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Nuclear fuel technology - Controlled-potential coulometric assay of plutonium (ISO 12183:2016)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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Technologie du combustible nucléaire - Dosage du plutonium par coulométrie à potentiel imposé (ISO 12183:2016)

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European foreword

The text of ISO 12183:2016 has been prepared by Technical Committee ISO/TC 85 "Nuclear energy, nuclear technologies, and radiological protection" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 12183:2019 by Technical Committee CEN/TC 430 "Nuclear energy, nuclear technologies, and radiological protection" the secretariat of which is held by AFNOR.

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**INTERNATIONAL
STANDARD**

**ISO
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Third edition
2016-08-15

**Nuclear fuel technology — Controlled-
potential coulometric assay of
plutonium**

*Technologie du combustible nucléaire — Dosage du plutonium par
coulométrie à potentiel imposé*



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ISO 12183:2016(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.

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The committee responsible for this document is Technical Committee ISO/TC 85, *Nuclear energy, nuclear technologies, and radiological protection*, Subcommittee SC 5, *Nuclear fuel cycle*.

This third edition cancels and replaces the second edition (ISO 12183:2005), which has been technically revised.

Nuclear fuel technology — Controlled-potential coulometric assay of plutonium

1 Scope

This document describes an analytical method for the electrochemical assay of pure plutonium nitrate solutions of nuclear grade, with a total uncertainty not exceeding $\pm 0,2\%$ at the confidence level of 0,95 for a single determination (coverage factor, $K = 2$). The method is suitable for aqueous solutions containing more than 0,5 g/L plutonium and test samples containing between 4 mg and 15 mg of plutonium. Application of this technique to solutions containing less than 0,5 g/L and test samples containing less than 4 mg of plutonium requires experimental demonstration by the user that applicable data quality objectives will be met.

For some applications, purification of test samples by anion exchange is required before measurement to remove interfering substances when present in significant amounts. Refer to [Clause 10](#) for a discussion of interferences and corrective actions. Purification is also appropriate in situations where the purity of the test sample is unknown or when it may fluctuate unpredictably in a manufacturing process.

[Clause 11](#) discusses the changes in application of the method and methodology that can be applied and important considerations when selecting measurement parameters, while still remaining within the intended scope of this document.

2 Normative references

There are no normative references in this document.

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