

STN	Jadrová energia Stanovenie fluencie neutrónov a presunutia na atóm (dpa) v nádobe reaktora a vo vnútroreaktorových častiach (ISO 19226: 2017)	STN EN ISO 19226 40 1017
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Nuclear energy - Determination of neutron fluence and displacement per atom (dpa) in reactor vessel and internals (ISO 19226:2017)

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

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Nuclear energy - Determination of neutron fluence and displacement per atom (dpa) in reactor vessel and internals (ISO 19226:2017)

Énergie nucléaire - Détermination de la fluence neutronique et des déplacements par atome (dpa) dans la cuve et les internes du réacteur (ISO 19226:2017)

Kernenergie - Bestimmung der Neutronenfluenz und Verschiebungen pro Atom (dpa) im Reaktorbehälter und Einbauten (ISO 19226:2017)

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EN ISO 19226:2020 (E)

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European foreword

The text of ISO 19226:2017 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 19226:2020 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

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Nuclear energy — Determination of neutron fluence and displacement per atom (dpa) in reactor vessel and internals

Énergie nucléaire — Détermination de la fluence neutronique et du déplacement par atome (dpa) dans la cuve et les internes du réacteur



Reference number
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ISO 19226:2017(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.

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 documents 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).

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This document was prepared by Technical committee ISO/TC 85, *Nuclear energy, nuclear technologies, and radiological protection*, Subcommittee SC 6, *Reactor Technology*.

This document is based on the ANSI/ANS 19.10-2009 but extends to cover the evaluation of irradiation damage due to neutron fluence.

Introduction

This document is intended for use by

- a) those involved in the determination of exposure parameters for the prediction of irradiation damage to the vessel and to the internals of a nuclear reactor, where the exposure parameters can be neutron fluence and/or displacements per atom (dpa),
- b) those involved in the determination of material properties of irradiated reactor vessel and reactor internals,
- c) regulatory agencies in licensing actions such as the writing of Regulatory Guides, analysis of reports concerning the integrity and material properties of irradiated pressure vessels and reactor internals.

Nuclear energy — Determination of neutron fluence and displacement per atom (dpa) in reactor vessel and internals

1 Scope

This document provides a procedure for the evaluation of irradiation data in the region between the reactor core and the inside surface of the containment vessel, through the pressure vessel and the reactor cavity, between the ends of active fuel assemblies, given the neutron source in the core.

NOTE These irradiation data could be neutron fluence or displacements per atom (dpa), and Helium production.

The evaluation employs both neutron flux computations and measurement data from in-vessel and cavity dosimetry, as appropriate. This document applies to pressurized water reactors (PWRs), boiling water reactors (BWRs), and pressurized heavy water reactors (PHWRs).

This document also provides a procedure for evaluating neutron damage properties at the reactor pressure vessel and internal components of PWRs, BWRs, and PHWRs. Damage properties are focused on atomic displacement damage caused by direct displacements of atoms due to collisions with neutrons and indirect damage caused by gas production, both of which are strongly dependent on the neutron energy spectrum. Therefore, for a given neutron fluence and neutron energy spectrum, calculations of the total accumulated number of atomic displacements are important data to be used for reactor life management.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ANSI/ANS 19.10, *Methods for determining neutron fluence in BWR and PWR pressure vessel and reactor internals*

ASTM E170-16a, *Standard Terminology Relating to Radiation Measurements and Dosimetry*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN