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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/Z 41285.1-2022

**Non-destructive testing instruments - Radiation protection
rules for the technical application of sealed radioactive sources
- Part 1: Stationary and mobile handling for gamma radiography**

无损检测仪器 密封放射性源技术应用射线防护规则 第1部分：γ射线机的固定和
移动操作

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part

1. Structure and Drafting Rules of Standardization Documents" drafted. This document is the first part of GB /Z 41285 "Rules for Radiation Protection of Non-destructive Testing Instruments Sealed Radioactive Source Technology Application". GB /Z 41285 has published the following parts.

1. Fixed and mobile operation of gamma-ray machines.

3. Radiation protection measures for gamma ray machines during operation and transportation.

4. Manufacture and testing of removable equipment for gamma ray machines.

5. Precautions for gamma ray machines.

6. Inspection, maintenance and functional testing of removable equipment for gamma ray machines. Please note that some content of this document may be patented. The issuing agency of this document assumes no responsibility for identifying patents. This document is proposed by China Machinery Industry Federation. This document is under the jurisdiction of the National Standardization Technical Committee of Testing Machines (SAC/TC122). This document is drafted by: Liaoning Instrument Research Institute Co., Ltd., Shenzhen Guoji Instrument Co., Ltd., General Electric Detection and Control Technology (Shanghai) Co., Ltd., Edson (Xiamen) Electronics Co., Ltd., Shanghai Yinghua Testing Technology Co., Ltd., Zhongshan Vocational and Technical College. The main drafters of this document. Yu Zhijun, Guo Bing, Kong Fanqin, Lin Junming, Li Bo, Fuyang, Wang Lin.

Gamma rays are electromagnetic waves with a shorter wavelength and higher energy than X-rays, and have extremely strong penetrating power. Gamma ray flaw detection is the use of gamma The penetration and linearity of rays are used to detect flaws. Because of this, when the human body is irradiated by gamma-rays, the gamma-rays enter the human body. The ionization effect occurs with the cells in the body, and the ions generated by the

ionization will erode the organic molecules in the body, such as proteins, enzymes, etc. Once the main components of living cell tissues are destroyed, the normal chemical processes in the human body will be disturbed, and in severe cases, cells may die. Death. The purpose of this document is to provide structural protection, operating conditions and environment, protective measures, etc. information, and then put forward suggestions on industrial gamma ray protection, labor safety, labor hygiene and other issues, and provide suggestions on ray protection methods, personal safety, etc. play a normative role. GB /Z 41285 is intended to be composed of 5 parts.

1.Fixed and mobile operation of gamma-ray machines. The purpose is to clarify the basic protection of gamma-ray machine during fixed and mobile operation. protection rules and requirements.

3.Radiation protection measures for gamma ray machines during operation and transportation. The purpose is for the use and operation of the gamma ray machine Provide effective and reliable radiation protection measures during transportation.

4.Manufacture and testing of removable equipment for gamma ray machines. The purpose is to provide a seal for gamma ray machine manufacturing and inspection Guidelines for the use of radioactive materials, and the safety measures established to protect the safety of those involved.

5.Precautions for gamma ray machines. The purpose is to provide recommendations for preventive measures for gamma ray machine operation.

6.Inspection, maintenance and functional testing of removable equipment for gamma ray machines. The purpose is to improve the mobile gamma ray machine Suggestions are made on inspection cycle, annual maintenance, and functional inspection of equipment to ensure that equipment can operate safely. Nondestructive testing instruments Radiation protection rules for the technical application of sealed radioactive sources Part

1 Scope

GB/Z 41285.1-2022 is the Chinese national standard on non-destructive testing instruments - radiation protection rules for the technical application of sealed radioactive sources - part 1:stationary and mobile handling for gamma radiography, in the field of testing. The /Z suffix marks it as a guiding technical document: it does not prescribe requirements that can be certified against, but sets out the technique, the method or the state of the art that the standards bodies recommend following. It was issued on 9 March 2022 by the State Administration for Market Regulation; Standardization Administration of China. As a guiding technical document it carries no separate date of entry into force: it applies from publication. Classification: ICS 19.100, CCS N78. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The

clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the general safety technical requirements and supervision of gamma-ray machines in stationary and mobile operation, the working methods of transmission inspection and Replacement of radioactive source and radioactive source holder in radiographic examination, etc. This document applies to the operation of instruments and facilities using sealed radioactive sources, including the replacement of radioactive sources or radioactive source holders.

2 Normative references

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, dated citations documents, only the version corresponding to that date applies to this document; for undated references, the latest edition (including all amendments) applies to this document.

GB 18871 Basic standard for ionizing radiation protection and radiation source safety GB /Z 41285.6-2022 Radiation protection rules for the technical application of sealed radioactive sources for nondestructive testing instruments - Part

6.Gamma rays Inspection, maintenance and functional testing of mechanical movable devices GBZ 132-2008 Industrial gamma ray flaw detection radiation protection standard

3 Terms and Definitions

There are no terms and definitions that need to be defined in this document.

4 General safety technical requirements and supervision

4.1 Body Dose Limits Radiation protection measures should ensure that radiation exposure is as small as possible. Table 1 gives the effective dose limit, the actual effective dose limit is not These values should be exceeded.