



NSAI
Standards

Irish Standard
I.S. EN ISO 18256-1:2021

Nuclear fuel technology - Dissolution of plutonium dioxide-containing materials - Part 1: Dissolution of plutonium dioxide powders (ISO 18256-1:2019)

I.S. EN ISO 18256-1:2021

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National Foreword

I.S. EN ISO 18256-1:2021 is the adopted Irish version of the European Document EN ISO 18256-1:2021, Nuclear fuel technology - Dissolution of plutonium dioxide-containing materials - Part 1: Dissolution of plutonium dioxide powders (ISO 18256-1:2019)

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 18256-1

February 2021

ICS 27.120.30

English Version

**Nuclear fuel technology - Dissolution of plutonium
dioxide-containing materials - Part 1: Dissolution of
plutonium dioxide powders (ISO 18256-1:2019)**

Technologie du combustible nucléaire - Dissolution des
matériaux contenant du dioxyde de plutonium - Partie
1: Dissolution des poudres de dioxyde de plutonium
(ISO 18256-1:2019)

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EN ISO 18256-1:2021 (E)

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European foreword

The text of ISO 18256-1:2019 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 18256-1:2021 by Technical Committee CEN/TC 430 "Nuclear energy, nuclear technologies, and radiological protection" the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2021, and conflicting national standards shall be withdrawn at the latest by August 2021.

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Endorsement notice

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INTERNATIONAL STANDARD

**ISO
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Nuclear fuel technology — Dissolution of plutonium dioxide-containing materials —

Part 1: Dissolution of plutonium dioxide powders

*Technologie du combustible nucléaire — Dissolution des matériaux
contenant du dioxyde de plutonium —*

Partie 1: Dissolution des poudres de dioxyde de plutonium



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ISO 18256-1:2019(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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This document was prepared by Technical Committee ISO/TC 85, *Nuclear energy, nuclear technologies, and radiological protection*, Subcommittee SC 5, *Nuclear installations, processes and technologies*.

A list of all the parts in the ISO 18256 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document describes a method to dissolve powder samples of plutonium oxide to provide suitable aliquots for subsequent analysis of elemental concentration and isotopic composition.

Nuclear fuel technology — Dissolution of plutonium dioxide-containing materials —

Part 1: Dissolution of plutonium dioxide powders

1 Scope

This document specifies the dissolution of powder samples of plutonium oxide for subsequent determination of elemental concentration and isotopic composition.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Summary of the method

Among the factors affecting the formation of solid solution and hence, the ease of dissolution are:

- the method of fuel fabrication (i.e. mechanically blended oxides, co-precipitated oxides, or sol-gel oxides);
- the degree of sintering.

Therefore, different dissolution methods are applied according to the type of plutonium oxide sample to be dissolved. For high-fired plutonium oxide procedure can be different.

The radiological hazard of plutonium and the need to minimize the waste shall be taken into account when choosing the mass of the sample to be dissolved. In most cases, PuO₂ masses between 0,1 g and 1 g are appropriate for the subsequent analysis.

For the highest possible assay accuracy only gravimetric dissolution methods are recommended. However for a less critical assay, volumetric dissolution may be appropriate.

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