pure nuclear-grade plutonium nitrate solutions, using a controlled potential technique.

This standard was first published in 2021 by adopting ISO 12183:2016 under a dual numbering system. During the review of IS 17329, the committee observed that ISO 12183 :2016 had been updated to ISO 12183:2024 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 12183:2024.

The following changes in the revision are as follows:

a) Figures 1 and 2 have been revised to resolve errors introduced in the third edition of this document;
b) Quantity values and uncertainties values have been reformatted to comply with requirements for properly stating these values with SI units;
c) Editorial changes were made throughout the document to ensure clarity of the instructions;
d) Words with optional spellings were corrected to match ISO/IEC guidance;
e) An additional key step was added to Clause 4 to indicated that the moles of plutonium obtained by controlled-potential coulometry is multiplied by the molar mass of plutonium obtained by other means, such as mass spectrometry or process knowledge;
f) A formula has been added to 8.4 to calculate the amount of substance of plutonium in millimoles in addition to the mass of plutonium in milligrams;
g) Clause 12 has been added to discuss traceability to SI units.

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/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 12183:2024

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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