SLOVENSKI STANDARD
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Tehnologija jedrskih goriv - Raztapljanje materialov, ki vsebujejo plutonijev dioksid - 2. del: Raztapljanje peletov in praškov MOX (ISO 18256-2:2019)

Nuclear fuel technology - Dissolution of plutonium dioxide-containing materials - Part 2: Dissolution of MOX pellets and powders (ISO 18256-2:2019)

Technologie du combustible nucléaire - Dissolution des matériaux contenant du dioxyde de plutonium - Partie 2: Dissolution de pastilles et poudres de MOX (ou mélanges d'oxydes) (ISO 18256-2:2019)

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

Part 2: Dissolution of MOX pellets and powders

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

Partie 2: Dissolution de pastilles et poudres de MOX (ou mélanges d'oxydes)

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Foreword

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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 samples consisting of MOX pellets or powders to provide suitable aliquots for subsequent analysis of elemental concentration and isotopic composition.

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

Part 2: Dissolution of MOX pellets and powders

1 Scope

This document specifies the dissolution of samples consisting of MOX pellets or powders to provide suitable aliquots for subsequent analysis 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, microwave denitrated oxides or sol-gel oxides);

— the degree of sintering.

Therefore, different dissolution methods are applied depending on the type of MOX sample to be dissolved.

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. A MOX mass of 0,1 g to 10 g should be sufficient for most of the analyses. Some analysis may however require more material.

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