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Protective devices against diagnostic medical X-radiation — Part 1: Determination of attenuation properties of materials

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Foreword

This Japanese Industrial Standard has been revised by the Minister of Health, Labour and Welfare and the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by Japan Medical Imaging and Radiological Systems Industries Association (JIRA)/Japanese Standards Association (JSA) with a draft being attached, based on the provision of Article 12, paragraph (1) of the Industrial Standardization Act applied mutatis mutandis pursuant to the provision of Article 16 of the said Act. This edition replaces the previous edition (**JIS T 61331-1** : 2016), which has been technically revised.

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JIS T 61331 series consists of the following 3 parts under the general title *Protective devices against diagnostic medical X-radiation* —

Part 1: Determination of attenuation properties of materials

Part 2: Translucent protective plates

Part 3: Protective clothing, eyewear and protective patient shields

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Protective devices against diagnostic medical X-radiation — Part 1: Determination of attenuation properties of materials

Introduction

This Japanese Industrial Standard has been prepared based on **IEC 61331-1** : 2014, Edition 2, with some modifications of the technical contents to reflect the unique conditions in Japan.

Tables of ATTENUATION RATIOS, BUILD UP FACTORS and first HALF-VALUE LAYERS are provided in Annex A. The calculation of the ATTENUATION RATIO for photon-emitting nuclides has been reclassified as informative and provided in Annex JA in light of conditions in Japan, such as the framework for the accepting the verification of mass-ATTENUATION COEFFICIENTS.

The dotted underlines indicate changes from the corresponding International Standard. A list of modifications with the explanations is given in Annex JB.

In this Standard, terms defined in **JIS T 0601-1-3**, **JIS Z 4005** and Clause **3** of this Standard are presented in small capitals.

1 Scope

This Standard applies to materials in sheet form used for the manufacturing of PROTECTIVE DEVICES against X-RADIATION of X-RAY TUBE VOLTAGES up to 400 kV and gamma radiation emitted by radionuclides with photon energies up to 1.3 MeV.

This Standard specifies the methods of determining and indicating the ATTENUATION properties of the materials. The ATTENUATION properties are given in terms of:

— ATTENUATION RATIO;

— BUILD UP FACTOR;

— ATTENUATION EQUIVALENT;

together with, as appropriate, an indication of homogeneity.

Excluded from the scope of this Standard are:

— methods for periodical checks of PROTECTIVE DEVICES, particularly of PROTECTIVE CLOTHING,

— methods of determining ATTENUATION properties by layers in the RADIATION BEAM,

— methods of determining ATTENUATION for purposes of protection against IONIZING RADIATION provided by walls and other protective materials of an installation, and

— checks for the condition of the ATTENUATION properties of PROTECTIVE DEVICES and protective materials before and after periods of use.

NOTE The International Standard corresponding to this Standard and the

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