SLOVENSKI STANDARD

SIST EN 741:2001+A1:2011

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Nadomešča:

SIST EN 741:2001

Naprave in sistemi za kontinuirni transport - Varnostne zahteve za sisteme in njihove komponente za pnevmatsko manipulacijo sipkega materiala (vključno z dopolnilom A1)

Continuous handling equipment and systems - Safety requirements for systems and their components for pneumatic handling of bulk materials

Stetigförderer und Systeme - Sicherheitsanforderungen an Systeme und ihre Komponenten zur pneumatischen Förderung von Schüttgut

Equipements et systèmes de manutention continue - Prescriptions de sécurité pour les systèmes et leurs composants pour la manutention pneumatique des produits en vrac

Ta slovenski standard je istoveten z: **EN 741:2000+A1:2010**

ICS:

53.040.30	Pnevmatični transport in njegovi sestavni deli	Pneumatic transport and its components

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EUROPEAN STANDARD

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English Version

Continuous handling equipment and systems - Safety requirements for systems and their components for pneumatic handling of bulk materials

Equipements et systèmes de manutention continue - Prescriptions de sécurité pour les systèmes et leurs composants pour la manutention pneumatique des produits en vrac

Stetigförderer und Systeme - Sicherheitsanforderungen an Systeme und ihre Komponenten zur pneumatischen Förderung von Schüttgut

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Ref. No. EN 741:2000+A1:2010: E

Contents

Foreword

This document (EN 741:2000+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of an identical text or by endorsement, at the latest by June 2011, and conflicting national standards shall be withdrawn at the latest by June 2011.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 2010-11-16.

This document supersedes EN 741:2000.

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 Annex ZA, which is an integral part of this standard.

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

EN 617, ⟨A1⟩ *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* ⟨A1⟩

EN 620, ⟨A1⟩ *Continuous handling equipment and systems — Safety and EMC requirements for fixed belt conveyors for bulk materials* ⟨A1⟩

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 defined in [A1] EN ISO 12100-1 [A1].

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 systems and components that have been designed and built according to the provisions of this type C standard.

While producing this standard it was assumed that:

- only trained persons operate the machine;

- parts without specific requirements are:

  a) designed in accordance with the usual engineering practice and calculation codes, including all failures modes;

  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 system and components;

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

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

- the ambient air temperature is maintained between - 15 °C and + 40 °C;

- the relative humidity is kept between limits which do not impede the safe working of the system and components;

- the components (see clause 3.4) are not exposed to external vibration;

[A1] *deleted text* [A1]

- a negotiation takes place between the user / installer and the manufacturer concerning the particular conditions for the use and places of use of the machinery;

- the working area is adequately lit;

- the places of installation allow a safe use of the system;

- safety data sheets on the bulk materials to be conveyed are provided by the user / installer and are part of the design criteria.

EN 617, EN 618 and EN 620 may need to be considered for a complete continuous handling system (machine).

1 Scope

1.1 This standard specifies the special safety requirements for those types of fixed pneumatic handling systems and components as defined in clause 3, which are designed for conveying bulk materials on a continuous or an intermittent basis (batch conveying system) from the loading point(s) to the unloading point(s).

1.2 This European standard deals with the technical requirements to minimise the hazards listed in clause 4 which can arise during the operation and the maintenance of the pneumatic conveying system. when carried out in accordance with the specifications given by the manufacturer or his authorised representative.

Annex A gives a list of hazards according to ⟦A1⟩ EN ISO 12100-1 ⟨A1⟧. and the safety requirements and/or measures are specified in the same order as they are given in Annex A.

1.3 This standard applies to design, on site assembly, and commissioning stages.

1.4 This standard applies also to the built-in actuators and parts of the systems, which control the components.

1.5 Exclusions

This standard does not specify the requirements for any elements used as a link between a fixed part(s) of the system and any other part mounted on mobile/movable supports (e.g.: ship, unloaders, ...).

This standard does not take into account the risks of burns and scalds by the radiation of heat sources or by contact with hot gases.

This standard does not take into account the risk generated by ionising materials used in measuring equipment (e.g. level indicators).

This standard does not specify the requirements for handling specific hazardous materials, such as radiating material, explosives, explosive gases, ...

This standard does not specify the requirements for hazards due to electrostatic charges of pipes and equipment made of non-metallic materials.

The safety requirements for the transportation including loading and unloading of the components are not covered by this standard.

This standard does not apply to pneumatic conveying systems used underground, for mining and in public areas.

This European standard does not establish the additional requirements for: freezer applications, high temperatures, corrosive environments, strong magnetic fields, potentially explosive atmospheres, radioactive environment, operation on ships and earthquake effects, hazards during decommissioning.

⟦A1⟩ This standard does not specify the requirements for hazards due to noise. ⟨A1⟧

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

⟦A1⟩ *deleted text* ⟨A1⟧

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

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

EN 1050:1996, *Safety of machinery — Risk assessment*

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 explosions — Part 1: Explosion prevention and protection*

A1⟩ *deleted text* ⟨A1

EN 50014:1992, *Electrical apparatus for potentially explosive atmospheres — General requirements*

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

A1⟩ EN 60204-1:2006, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2005, modified)* ⟨A1

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

EN 61310-2:1995, *Safety of machinery — Indication, marking and actuation — Part 2: Requirements for marking*

EN 1672-2:1997, *Food processing machinery — Basic concepts — Part 2: Hygiene requirements*

CENELEC R044-001:1999, *Guidance and recommendations for the avoidance of hazards due to static electricity*

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, *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 13850, *Safety of machinery — Emergency stop — Principles for design (ISO 13850:2006)* ⟨A1

A1⟩ EN ISO 13857:2008, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs. (ISO 13857:2008)* ⟨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 14122-2:2001, *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⟩ EN ISO 14122-4, *Safety of machinery — Permanent means of access to machinery — Part 4: Fixed ladders (ISO 14122-4:2004)* ⟨A1

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

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply in addition to those stated in EN 1070:

3.1
pneumatic conveying system
a system (see 3.2 and 3.3) for the pneumatic conveying of loose bulk materials in pipes (ducts) by means of gas, usually air, including the piping and components (see 3.4) and limited to them

3.2 systems related terms

3.2.1
open and closed systems
open systems operate on a once-through basis with regard to the conveying gas. In closed systems the conveying gas is recirculated and all or part of this gas is reused

3.2.2
continuous and batch conveying systems
continuous conveying systems are those in which flow of gas and material is not interrupted during operation. In batch conveying systems individual batches of material are conveyed on an intermittent basis

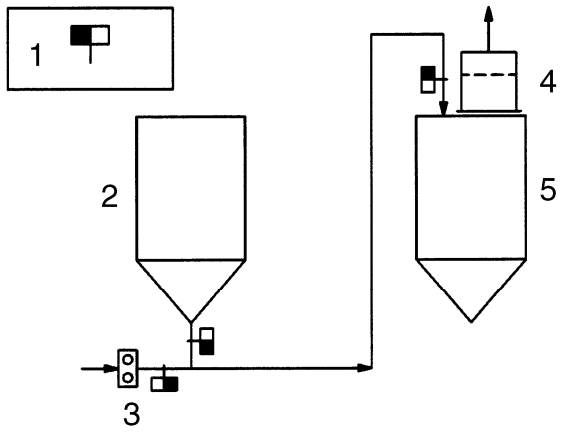
3.2.3
fixed systems
fixed systems are those where the relative position of all components is fixed. This includes:

- parts of the system mounted on mobile/movable supports (structure);

- flexible connecting piping between rigid piping.

3.3
systems and limits of systems
on the schematic drawings below, the limit of the system is defined by the black part of the flag

3.3.1
simple pressure conveying system
pneumatic conveying under pressure by blowing, with discharge into a single separator of gas and material, which is also a material-receiving vessel (see Figure 1)

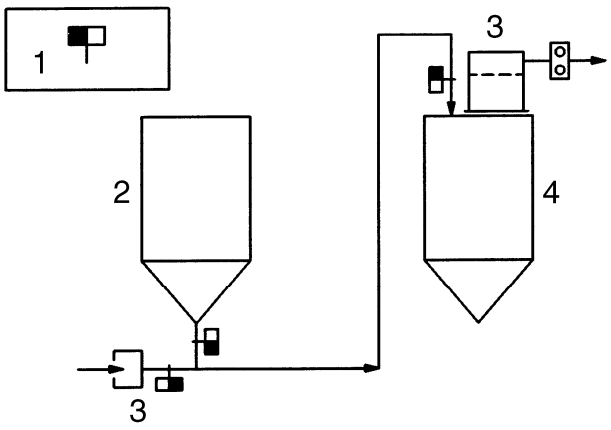


Key

1 EN 741/other
2 Storage hopper
3 Gas supply
4 Filter
5 Discharge hopper

Figure 1 - Example of a typical simple pressure conveying system

3.3.2
simple suction conveying system
pneumatic conveying under suction, with discharge into a single separator of gas and material, which is also a material receiving vessel (see Figure 2)

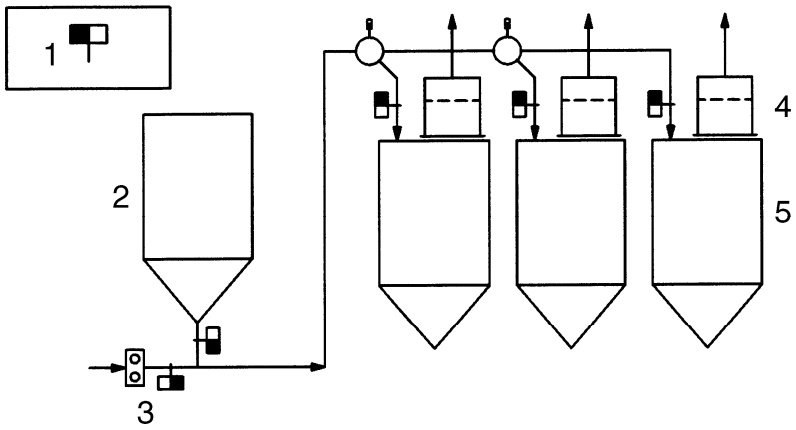


Key

1 EN 741/other
2 Storage hopper
3 Filter
4 Discharge hopper

Figure 2 - Example of a typical simple suction conveying system

3.3.3
multi discharge conveying system
pneumatic conveying by blowing or suction with discharge into several separators of gas and material, which are also material receiving vessels (see Figure 3)



Key

1 EN 741/other
2 Storage hopper
3 Gas supply
4 Filter
5 Discharge hopper

Figure 3 - Example of a typical multi discharge conveying system (pressure conveying system)