

**Kompressorid ja vaakumpumbad. Ohutusnõuded. Osa
2: Vaakumpumbad KONSOLIDEERITUD TEKST**

Compressors and vacuum pumps - Safety requirements -
Part 2: Vacuum pumps CONSOLIDATED TEXT

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 1012-2:1996+A1:2009 sisaldab Euroopa standardi EN 1012-2:1996+A1:2009 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 30.11.2009 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 30.09.2009.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 1012-2:1996+A1:2009 consists of the English text of the European standard EN 1012-2:1996+A1:2009.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 30.11.2009 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 30.09.2009.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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English Version

Compressors and vacuum pumps - Safety requirements - Part 2: Vacuum pumps

Compresseurs et pompes à vide - Prescriptions de sécurité
- Partie 2: Pompes à vide

Kompressoren und Vakuumpumpen -
Sicherheitsanforderungen - Teil 2: Vakuumpumpen

This European Standard was approved by CEN on 13 March 1996 and includes Amendment 1 approved by CEN on 6 August 2009.

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Foreword

This document (EN 1012-2:1996+A1:2009) has been prepared by Technical Committee CEN/TC 232 "Compressors, vacuum pumps and their systems", 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by publication of an identical text or by endorsement, at the latest by March 2010, and conflicting standards shall be withdrawn at the latest by March 2010.

This document includes Amendment 1, approved by CEN on 2009-08-06.

This document supersedes EN 1012-2:1996.

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

The responsibility of CEN/TC 232 includes coordination of safety standards with CEN/TC 182 "Refrigerating systems, safety and environmental requirements" and CEN/TC 234 "Gas supply".

A1 Annexes A, ZA and ZB to this draft European Standard are informative. **A1**

This standard is divided in two parts:

- EN 1012-1 Compressors
- EN 1012-2 Vacuum Pumps

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.

A1 Introduction

This document is a type C standard as stated in EN ISO 12100.

The machinery concerned and the extent to which hazards, hazardous situations and hazardous events are covered are indicated in the scope of this document.

When provisions of this type C standard are different from those which are stated in type A or B standards, the provisions of this type C standard take precedence over the provisions of the other standards, for machines that have been designed and built according to the provisions of this type C standard. **A1**

1 Scope

This standard is applicable to all vacuum pumps, vacuum pump combinations and vacuum pumping systems. The standard lists the significant hazards associated with vacuum pumps and specifies safety requirements applicable to the design, installation, operation, maintenance and dismantling of vacuum pumps during their foreseeable life and subsequent disposal.

The scope does not include pumps designed to pump continuously on open systems where the pump inlet pressure is above 75 kPa (750 mbar) absolute, i.e. vacuum cleaners, ventilation fans).

Vacuum pumps intended for use in special applications shall also comply with any specific standards relating to those applications.

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 they are incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

A1 deleted text **A1**

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

EN 418, *Safety of machinery – Emergency stop equipment – Functional aspects*

EN 563, *Temperatures of touchable surfaces – Ergonomics data to establish temperature limit values for hot surfaces*

EN 953, *Safety of machinery – Guarding of machinery – Fixed and moveable guards.*

EN 1127-1, *Safety of machinery – Fires and explosions – Part 1: Explosion prevention*

A1 deleted text **A1**

EN 50 014, *Electrical apparatus for potentially explosive atmospheres – General requirements*

EN 50 081-2, *Electro-magnetic compatibility – Generic emission – Part 2: Industrial environment*

EN 50 082-2, *Electro-magnetic compatibility – Generic immunity – Part 2: Industrial environment*

EN 61310-1, *Safety of machinery – Indication, marking and actuation – Part 1: Requirements for visual, auditory and tactile signal (IEC 1310-1:1995)*

EN 60204-1:1992, *Electrical equipment of industrial machines – Part 1: General requirements*

EN 60529, *Degrees of protection provided by enclosures*

ENV 1070, *Safety of machinery – Terminology*

A1 EN ISO 2151, *Acoustics – Noise test code for compressors and vacuum pumps – Engineering method (Grade 2) (ISO 2151:2004)* **A1**

A1 EN ISO 12100-2:2003, *Safety of machinery – Basic concepts, general principles for design – Part 2: Technical principles (ISO 12100-2:2003)* **A1**

ISO 3266, *Eyebolts for lifting purposes*

ISO 3529, *Vacuum Technology – Vocabulary*

ISO 4126-1, *Safety valves – Part 1: General Requirements*

ISO 4871, *Acoustics – Declaration and verification of noise emission values of machinery and equipment*

ISO 7000, *Graphical symbols for use on equipment – Index and synopsis*

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

IEC 417, *Graphical symbols for use on equipment*

IEC 61010-1, *Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements*

3 Definitions

For the purposes of this standard the definitions given in ENV 1070 and ISO 3529 apply. Definitions specifically needed for this standard are added below.

3.1

vacuum

an environment where the total pressure is below the prevailing atmospheric level.

NOTE Vacuum is usually measured as the absolute pressure of the residual gas expressed as Pascals (Pa) or millibar (mbar). 1 mbar = 100 Pa.

3.2

vacuum pump

device for creating, improving and/or maintaining a vacuum.

NOTE Terms "vacuum pump" and "pump" have the same meaning throughout this standard.

3.3

pump inlet

port by which gas to be pumped enters the pump

3.4

pump outlet

outlet or discharge port of a pump

3.5

maximum starting pressure

maximum inlet pressure at which the vacuum pump may be started

3.6

maximum outlet pressure

maximum pressure at the vacuum pump outlet specified by the manufacturer