

**Masinate ohutus. Masinatest lähtuvast kiirgusest  
tulenevate riskide hindamine ja vähendamine. Osa  
2: Kiirguse mõõtmine KONSOLIDEERITUD TEKST**

Safety of machinery - Assessment and reduction of  
risks arising from radiation emitted by machinery - PArt  
2: Radiation emission measurement procedure  
CONSOLIDATED TEXT

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 12198-2:2003+A1:2008 sisaldab Euroopa standardi EN 12198-2:2002+A1:2008 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 27.10.2008 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 10.09.2008.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 12198-2:2003+A1:2008 consists of the English text of the European standard EN 12198-2:2002+A1:2008.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 27.10.2008 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 10.09.2008.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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**Võtmesõnad:** electr, electromagnetic radia, emission control, emission of radiation, equipment safety, hazards, machines, marking, measuring instruments, measuring techniques, radiation, safety, safety requirements, specification (approval), specifications

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Aru 10 Tallinn 10317 Eesti; [www.evs.ee](http://www.evs.ee); Telefon: 605 5050; E-post: [info@evs.ee](mailto:info@evs.ee)

English Version

**Safety of machinery - Assessment and reduction of risks arising  
from radiation emitted by machinery - Part 2: Radiation emission  
measurement procedure**

Sécurité des machines - Estimation et réduction des  
risques engendrés par les rayonnements émis par les  
machines - Partie 2: Procédures de mesurage des  
émissions de rayonnement

Sicherheit von Maschinen - Bewertung und Verminderung  
des Risikos der von Maschinen emittierten Strahlung - Teil  
2: Messverfahren für die Strahlenemission

This European Standard was approved by CEN on 16 October 2002 and includes Amendment 1 approved by CEN on 27 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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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**Management Centre: rue de Stassart, 36 B-1050 Brussels**

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## Foreword

This document (EN 12198-2:2002+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 March 2009, and conflicting national standards shall be withdrawn at the latest by December 2009.

This document includes Amendment 1, approved by CEN on 2008-07-27.

This document supersedes EN 12198-2:2002.

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 Directives, 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).

Annex A is informative.

This document includes a Bibliography.

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 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.

EN 12198-1 contains the general principles of risk assessment of radiation emission by machinery.

EN 12198-3 contains details of protective measures for avoiding or reducing radiation exposure of persons by reducing emissions and requiring the provision of information.

Designers should identify the radiation hazards arising from machinery in accordance with the general principles set out in EN 12198-1. In order to assess the risks and categorize the radiation emissions, designers need to quantify the hazards.

Measurements are made in accordance with the following clauses in order to:

- check the level of safety integration in the design of machinery;
- give a basis for the categorization according to 7.1 of EN 12198-1:2000;
- assess the ability of machinery to be operated, set and maintained without any hazard to persons when setting and maintenance operations are carried out under the conditions specified by the manufacturer;
- detect and measure, any radiation leakage;
- determine areas where radiation emissions may create a health and safety hazard;
- enable potential users to make comparisons of the radiation emission from different machines.

In case of particular difficulties, measurements can be supplemented by duly justified calculations.

Annex A gives information about the techniques of measurement of the different types of radiations. The standard techniques will be specified in other standards as they are developed. Other methods and detectors can be developed, their omission from this annex does not exclude their use.

If no standard measurement techniques exist, then an accepted scientific procedure should be applied and appropriate details given.

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

This European Standard defines basic technology and specifies general procedures for making and reporting measurements of quantities related to radiation emitted by machinery. It covers the different radiation emissions as defined in EN 12198-1.

This standard applies to machinery as defined in 3.1 of EN 292-1:1991.

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

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

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

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

#### **operating conditions**

conditions existing, including operating parameters, during the mode or phase of operation of the machine under test

### 3.2

#### **no-load operation**

operation during which the machinery operates without any processed material in place, with all its components and special auxiliaries in operation (pumps, hydraulic set, suction system, etc.) and all moving parts in action (spindles, tables, carriages, etc.) within the limits of its possibilities

### 3.3

#### **operation under load**

operation during which the machinery is running in an operational way with processed material and with all its components and special auxiliaries

### 3.4

#### **phase of operation**

time interval during which the machine performs a particular function

### 3.5

#### **operating cycle**

complete sequence of phases of operation from the introduction of the processed material to its removal or transfer to the next workstation

### 3.6

#### **measurement time**

the period during which radiation measurements are made