

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 61331-1:2014 sisaldab Euroopa standardi EN 61331-1:2014 inglisekeelset teksti.	This Estonian standard EVS-EN 61331-1:2014 consists of the English text of the European standard EN 61331-1:2014.
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English Version

**Protective devices against diagnostic medical X-radiation - Part
1: Determination of attenuation properties of materials
(IEC 61331-1:2014)**

Dispositifs de protection radiologique contre les
rayonnements X pour diagnostic médical - Partie 1:
Détermination des propriétés d'atténuation des matériaux
(CEI 61331-1:2014)

Strahlenschutz in der medizinischen Röntgendiagnostik -
Teil 1: Bestimmung von Schwächungseigenschaften von
Materialien
(IEC 61331-1:2014)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of document 62B/936/FDIS, future edition 2 of IEC 61331-1, prepared by SC 62B, "Diagnostic imaging equipment", of IEC TC 62, "Electrical equipment in medical practice " was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61331-1:2014.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2015-04-24
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2017-06-11

This document supersedes EN 61331-1:2002.

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Endorsement notice

The text of the International Standard IEC 61331-1:2014 was approved by CENELEC as a European Standard without any modification.

IEC 61331-3

NOTE Harmonised as EN 61331-3.

Annex ZA

(normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60601-1	2005	Medical electrical equipment -- Part 1: General requirements for basic safety and essential performance	EN 60601-1	2006
			+EN 60601- 1:2006/corrigendum Mar. 2010	2010
			+AC	2014
+A1	2012		+A11	2011
IEC 60601-1-3	2008	Medical electrical equipment -- Part 1-3: General requirements for basic safety and essential performance - Collateral Standard: Radiation protection in diagnostic X-ray equipment	+A1	2013
			EN 60601-1-3	2008
			+EN 60601-1- 3:2008/corrigendum Mar. 2010	2010
+A1	2013		+A1	2013
			+AC	2014
IEC/TR 60788	2004	Medical electrical equipment - Glossary of defined terms	-	-

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PROTECTIVE DEVICES AGAINST DIAGNOSTIC MEDICAL X-RADIATION –

Part 1: Determination of attenuation properties of materials

1 Scope

This part of IEC 61331 applies to materials in sheet form used for the manufacturing of PROTECTIVE DEVICES against X-RADIATION of RADIATION QUALITIES generated with X-RAY TUBE VOLTAGES up to 400 kV and gamma radiation emitted by radionuclides with photon energies up to 1,3 MeV.

This Part 1 is not intended to be applied to PROTECTIVE DEVICES when these are to be checked for the presence of their ATTENUATION properties before and after periods of use.

This Part 1 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 and mass per unit area.

Ways of stating values of ATTENUATION properties in compliance with this part of the International Standard are included.

Excluded from the scope of this International Standard are:

- methods for periodical checks of PROTECTIVE DEVICES, particularly of PROTECTIVE CLOTHING,
- methods of determining ATTENUATION by layers in the RADIATION BEAM, and
- methods of determining ATTENUATION for purposes of protection against IONIZING RADIATION provided by walls and other parts of an installation.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60601-1:2005, *Medical electrical equipment – Part 1: General requirements for basic safety and essential performance*
IEC 60601-1:2005/AMD1:2012

IEC 60601-1-3:2008, *Medical electrical equipment – Part 1-3: General requirements for basic safety and essential performance – Collateral Standard: Radiation protection in diagnostic X-ray equipment*
IEC 60601-1-3:2008/AMD1:2013

IEC/TR 60788:2004, *Medical electrical equipment – Glossary of defined terms*