Pidevtoimelised teisaldusseadmed ja -süsteemid. Ohutuse ja elektromagnetilise ühilduvuse nõuded puistmaterjalide ladustamisseadmetele silohoidlates, punkrites, salvedes ja hopperites

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

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 617:2001+A1:2010 sisaldab Euroopa standardi EN 617:2001+A1:2010 ingliskeelset teksti.	This Estonian standard EVS-EN 617:2001+A1:2010 consists of the English text of the European standard EN 617:2001+A1:2010.
Standard on kinnitatud Eesti Standardikeskuse 31.12.2010 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	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.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 08.12.2010.	Date of Availability of the European standard text 08.12.2010.
Standard on kättesaadav Eesti standardiorganisatsioonist.	The standard is available from Estonian standardisation organisation.

ICS 53.040.10

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 617:2001+A1

December 2010

ICS 53.040.10

Supersedes EN 617:2001

English Version

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

Equipements et systèmes de manutention continue - Prescriptions de sécurité et de CEM pour les équipements de stockage des produits en vrac en silos, soutes, réservoirs et trémies

Stetigförderer und Systeme - Sicherheits- und EMV-Anforderungen an Einrichtungen für die Lagerung von Schüttgütern in Silos, Bunkern, Vorratsbehältern und Trichtern

This European Standard was approved by CEN on 4 June 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

Ref. No. EN 617:2001+A1:2010: E

Contents

Foreword

This document (EN 617:2001+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 617:2001.

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).

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

[A1] *deleted text* ⟨A1]

This [A1] standard ⟨A1] forms part of a series of five [A1] standards ⟨A1] 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*

— [A1] EN 618 ⟨A1], *Continuous handling equipment and systems — Safety and EMC requirements for equipment for mechanical handling of bulk materials except fixed belt conveyors*

— [A1] EN 619 ⟨A1], *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*

[A1] *deleted text* ⟨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, 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 stated in EN 1070.

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

While producing this standard it was assumed that:

— only competent persons operate the system;

— components without specific requirements are:

a) designed in accordance with the usual engineering practice and calculation codes, including all failure modes (see also Bibliography and annex B);

b) of sound mechanical and electrical construction;

c) made of materials with adequate strength and of suitable quality;

d) made of materials free of defects.

— harmful materials, such as asbestos are not used as part of the machine;

— components are kept in good repair and working order, so that required characteristics remain despite wear;

— by design of the load bearing elements, a safe operation of the system is assured for loading ranging from zero to 100 % of the rated possibilities and during the tests;

— to ensure the correct function of the equipment the ambient temperature is maintained between -5 °C to + 50 °C;

— negotiation occurred between the manufacturer[1)] and the user concerning particular conditions for the use and places of use for the machinery related to health and safety;

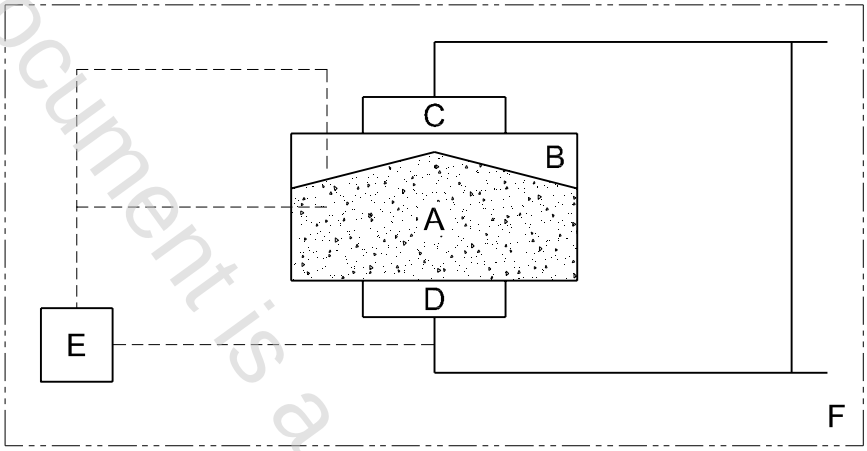
— the place of installation allows a safe use of the machine.

1) “manufacturer” within the European Union is to be understood as intended in the Machinery Directive.

1 Scope

This European Standard deals with the technical requirements to minimise the hazards listed in clause 4 and annex A. These hazards can arise during the operation and maintenance of equipment to store bulk materials in silos, bunkers, bins and hoppers and their built-in inlet and outlet devices when carried out in accordance with the specifications given by the manufacturer or his authorised representative. This standard deals with safety related technical verification during commissioning.

The following parts are dealt with in this standard (see Figure 1):



Key

A Bulk material to be stored
B Storage space limited by the silo structure
C Charging
D Discharging
E Associated and additional equipment (e.g. flow aid devices, instrumentation, local control systems)
F Working and traffic area

Figure 1 – Parts of a storage equipment

NOTE Silos are made of different materials e.g. concrete, steel, aluminium, spun rayon, wood.

Safety requirements and/or measures in this standard apply to equipment used in all environments. However, additional risk assessment and safety measures need to be considered in severe conditions, e.g. low or high temperatures out of the range covered by EN 60204-1, corrosive environments, strong magnetic fields, radioactive conditions and bulk materials to be stored included their flow the nature of which could lead to a dangerous situation.

This standard does not cover requirements for:

— movable, non permanent storage equipment such as road vehicles, rail wagons, containers for bulk materials, ships and barges;

— blow tanks and pressure vessels as used in pneumatic conveying systems;

— stockpiles and flat storage;

— storage equipment for non bulk materials (liquid, gas, slurries, sludge, silage);

— dismantling and transport of storage equipments;

— procedure for entering the silo and behaviour of persons inside the silo;

— storage equipments for underground mining;

— [A1] noise. [A1]

This European Standard deals with the technical requirements for electromagnetic compatibility (EMC).

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]

EN 131, *Ladders — Terms, types, functional sizes*

[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 the parts of the human body*

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

EN 547-1:1996, *Safety of machinery — Human body measurements — Part 1: Principles for determining the dimensions required for openings for whole body access into machinery*

EN 547-3, *Safety of machinery — Human body measurements — Part 3: Anthropometric data*

[A1] *deleted text* [A1]

EN 574, *Safety of machinery — Two- hand control devices — Functional aspects — Principles for design*

[A1] EN 618 [A1], *Continuous handling equipment and systems — Safety and EMC requirements for equipment for mechanical handling of bulk material except fixed belt conveyors*

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

EN 626-1, *Safety of machinery — Reduction of risks to health from hazardous substances emitted by machinery — Part 1: Principles and specifications for machinery manufacturers*

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

EN 795, *Protection against falls from a height — Anchor devices — Requirements and testing*

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

EN 842, *Safety of machinery — Visual danger signals — General requirements, design and testing*

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

EN 954-1:1996, *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 1088:1995, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*

EN 1127-1, *Explosive atmospheres — Explosion prevention and protection — Part 1: Basic concepts and methodology*

[A1] EN 12464-1*, Light and lighting — Lighting of work places — Part 1: Indoor work places*

EN 12464-2*, Light and lighting — Lighting of work places — Part 2: Outdoor work places* [A1]

[A1] EN ISO 12100-1:2003, *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]

[A1] EN ISO 14122-1*, Safety of machinery — Permanent means of access to machinery — Part 1: Choice of fixed means of access between two levels (ISO 14122-1:2001)* [A1]

[A1] EN ISO 14122-2*, Safety of machinery — Permanent means of access to machinery — Part 2: Working platforms and walkways (ISO 14122-2:2001)* [A1]

[A1] EN ISO 14122-3*, Safety of machinery — Permanent means of access to machinery — Part 3: Stairs, stepladders and guard-rails (ISO 14122-3:2001)* [A1]

[A1] *deleted text* [A1]

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

[A1] *deleted text* [A1]

EN 60204-1:1997, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:1997)*

prEN 60204-11:1998, *Safety of machinery — Electrical equipment of machines — Part 11: General requirements for voltage above 1 000 V a.c. or 1 500 V d.c. and not exceeding 36 kV*

EN 60529, *Degrees of protection provided by enclosures (IP code) (IEC 60529:1989)*

[A1] EN 60825-1, *Safety of laser products — Part 1: Equipment classification and requirements (IEC 60825-1:2007)* [A1]

EN 60947-5-1:1997, *Low voltage switchgear and controlgear — Part 5: Control circuit devices and switching elements — Section 1: Electromechanical control circuit devices (IEC 60947-5-1:1997)*

IEC 60364-7-706, *Electrical installations of buildings — Part 7: Requirements for special installations or locations. Section 706 — Restrictive conducting locations*

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

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

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

ISO 3864, *Safety colours and safety signs*