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BUREAU OF INDIAN STANDARDS

Draft Indian Standard

Nuclear Fuel Technology — Determination of Uranium in Solutions, Uranium Hexafluoride and Solids

Part 2: Iron(II) Reduction/Cerium(IV) Oxidation Titrimetric Method

[*First Revision of IS 17328 (Part 2*)]

(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)

This document provides a titrimetric method for accurately and reliably determining uranium in samples from pure product materials such as U metal, UO_2, UO_3, U_3O_8, uranyl nitrate hexahydrate and uranium hexafluoride from the nuclear fuel cycle.

This standard was first published in 2021 by adopting ISO 7097-2:2004 under a dual numbering system. During the review of IS 17328 (Part 2), the committee noted that ISO 7097-2:2004 had been revised as ISO 7097-2:2022 and considered it suitable for adoption. Accordingly, this revision has been taken to align the standard with the latest version, ISO 7097-2:2022.

The following changes in the revision are as follows:

a) The scope was updated (*see* Clause 1);
b) Information on interferences was updated (*see* 5.2);
c) Requirements for standardisation of ceric titrant were updated (*see* 6.16);
d) Annex A was divided into two annexes (Annex A and Annex B).

This Indian Standard is published in four parts. The other parts in this series are:

Part 1 Determination of uranium in solutions, uranium hexafluoride and solids — Iron (II) reduction/potassium dichromate oxidation titrimetric method

Part 3 Determination of uranium in uranyl nitrate solutions of nuclear grade quality — Gravimetric method

Part 4 Determination of the isotopic and elemental uranium and plutonium concentrations of nuclear materials in nitric acid solutions by thermal-ionization mass spectrometry

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 5725-1 Accuracy (trueness and precision) of measurement methods and results — Part 1: General principles and definitions	IS 15393 (Part 1):2003/ISO 5725-1:1994 Accuracy (Trueness And Precision) of measurement methods and results: Part 1 general principles and definitions	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 3696	Water for analytical laboratory use — Specification and test methods
ISO 9894	Subsampling of uranium hexafluoride in the liquid phase

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 7097-2:2022

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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