

**Pidevtoimelised teisaldusseadmed ja -süsteemid.  
Ohutuse ja elektromagnetilise ühilduvuse nõuded  
puistmaterjalide mehaanilise käitlemise  
seadmetele, väljaarvatult lintkonveieritele**

Continuous handling equipment and systems - Safety and EMC requirements for equipment for mechanical handling of bulk materials except fixed belt conveyors

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 618:2002+A1:2010 sisaldab Euroopa standardi EN 618:2002+A1:2010 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 31.12.2010 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 08.12.2010.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 618:2002+A1:2010 consists of the English text of the European standard EN 618:2002+A1:2010.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 31.12.2010 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 08.12.2010.</p> <p>The standard is available from Estonian standardisation organisation.</p>
--	---

ICS 53.040.10

### Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:  
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

## Continuous handling equipment and systems - Safety and EMC requirements for equipment for mechanical handling of bulk materials except fixed belt conveyors

Equipements et systèmes de manutention continue -  
Prescriptions de sécurité et de CEM pour les équipements  
de manutention mécanique des produits en vrac à  
l'exception des transporteurs fixes à courroie

Stetigförderer und Systeme - Sicherheits- und EMV-  
Anforderungen an mechanische Fördereinrichtungen für  
Schüttgut ausgenommen ortsfeste Gurtförder

This European Standard was approved by CEN on 8 March 2001 and includes Amendment 1 approved by CEN on 9 November 2010.

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-CENELEC 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-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, 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.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

## Contents

Foreword.....	3
Introduction.....	4
1 Scope .....	5
2 Normative references .....	6
3 Terms and definitions .....	7
4 Hazards .....	17
5 Safety and EMC requirements and/or measures.....	17
5.1 Mechanical hazards.....	17
5.2 Electrical hazards .....	21
5.3 Safety related to EMC phenomena .....	22
5.4 Hazards due to lightning.....	23
5.5 Thermal hazards .....	23
5.6 Measures for protection against fire and explosion hazards due to materials conveyed.....	24
5.7 Jamming and blocking of materials conveyed.....	24
5.8 Local lighting .....	24
5.9 Mental overload or underload stress etc. ....	24
5.10 Visibility .....	24
5.11 Hazards arising from control systems or caused by failure of energy supply, breaking down of machinery parts and other functional disorders.....	24
5.12 Hazards arising during inspection, maintenance and cleaning .....	26
5.13 Specific safety requirements and locations of the risks .....	26
6 Verification of safety requirements and/or measures .....	48
6.1 General.....	48
6.2 Special verification .....	50
7 Information for use - Instruction handbook.....	50
7.1 Instruction handbook .....	50
7.2 Marking .....	54
8 Electromagnetic compatibility (EMC).....	55
Annex A (normative) List of significant hazards .....	57
Annex B (informative) Fire or explosion hazard .....	63
Annex ZA (informative) <b>Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC</b> .....	65
Annex ZB (informative) <b>Clauses of this European Standard which address Principal Protection Requirements of the EU Electro-magnetic compatibility Directive 2004/108/EC</b> .....	66
Bibliography.....	67

## Foreword

This document (EN 618:2002+A1:2010) has been prepared by Technical Committee CEN /TC 148, "Continuous handling equipment and systems - Safety", the secretariat of which is held by AFNOR.

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 June 2011, and conflicting national standards shall be withdrawn at the latest by June 2011.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document includes Amendment 1, approved by CEN on 2010-11-09.

This document supersedes EN 618:2002.

The start and finish of text introduced or altered by amendment is indicated in the text by tags  $\boxed{A_1}$   $\triangleleft A_1$ .

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 EU Directive(s).

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

$\boxed{A_1}$  *deleted text*  $\triangleleft A_1$

This standard forms part of a series of five standards the titles of which are given below:

EN 617, *Continuous handling equipment and systems — Safety and EMC requirements for the equipment for the storage of bulk materials in silos, bunkers, bins and hoppers*

EN 618, *Continuous handling equipment and systems — Safety and EMC requirements for equipment for mechanical handling of bulk materials except fixed belt conveyors*

$\boxed{A_1}$  EN 619  $\triangleleft A_1$ , *Continuous handling equipment and systems — Safety and EMC requirements for equipment for mechanical handling of unit loads*

EN 620, *Continuous handling equipment and systems — Safety and EMC requirements for fixed belt conveyors for bulk material*

EN 741, *Continuous handling equipment and systems — Safety requirements for systems and their components for pneumatic handling of bulk materials.*

$\boxed{A_1}$  *deleted text*  $\triangleleft A_1$

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, Croatia, 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

This European standard is a "Type C" standard as defined in EN 1070.

The equipment concerned and the extent to which hazards are covered are indicated in the scope of this standard.

EN 617, EN 620 and EN 741 need to be considered for a complete continuous handling system (machine).

While producing this standard, it was assumed that:

- only suitably trained persons will operate the equipment;
- all parts of the equipment without specific requirements in this standard are:
  - designed in accordance with the usual engineering practice and calculation codes (e.g. for mobile equipment FEM 2 131/2 132 or ISO 5049-1, ...) including all failure modes;
  - made of materials of adequate strength and of quality for their intended purpose taking into account all failure modes using recognised design methods and appropriate safety factors;
- harmful materials, such as asbestos, are not used as part of the machine;
- components will be kept in good repair and working order in accordance with the manufacturer's instructions, to retain specified health and safety characteristics throughout its working life;
- by design of the load bearing elements, a safe operation of the equipment is assured for loading ranging from zero to 100 % of the rated capacity;
- negotiations occur between the manufacturer <sup>1)</sup> and the user concerning materials characteristics (see Note 1) and particular conditions for the use and places of use for the machinery related to health and safety;
- the place of installation is adequately lit.

NOTE 1 For the description of bulk materials, reference can be made to documents FEM 2 581/2 582 and ISO 3435.

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 other standards, for equipment that have been designed and built according to the provisions of this type C standard.

---

1) "Manufacturer" within the European Union is to be understood as intended in the Machinery Directive.

## 1 Scope

**1.1** This standard deals with the technical requirements to minimise the risks due to the hazards listed in clause 4, which can arise during operation and maintenance of mechanical handling equipment defined in clauses 3.1 to 3.3 and which are designed for continuously conveying bulk materials from the loading point(s) to the unloading point(s). In general, it also applies to equipment which are built into machines or attached to machines. This standard deals with the technical requirements for EMC.

**1.2** The standard does not apply to:

- continuous handling equipment and systems for open-cast lignite mining;
- continuous handling equipment and systems for underground mining;
- tunnel digging and excavating machines;
- bulk material processing or classification machines such as grinders, crushers, screens;
- fixed belt conveyors for bulk materials. These are covered by the standard  $\text{A1}$  EN 620:2002+A1:2010  $\text{A1}$ ;
- fixed pneumatic handling equipment. These equipment and systems are covered by the standard EN 741;
- the interface between the machinery dealt with in this standard and the fixed belt or pneumatic conveyor.

**1.3** This standard does not give the additional requirements for:

- a) use in public areas or for the transportation of people;
- b) floating, dredging and ship mounted equipment;
- c) conveyors requiring a high level of cleanliness for hygiene reasons, e.g. in direct contact with foodstuffs or pharmaceuticals;
- d) transportation of the equipment;
- e) hazards caused by vibration;
- f) use in ambient air temperature below  $-20\text{ }^{\circ}\text{C}$  and above  $+40\text{ }^{\circ}\text{C}$ ;
- g) the effects of wind on strength and stability;
- h) hazards resulting from handling specific hazardous materials, (e.g. Explosives, radiating material);
- i) hazards resulting from contact with or inhalation of harmful fluids, gas, mists, fumes and dusts;
- j) biological and micro-biological (viral or bacterial) hazards;
- k) hazards due to heat radiation from the materials handled;
- l) hazards caused by operation in electromagnetic fields outside the range of EN 61000-6-2;
- m) hazards caused by operation subject to special regulations (e.g. explosive atmospheres);
- n) hazards caused by noise;
- o) hazards caused by the use of ionising radiation sources (e.g. measurement equipment);

- p) hazards caused by hydraulic equipment;
- q) hazards caused by inadequate controls cabins lighting;
- r) the risk related to elevating of the control stations;
- s) hazards related to contact with or inhalation of harmful fluids, gases, mists, fums and dusts.

**1.4** The safety requirements apply to equipment and systems placed on the market after the date of publication of this standard.

NOTE 1 The requirements of this standard can be used for comparable machines outside the scope of this standard with the same risks.

NOTE 2 Directive 94/9/EC concerning equipment and protective systems intended for use in potentially explosive atmospheres can be applicable to the type of machine or equipment covered by this European Standard. The present standard is not intended to provide means of complying with the essential health and safety requirements of Directive 94/9/EC.

## 2 Normative references

**[A1]** The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies. **[A1]**

**[A1]** *deleted text* **[A1]**

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

EN 349:1993, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*

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

**[A1]** *deleted text* **[A1]**

EN 617, *Continuous handling equipment and systems — Safety and EMC requirements for storage of bulk materials in silos, bunkers, bins and hoppers*

**[A1]** EN 620:2002+A1:2010 **[A1]**, *Continuous handling equipment and systems — Safety and EMC requirements for fixed belt conveyors for bulk material*

**[A1]** EN 741 **[A1]**, *Continuous handling equipment and systems — Safety requirements for systems and their components for pneumatic handling of bulk materials*

EN 811:1996, *Safety of machinery — Safety distances to prevent danger zone being reached by the lower limbs*

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

EN 954-1:1997, *Safety of machinery — Safety related parts of control systems — Part 1: General principles for design*

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

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

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



EN 1127-1:1997, *Safety of machinery — Fire and explosion — Part 1: Explosion prevention and protection*

EN 12150-1:2000, *Glass in building — Thermally toughened soda lime silicate safety glass — Part 1: Definition and description*

**A1** deleted text **A1**

EN 13586:1999, *Cranes — Access*

EN 26184-1:1991, *Explosion protection systems — Part 1: Determination of explosion indices of combustibles dusts in air (ISO 6184-1:1985)*

**A1** deleted text **A1**

EN 60204-1:1997, *Safety of machinery — Electrical equipment of machines — Part 1: Specification for requirements*

**A1** EN 60204-11:2000, *Safety of machinery — Electrical equipment of machines — Part 11: Requirements for HV equipment for voltages above 1 000 V a.c. or 1 500 d.c. and not exceeding 36 kV (IEC 60204-11:2000) **A1***

EN 60947-5-1:1991, *Low voltage switch gear and control gear — Part 5: Control circuit devices and switching elements — Section 1: Electromechanical control circuit devices*

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

EN 61000-6-2:1999, *Electromagnetic compatibility (EMC) — Part 6-2: Generic standards — Immunity for industrial environments (CEI 61000-6-2:1999)*

**A1** EN 61000-6-3, *Electromagnetic compatibility (EMC) — Part 6-3: Generic standards — Emission standard for residential, commercial and light-industrial environments (IEC 61000-6-3:2006) **A1***

**A1** EN ISO 12100-1, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology (ISO 12100-1:2003) **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***

**A1** EN ISO 13732-1:2008, *Ergonomics of the thermal environment — Methods for the assessment of human responses to contact with surfaces — Part 1: Hot surfaces (ISO 13732-1:2006) **A1***

ISO 2148:1974, *Continuous handling equipment — Nomenclature — Bilingual edition*

ISO 3435:1977, *Continuous mechanical handling equipment — Classification and symbolisation of bulk materials*

ISO 3864:1984, *Safety colours and safety signs*

ISO 5049-1:1994, *Mobile equipment for continuous handling of bulk materials — Part 1: Rules for the design of steel structures*

IEC 61241-1-2:1999, *Electrical apparatus for use in the presence of combustible dust — Part 1-2: Electrical apparatus protected by enclosures — Selection, installation and maintenance*

### 3 Terms and definitions

For the purposes of this standard, the terms and definitions stated in EN 1070 and ISO 2148 apply. Additional terms used in this standard are defined below. For other definitions on components of fixed belt conveyors, see

**A1** EN 620:2002+A1:2010 **A1**.