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CONTENTS

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NUCLEAR INSTRUMENTATION – PORTABLE X-RAY FLUORESCENCE ANALYSIS EQUIPMENT UTILIZING A MINIATURE X-RAY TUBE

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International Standard IEC 62495 has been prepared by committee 45: Nuclear instrumentation.

The text of this standard is based on the following documents:

FDIS	Report on voting
45/717/FDIS	45/731/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

NUCLEAR INSTRUMENTATION – PORTABLE X-RAY FLUORESCENCE ANALYSIS EQUIPMENT UTILIZING A MINIATURE X-RAY TUBE

1 Scope and object

This International Standard is applicable to the radiological safety of portable handheld X-ray fluorescence (XRF) analysis equipment utilizing a miniature X-ray tube as the source of ionizing radiation for industrial applications.

The following are beyond the scope of this standard:

a) portable XRF analysis equipment utilizing a radioactive source(s);

b) large fixed installation XRF analysis equipment utilizing an X-ray tube;

c) veterinary and medical applications for portable XRF analysis.

The object of this standard is to establish performance specifications for general radiation, electrical, safety and environmental characteristics of the design and operation, and test methods in relation to radiological safety for portable XRF analysis equipment utilizing a miniature X-ray tube. The proposed performance specifications are aimed at minimizing and avoiding the health risk associated with the use of these devices. Analytical performance specifications are beyond the scope of this standard.

Portable XRF analyzers utilizing low power, miniature X-ray tubes as sources of ionizing radiation represent a new class of industrial equipment. The miniature X-ray tube replaces the small radioisotope sources (e.g., Fe-55, Co-57, Cd-109, Am-241 and Cm-244) that have been used in portable analyzers for applications such as analysis of lead in paint, alloy identification, and soil screening for hazardous materials.

2 Normative references

The following referenced documents are indispensable for the application 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.

IEC 60692:1999, *Nuclear Instrumentation – Density gauges utilizing ionizing radiation – Definitions and test methods*

IEC 60982:1989, *Level measuring systems utilizing ionizing radiation with continuous or switching output*

IEC 61010-1:2010, *Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements*

IEC 61326 (all parts): *Electrical equipment for measurement, control and laboratory use – EMC requirements*

IEC 61336:1996, *Nuclear Instrumentation – Thickness measurement systems utilizing ionizing radiation – Definitions and test methods*