BS ISO 6863:2024

BSI Standards Publication

Nuclear fuel technology — Preparation of spikes for isotope dilution mass spectrometry (IDMS)

Documents
Document Sharing Hub

Full document details: BS ISO 6863:2024

National foreword

This British Standard is the UK implementation of ISO 6863:2024.

The UK participation in its preparation was entrusted to Technical Committee NCE/9, Nuclear Installations, Processes & Technologies.

A list of organizations represented on this committee can be obtained on request to its committee manager.

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

© The British Standards Institution 2024
Published by BSI Standards Limited 2024

ISBN 978 0 539 21780 3

ICS 27.120.30

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 November 2024.

Amendments/corrigenda issued since publication

Date	Text affected

Documents
Document Sharing Hub

Full document details: BS ISO 6863:2024

International Standard

ISO 6863

First edition
2024-11

Nuclear fuel technology — Preparation of spikes for isotope dilution mass spectrometry (IDMS)

Technologie du combustible nucléaire — Préparation de traceurs pour les analyses par spectrométrie de masse avec dilution isotopique (IDMS)

Reference number
ISO 6863:2024(en)

© ISO 2024

Documents
Document Sharing Hub

Full document details: BS ISO 6863:2024

COPYRIGHT PROTECTED DOCUMENT

© ISO 2024

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Documents
Document Sharing Hub

Full document details: BS ISO 6863:2024

Contents

Page

Foreword ... **iv**

1 Scope ... **1**

2 Normative references ... **1**

3 Terms and definitions ... **1**

4 Principle ... **2**

5 Design of spikes ... **2**
5.1 Optimization of spikes ... 2
5.2 Uncertainty of spikes ... 3

6 Reference materials and reagents ... **3**
6.1 Reference materials ... 3
6.1.1 Uranium reference materials ... 3
6.1.2 Plutonium reference materials ... 3
6.1.3 Secondary standard materials ... 4
6.2 Other chemical reagents ... 4

7 Apparatus ... **4**

8 Preparation of spikes ... **5**
8.1 Large-sized dried (LSD) spikes ... 5
8.1.1 Preparation of uranium stock solution ... 5
8.1.2 Preparation of plutonium stock solution ... 6
8.1.3 Preparation of mixed stock solution ... 7
8.1.4 Taking mixed solution aliquots ... 8
8.1.5 Drying ... 9
8.1.6 Stabilization of LSD spike ... 9
8.2 Uranium spikes ... 9
8.2.1 Uranium liquid spikes ... 9
8.2.2 Uranium dried spikes ... 10
8.3 Plutonium spikes ... 10
8.3.1 Plutonium liquid spikes ... 10
8.3.2 Plutonium dried spikes ... 10
8.4 Uranium – plutonium mixed spikes ... 10

9 Validation of spikes ... **11**
9.1 General ... 11
9.2 LSD spikes ... 11
9.3 Uranium spikes ... 11
9.4 Plutonium spikes ... 12
9.5 Uranium-plutonium mixed spikes ... 12

10 Storage of spikes ... **12**
10.1 Storing solution spikes ... 12
10.2 Storing dried spikes ... 12
10.3 Reconditioning of dried spikes ... 12

Bibliography ... **13**

© ISO 2024 – All rights reserved

Documents
Document Sharing Hub

Full document details: BS ISO 6863:2024

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

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*.

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.

© ISO 2024 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS ISO 6863:2024