



SLOVENSKI STANDARD
SIST EN 14958:2006
01-oktober-2006

Stroji za obdelavo hrane – Stroji za mletje in obdelavo moke in zdroba – Varnostne in higienske zahteve

Food processing machinery - Machinery for grinding and processing flour and semolina - Safety and hygiene requirements

Getreideverarbeitungsmaschinen - Mahlen und Verarbeiten von Mehl und Grieß - Sicherheits- und Hygieneanforderungen

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Machines pour les produits alimentaires - Machines pour la mouture et la transformation de farines et de semoules - Prescriptions relatives a la sécurité et a l'hygiène

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ICS:

67.260

Tovarne in oprema za
živilsko industrijo

Plants and equipment for the
food industry

SIST EN 14958:2006

en

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English Version

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This European Standard was approved by CEN on 10 May 2006.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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

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COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN 14958:2006) has been prepared by Technical Committee CEN/TC 153 “Food processing machinery - Safety and hygiene specifications”, the secretariat of which is held by DIN.

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 December 2006, and conflicting national standards shall be withdrawn at the latest by December 2006.

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

It is one of a series of standards which have been prepared for machines and equipment for grain processing equipment in accordance with EN 1672-2.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, 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.

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Introduction

This European Standard is a C type 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 European Standard.

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.

Complementary to the hygiene requirements common to all food processing machines, specific requirements for cleanability and sanitation of the machines in the scope are formulated.

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1 Scope

This European Standard deals with the significant hazards, hazardous situations and events relevant to the following machinery for grinding and processing of flour and semolina, as defined in Clause 3: roller mills, plan sifters and rotary separators, air classifiers, rotating machines and impact machines.

The machines in the scope are stationery (not intended to be moved when in operation), have a capacity of at least 100 kg/h, and are intended for use in installations for grain processing, such as flour mills, semolina mills, grain cleaning and flaking plants.

This European Standard deals with the significant hazards during commissioning, operation, cleaning and maintenance of the machines in the scope when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer.

This European Standard is not applicable to:

- machines intended for household use or laboratory use;
- stone mills;
- equipment for dampening and heating;
- auxiliary equipment for conveying, weighting and bagging (without changing the characteristics of the products).

This European Standard is not dealing with the following:

- hazards related to decommissioning;
- the hazards of the installations into which the machines are incorporated other than those directly related to the machines in the scope (e.g. start of the installation, disconnection of energy supply, need from an emergency stop device);
- hazards due to the use of the machinery in a potentially explosive atmosphere (when producing this standard it has been assumed that the machinery in the scope, if designed and used in accordance with this European Standard, is not creating itself a hazardous atmosphere wholly or partly surrounding it).

NOTE If the machine is intended for use in a potentially explosive atmosphere, additional safety measures can be necessary¹⁾.

This European Standard is not applicable to machines for grinding and processing of flour and semolina which are manufactured before the date of its publication as EN.

2 Normative references

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.

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*

1) For the EU and the EEA the requirements of the EU directive 94/9/EC may apply.

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

EN 614-1:1995, *Safety of machinery — Ergonomic design principles — Part 1: Terminology and general principles*

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

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

EN 1088:1997, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*

EN 1127-1:1997, *Explosive atmospheres — Explosion prevention and protection — Part 1: Basic concepts and methodology*

EN 1672-2:2005, *Food processing machinery - Basic concepts - Part 2: Hygiene requirements*

EN 13284-1:2001, *Stationery source emissions — Determination of low range mass concentration of dust — Part 1: Manual gravimetric method*

EN 13478:2001, *Safety of machinery — Fire prevention and protection*

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

EN 60529:1991, *Degrees of protection provided by enclosures (IP code) (IEC 60529:1989)*

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

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 3744:1994)*

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

EN ISO 11201, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a work station and at other specified positions — Engineering method in an essentially free field over a reflecting plane (ISO 11201:1995)*

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

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

3 Terms and definitions

For the purposes of this document, the terms and definition given in EN ISO 12100-1:2003 and the following apply.

3.1**roller mill**

machine that carries out a physical action on grain and/or grain products causing granulometric reduction or shape modification by means of pressure generated by counter rotating components (see Figure 1)

3.2**plan sifter and rotary separator**

machine that carries out a granulometric separating action on grain and/or grain products by means of screens and/or sieves using rotary motion (see Figure 2)

3.3**air classifier**

machine that carries out a granulometric separating action and/or a separation according to specific weight on grain and/or grain products by means of screens or sieves by using stroking motion (see Figure 3).

The following machines are included in this group: purifiers, gravity separators, aspirators, de-stoners, vibrating separators

3.4**rotating machine**

machine that carries out on grain and/or grain products a physical action by means of rotary motion components and/or a separating action by means of fixed components with screens and sieves (see Figure 4).

The following machines are included in this group: vibrating finishers, intensive scourers, rotating sifters, bran finishers, crumblers, de-germinators, de-huskers

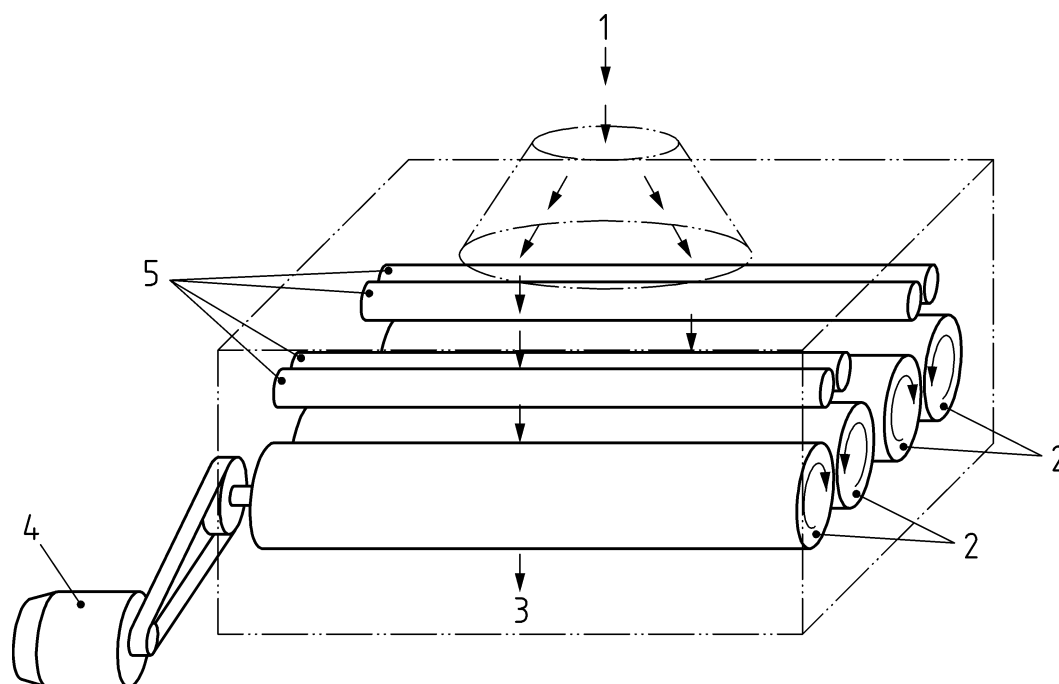
3.5**impact machine**

machine that carry out a physical action on grain and/or grain products by causing a granulometric reduction by impact using rotating components (see Figure 5).

The following machines are included in this group: impactors, infestation destroyers

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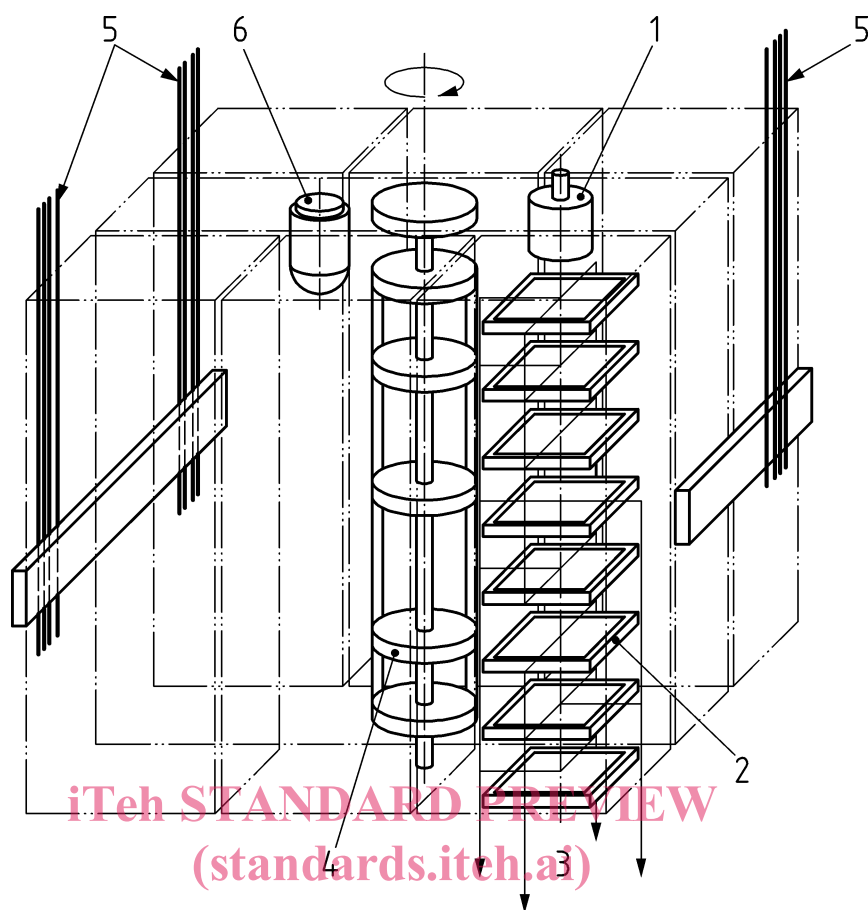
Key

- 1 product inlet
- 2 grinding rolls
- 3 product outlet
- 4 drive motor
- 5 feeding rolls

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Figure 1 — Operating principle of roller mill



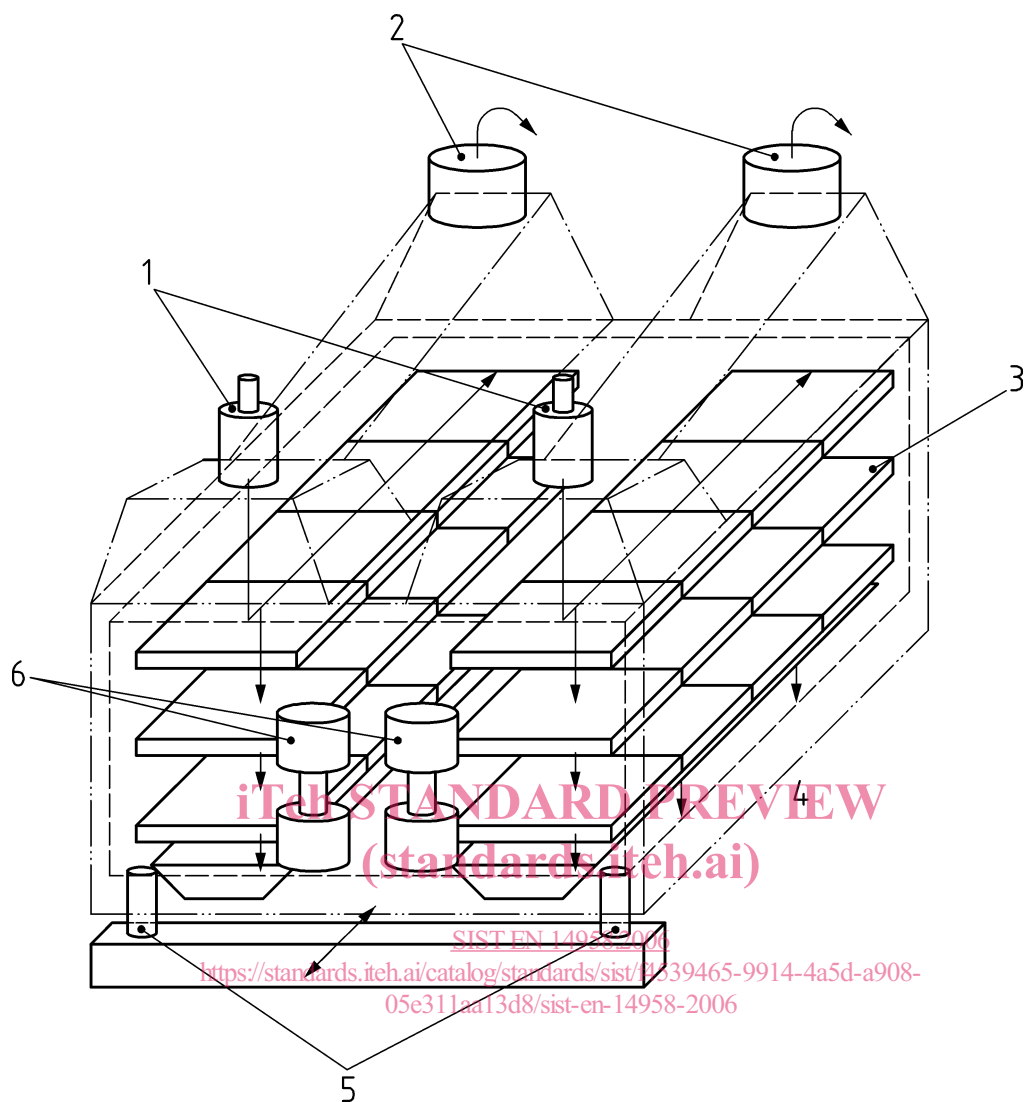
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Key

- 1 product inlet
- 2 sieves
- 3 product outlet
- 4 centrifugal weights
- 5 suspension rods
- 6 drive motor

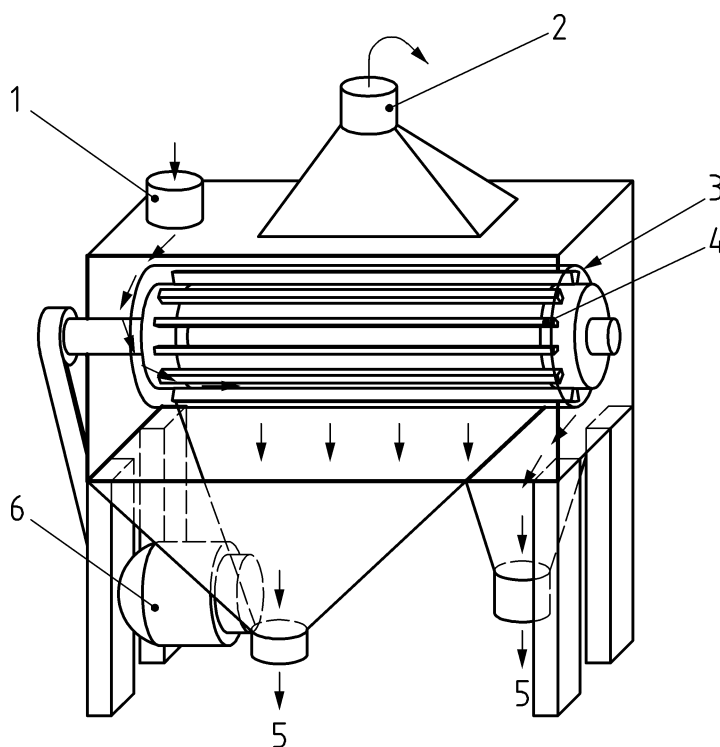
Figure 2 — Operating principle of plan sifter and rotary separator



Key

- 1 product inlet
- 2 air exhaust
- 3 sieves
- 4 product outlets
- 5 supporting springs
- 6 vibrating devices

Figure 3 — Operating principle of air classifier (purifier, gravity separator, aspirator, de-stoner, vibrating separator)

**Key**

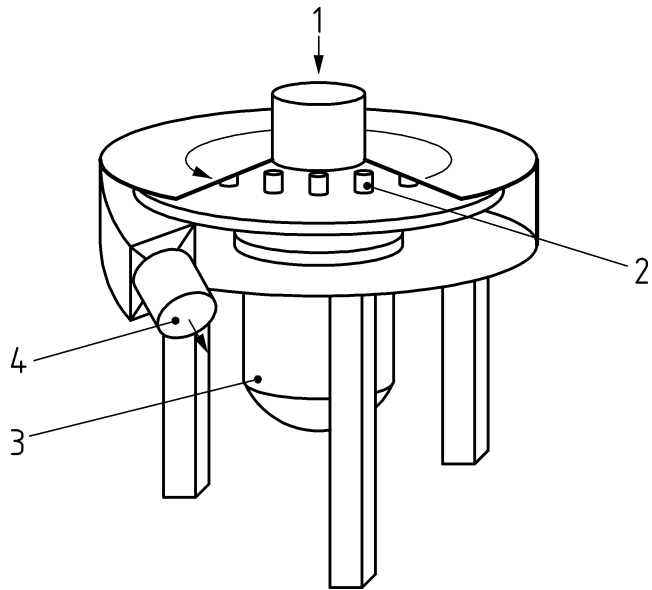
- 1 product inlet
- 2 air exhaust
- 3 fixed component (sieve or screen)
- 4 rotating component
- 5 product outlet
- 6 drive motor

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Figure 4 — Operating principle of rotating machine (vibrating fisher, intensive scourer, rotating sifter, bran finisher, crumbler, de-germinator, de-husker)



Key

- 1 product inlet
- 2 rotating components
- 3 drive motor
- 4 product outlet

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Figure 5 — Operating principle of impact machine (impactor, infestation destroyer)

4 List of significant hazards

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This clause contains all the significant hazards, hazardous situations and events, as far as they are dealt with in this European Standard, identified by risk assessment as significant for this type of machinery and which require action to eliminate or reduce the risk.

Before using this standard it is important to carry out a risk assessment of the different types of machines to check that it has the hazards identified in this clause.

Table 1 — List of significant hazards

Hazards	Hazard Zone	Relevant subclauses
4.1 Mechanical hazards		
4.1.1 Crushing	1	5.2.2.1 – 5.2.3.1 – 5.2.4.1 – 5.2.5.1 – 5.2.6.1 – 5.2.7.1.1 – 5.2.7.2.1
	2	5.2.2.2 – 5.2.3.2 – 5.2.5.2 – 5.2.6.2 – 5.2.7.1.2 – 5.2.7.2.2
	3	5.2.2.3 – 5.2.5.3
	4	5.2.2.4 – 5.2.5.4
	5	5.2.2.5
	6	5.2.2.6
4.1.2 Cutting or severing	1	5.2.2.1 – 5.2.3.1 – 5.2.4.1 – 5.2.5.1 – 5.2.6.1 – 5.2.7.1.1 – 5.2.7.2.1
	2	5.2.2.2 – 5.2.3.2 – 5.2.5.2 – 5.2.6.2 – 5.2.7.1.2 – 5.2.7.2.2
	3	5.2.2.3 – 5.2.5.3
	4	5.2.2.4 – 5.2.5.4
	5	5.2.2.5
	6	5.2.2.6
	7	5.2.2.7
4.1.3 Entanglement	1	5.2.2.1 – 5.2.3.1 – 5.2.4.1 – 5.2.5.1 – 5.2.6.1 – 5.2.7.1.1 – 5.2.7.2.1
	2	5.2.2.2 – 5.2.3.2 – 5.2.5.2 – 5.2.6.2 – 5.2.7.1.2 – 5.2.7.2.2
	3	5.2.2.3 – 5.2.5.3
	4	5.2.2.4 – 5.2.5.4
	5	5.2.2.5
	6	5.2.2.6
4.1.4 Abrasion and impact	8	5.2.3.3 – 5.2.4.2
4.2 Electrical hazards and electrostatic phenomena	–	5.3
4.3 Noise hazards e.g. hearing damage, tinnitus, accidents due to a reduced intelligibility of acoustic warning signals, limited speech intelligibility	–	5.4
4.4 Hazards resulting from inhalation of dust	–	5.5
4.5 Hazards due to neglecting ergonomic principles	–	5.6
4.6 Hazards due to neglecting hygienic principles	–	5.7.2.1 – 5.7.2.2 – 5.7.2.3 – 5.7.2.4 – 5.7.2.5 – 5.7.2.6 – 5.7.2.7
4.7 Fire and explosion hazards	–	5.8
4.8 harmful substances		5.9