

**Masinate ohutus. Masinatest lähtuvast kiirgusest
tulenevate riskide hindamine ja vähendamine. Osa
3: Kiirguse vähendamine summutamise või
ekraniseerimisega KONSOLIDEERITUD TEKST**

Safety of machinery - Assessment and reduction of risks
arising from radiation emitted by machinery - Part 3:
reduction of radiation by attenuation or screening
CONSOLIDATED TEXT

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 12198-3:2003+A1:2008 sisaldab Euroopa standardi EN 12198-3:2002+A1:2008 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 25.09.2008 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 27.08.2008.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 12198-3:2003+A1:2008 consists of the English text of the European standard EN 12198-3:2002+A1:2008.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 25.09.2008 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.</p> <p>Date of Availability of the European standard text 27.08.2008.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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Võtmesõnad: electromagnetic radiation, equipment safety, hazards, machines, nuclear radiation, radiation, radiation hazards, radiation protection, radiation shields, safety, safety requirements, screens (protective), screens (protective), shields, specification (approval), specifications

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English Version

**Safety of machinery - Assessment and reduction of risks arising
from radiation emitted by machinery - Part 3: Reduction of
radiation by attenuation or screening**

Sécurité des machines - Estimation et réduction des
risques engendrés par les rayonnements émis par les
machines - Partie 3: Réduction du rayonnement par
atténuation ou par écrans

Sicherheit von Maschinen - Bewertung und Verminderung
des Risikos der von Maschinen emittierten Strahlung - Teil
3: Verminderung der Strahlung durch Abschwächung oder
Abschirmung

This European Standard was approved by CEN on 16 October 2002 and includes Amendment 1 approved by CEN on 18 July 2008.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Management Centre or to any CEN 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 CEN member into its own language and notified to the CEN Management Centre has the same status as the official versions.

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Foreword

This document (EN 12198-3:2002+A1:2008) has been prepared by Technical Committee CEN /TC 114 "Safety of machinery", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2009, and conflicting national standards shall be withdrawn at the latest by December 2009.

This document supersedes EN 12198-3:2002.

This document includes Amendment 1, approved by CEN on 2008-07-18.

The start and finish of text introduced or altered by amendment is indicated in the text by tags **A1** **A1**.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EC Directive(s).

A1 For relationship with EC Directive(s), see informative Annexes ZA and ZB, which are integral parts of this document. **A1**

This European Standard deals with the essential requirement "Radiation" (see EN 292-2:1991, annex A, paragraph 1.5.10).

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

Machinery supplied by electrical power or containing radiation sources may emit radiation or generate electric and/or magnetic fields. The radiation emissions will vary in frequency and magnitude.

It does not deal with other strategies concerning reduction of radiation risk by substitution with a smaller source, increasing the distance or reducing exposure time.

This document is a type B standard as stated in EN 1070.

The provisions of this document may be supplemented or modified by a type C standard.

NOTE For machines which are covered by the scope of a type C standard and which have been designed and built according to the provisions of that standard, the provisions of that type C standard take precedence over the provisions of this type B standard.

1 Scope

The purpose of this European standard is to provide means to enable manufacturers of machinery concerned by a radiation hazard to design and manufacture efficient safeguards against radiations.

Specific technical details of the design of shields for the different types of radiation and machines will be provided in other standards.

This European standard applies to machinery as defined by EN 292.

Part 1 of this standard contains the general principles of risk assessment of radiation emission by machinery. Details of the measurement of the radiation emission are given in Part 2 of this standard.

This standard deals with a design strategy for reducing the radiation flux by attenuation or screening.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 292-1:1991, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology.*

EN 292-2:1991, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles and specifications.*

EN 294:1992, *Safety of machinery — Safety distance to prevent danger zones being reached by the upper limbs.*

EN 953:1997, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards.*

EN 1050:1996, *Safety of machinery — Principles for risk assessment.*

EN 1070:1998, *Safety of machinery — Terminology.*

EN 1088:1995, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*.

EN 12198-1:2000, *Safety of machinery — Assessment and reduction of risks arising from radiation emitted by machinery — Part 1: General principles*.

EN 12198-2:2002, *Safety of machinery — Assessment and reduction of risks arising from radiation emitted by machinery — Part 2: Radiation emission measurement procedure*.

IEC 60050-111:1996, *International Electrotechnical Vocabulary — Chapter 111: Physics and chemistry*.

IEC 60050-121:1998, *International Electrotechnical Vocabulary — Part 121: Electromagnetism*.

IEC 60050-161:1990, *International Electrotechnical Vocabulary — Chapter 161: Electromagnetic compatibility*.

IEC 60050-881:1983, *International Electrotechnical Vocabulary — Chapter 881: Radiology and radiological physics*.

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 1070:1998 and the following apply. Additional definitions specifically needed for this standard are contained in EN 12198-1:2000.

The terms and definitions given in IEC 60050-111:1996, IEC 60050-121:1998, IEC 60050-161:1990 and IEC 60050-881:1983, are also applicable.

3.1

shield (general definition)

component designed to reduce, select or absorb radiations. The purpose of the component may be for radiation protection or in order to select particular radiations

NOTE Shields are also known as attenuators, screens or filters.

3.2

protection shield

shield used for the radiation protection of people and/or equipment

3.3

selective shield

shield used to filter the radiations, selecting their kind or their energy

3.4

shadow shield

shield arranged in such a way that the radiation source is not totally enclosed, but which prevents free passage of radiation in certain directions

4 Classification of radiation

Classification of radiation is given in clause 4 of EN 12198-1:2000.

Machinery shall be so designed and constructed that any emission of radiation is limited to the extent necessary for its operation and that the effects on exposed persons are non-existent or reduced to non-dangerous proportions (See EN 292-2:1991, annex A).