

**Tsentrifuugid. Üldised ohutusnõuded**  
**KONSOLIDEERITUD TEKST**

Centrifuges - Common safety requirements  
CONSOLIDATED TEXT

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 12547:1999+A1:2009 sisaldab Euroopa standardi EN 12547:1999+A1:2009 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 30.04.2009 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 25.03.2009.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 12547:1999+A1:2009 consists of the English text of the European standard EN 12547:1999+A1:2009.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 30.04.2009 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 25.03.2009.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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**Võtmesõnad:** accident prevention, acoustic tests, centrifuges, conformity tests, dangerous machines, hazards, marking, nomenclature, operating requirements, protection against mechanical hazards, safety of machinery, safety requirements, verification

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English Version

## Centrifuges - Common safety requirements

Centrifugeuses - Prescriptions communes de sécurité

Zentrifugen - Allgemeine Sicherheitsanforderungen

This European Standard was approved by CEN on 6 November 1998 and includes Amendment 1 approved by CEN on 22 February 2009.

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## Foreword

This document (EN 12547:1999+A1:2009) has been prepared by Technical Committee CEN/TC 313 "Centrifuges - Safety requirements", the secretariat of which is held by SIS.

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of an identical text or by endorsement, at the latest by September 2009, and conflicting national standards shall be withdrawn at the latest by December 2009.

This document includes Amendment 1, approved by CEN on 2009-02-22.

This document supersedes EN 12547:1999.

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

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

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

Annexes A and C of this European Standard are normative, whereas Annexes B, D, E, ZA and ZB are informative. **A1**

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

The extent to which significant hazards are covered is indicated in clause 1. It is indicated in greater detail in clause 4 and annex A. In addition, machinery should comply as appropriate with EN 292 for general machinery hazards which are not covered by this standard.

It is also intended to ensure that sufficient information is collected, is retained and can be made available, to enable centrifuges to be installed, commissioned, used, maintained and disposed of safely, i.e. that information is made available to users of centrifuges.

Different applications and particular centrifuge designs exist. Annex D includes more details of both of these ranges.

## 1 Scope

**1.1** This European Standard applies to centrifuges aiming at separation of liquid/liquid/solid/solid or at least two of these substances. It gives requirements to minimise the risks caused by the hazards specified in 1.2.

The Standard deals with the significant hazards associated with the operation of centrifuges.

**1.2** The Standard gives requirements for minimising the risks caused by the following hazards:

- mechanical hazards common to all types of centrifuges, except those specified in 1.3;
- ergonomical hazards;
- electrical hazards.

The standard also covers requirements for noise measurements.



### 1.3 Types of centrifuges and hazards excluded

#### 1.3.1 Types of centrifuges excluded:

- centrifuges with a kinetic energy of rotation less than 200 Joule;
- centrifuges designated by their manufacturers for domestic use;
- centrifuges designated by their manufacturers as laboratory centrifuges according to EN 61010-2-020, including Amendment 1;
- centrifuges designated by their manufacturers for forming, i.e. centrifugal hot metal casting machines.

#### 1.3.2 Hazards excluded:

- thermal hazards;
- hazards specific to processing radioactive products;
- hazards specific to microbiological processing - including viral and parasitic hazards;

- hazards from processing corrosive and/or erosive materials;
- hazards from processes involving flammable or explosive substances;
- hazards caused by leakage of hazardous substances;
- hazards caused by unsuitable hygienic design for applications involving food products;
- other application specific hazards which must be dealt with, either according to application specific standards (e.g.  EN 12505 , or EN 292.

**1.4** This standard applies to centrifuges which are manufactured after the date of issue of this standard.

## 2 Normative references

This European Standard incorporates by dated or undated references, 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.

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, including Amendment 1:1995*

EN 294:1992, *Safety of machinery - Safety distances to prevent danger zones being reached by the upper limbs*

EN 418:1992, *Safety of machinery - Emergency stop equipment, functional aspects - Principles for design*

EN 729-2:1994, *Quality requirements for welding - Fusion welding of metallic materials – Part 2: Comprehensive quality requirements*

EN 729-3:1994, *Quality requirements for welding - Fusion welding of metallic materials – Part 3: Standard quality requirements*

EN 894-2:1997, *Ergonomics - Requirements for the design of displays and control actuators. Part 2: Displays.*

prEN 894-3:1992, *Ergonomics - Requirements for the design of displays and control actuators. Part 3: Control actuators.*

EN 953:1997, *Safety of machinery - General requirements for the design and construction of guards (fixed and moveable)*

EN 954-1:1996, *Safety of machinery - Safety related parts of control systems – Part 1: General principles for design*

prEN 1005-2:1993, *Safety of machinery - Human physical performance – Part 2: Manual handling of objects associated to machinery*

EN 1037:1995, *Safety of machinery - Prevention of unexpected start-up*

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

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

EN ISO 3744:1995, *Acoustics - Determination of sound power levels of noise sources using sound pressure - Engineering method in an essentially free-field over a reflecting plane (ISO 3744:1995)*

EN ISO 3746:1995, *Acoustics - Determination of sound power levels of noise sources using sound pressure - Survey method using an enveloping measurement surface over a reflecting plane (ISO 3746:1995)*

EN ISO 4871:1996, *Acoustics - Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996)*

EN ISO 11203:1995, *Acoustics - Noise emitted by machinery and equipment - Determination of emission sound pressure levels at a work station and at other specified positions from the sound power level (ISO 11203:1995)*

EN ISO 11688-1:1998, *Acoustics – Recommended practice for the design of low-noise machinery and equipment – Part 1: Planning (ISO/TR 11688-1:1995)*

EN 50081-2:1994, *Electromagnetic compatibility - Generic emission standard. Part 2: Industrial environment*

EN 50082-2:1995, *Electromagnetic compatibility - Generic immunity standard. Part 2: Industrial environment*

EN 60204-1:1997, *Electrical equipment of machines – Part 1: General requirements*

EN 60529:1991, *Degrees of protection provided by enclosures (IP Code)*

EN 61310-1:1997, *Safety of machinery - Indicating, marking and actuation. Part 1: Requirements for visual, auditory and tactile signals*

ISO 780:1997, *Packaging - Pictorial marking for handling of goods*

ISO 3266:1984, *Eyebolts for general lifting purposes*

ISO 9296:1988, *Acoustics - Declared noise emission values of computer and business equipment*

ISO 9614-1:1993, *Acoustics - Determination of sound power levels of noise sources using sound intensity – Part 1: Measurement at discrete points*

ISO 9614-2:1993, *Acoustics - Determination of sound power levels of noise sources using sound intensity – Part 2: Measurement by scanning*

ISO TR 11688-2:1998, *Acoustics - Recommended practice for the design of low-noise machinery and equipment – Part 2: Introduction into physics of low-noise design*

IEC 60364:1992, *Electrical installations of buildings*