



SLOVENSKI STANDARD

SIST EN 13570:2005

01-julij-2005

Stroji za predelavo hrane – Mešalni stroji – Varnostne in higienske zahteve

Food processing machinery - Mixing machines - Safety and hygiene requirements

Nahrungsmittelmaschinen - Mischmaschinen - Sicherheits- und Hygieneanforderungen

Machines pour les produits alimentaires - Malaxeurs - Prescriptions relatives a la sécurité et a l'hygiene

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ICS:

67.260

Tovarne in oprema za
živilsko industrijo

Plants and equipment for the
food industry

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EUROPEAN STANDARD

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Food processing machinery - Mixing machines - Safety and hygiene requirements

Machines pour les produits alimentaires - Malaxeurs -
Prescriptions relatives à la sécurité et à l'hygiène

Nahrungsmittelmaschinen - Mischmaschinen - Sicherheits-
und Hygieneanforderungen

This European Standard was approved by CEN on 25 March 2005.

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.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This European Standard (EN 13570:2005) 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of an identical text or by endorsement, at the latest by November 2005, and conflicting national standards shall be withdrawn at the latest by November 2005.

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 98/37.

For relationship with EU Directive 98/37, see informative Annex ZA, which is an integral part of this document.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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Introduction

This European Standard is a type C standard as stated in EN ISO 12100-1.

The machinery concerned and the extent to which hazards, hazardous situations and 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.

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EN 13570:2005 (E)**1 Scope**

1.1 This European Standard specifies safety and hygiene requirements to minimise the hazards which can arise during the commissioning, the use and the maintenance of mixing machines and their accessories intended to be used in sausage kitchens and industrial operations.

This European Standard deals with all significant hazards, hazardous situations and events relevant to mixing machines, when they are used as intended and under the conditions foreseen by the manufacturer (see Clause 4).

This European standard is not applicable to mixing machines which are manufactured before the date of publication of this European Standard by CEN.

1.2 This European Standard covers the following types of mixing machines:

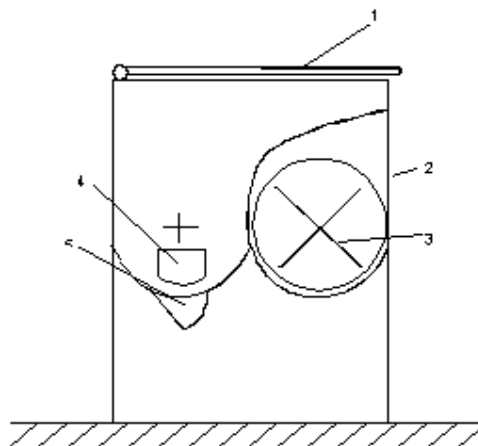
- Mixing machines with a tilting container, one or several mixing shafts
- Mixing machines with a stationary mixing container, front face or bottom discharge opening
- Mixing machines with a container and loading device
- Mixing machines with a container, mixing shaft(s), screw conveyor and loading device

The mixing machines are constructed of a machine frame, a trough-shaped mixing container, one or several mixing shafts, an associated drive and electrical, hydraulic and pneumatic components, depending on machine type.

The mixing shaft can be equipped with wings, screws, rods, paddles or the like.

Mixing machines may be equipped e.g. with [SIST EN 13570:2005](https://standards.iteh.ai/catalog/standards/sist/954ac194-65e6-4c05-b314-41cd2da976c4/sist-en-13570-2005)

- cover over the top of the mixing container,
- pipe connections for gases, steam, water or vacuum,
- protective hood over the front face discharge opening,
- lifting devices for mixing shaft,
- loading device,
- screw conveyor at the discharge opening.

**KEY**

- 1 cover
- 2 mixing container
- 3 mixing shaft
- 4 front-face discharge opening
- 5 bottom discharge opening

Figure 1 — Components of a mixing machine

1.3 Intended use

The fresh or frozen meat, meat product, meat pieces or fish, salt, spices and other additives are loaded into the mixing container by hand or by means of a loading device and mixed by the mixing unit.

The discharge outlet may be located at the bottom or the front face and can either be a slide, a flap, a pipe, a pump or a screw.

During the production of this standard the following assumptions were made:

- Mixing machines are installed at a sufficiently lighted place.
- They are used only by designated and skilled operators.

Although it should be advised against, the standard, taking into account practice, deals with the hazards due to cleaning with pressurised water.

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 distance to prevent danger zones being reached by the upper limbs*

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

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

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EN 954-1:1996, *Safety of machinery — Safety - related parts of control systems — Part 1: General principles for design.*

EN 982, *Safety of machinery - Safety requirements for fluid power systems and their components — Hydraulics.*

EN 1005-1, *Safety of machinery — Human physical performance — Part 1: Terms and definitions.*

EN 1005-2, *Safety of machinery - Human physical performance - Part 2: Manual handling of machinery and component parts of machinery*

EN 1005-3, *Safety of machinery — Human physical performance — Part 3: Recommended force limits for machine operation.*

EN 1050, *Safety of machinery — Principles for risk assessment.*

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

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

EN 60204-1:1997, *Safety of machinery — Electrical equipment of machinery — Part 1: General provisions.*

EN 60529, *Degrees of protection provided by enclosures (IP Code)(IEC 529:1989).*

EN 61496-1:1997, *Safety of machinery — Electrosensitive protective equipment — Part 1: General requirements and tests (IEC 61496-1:2004, modified),*

EN ISO 3744, *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 11201:1995, *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, *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 European Standard, the terms and definitions given in EN ISO 12100-1:2003 and the following apply.

3.1**working platform**

accessible standing area

3.2**interlocking step**

interlocked standing area

3.3**discharge flap**

flap at the discharge outlet

3.4**loading device**

lift tilt device for the lifting and tilting of trolleys and containers

3.5**product container**

device for holding products to be processed

3.6**feed intake cover**

movable device with safety function at the feed intake

3.7**trolley**

wheel-mounted device for holding the products to be processed

3.8**design dimension**

sum of the dimensions measured from the floor, or in case of steps, intermediate steps or working platforms: from the standing place, to the edge of the mixing container and from the edge of the mixing container to the next danger point in the mixing container.

3.9**mixing container**

container for holding products to be processed

3.10**mixing shaft**

rotating component in the mixing container for mixing the product

3.11**mechanical trip bar**

device with safety function

3.12**protective grid (mixing container)**

device on the opening of the mixing container with safety function

3.13**protective hood (discharge outlet)**

device over the discharge outlet with safety function

3.14**safeguard against toppling**

device for preventing the machine from lifting or toppling over

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3.15

feeding screw

rotating screw-shaped component in the mixing container for meat transport

3.16

transport carriage

trolley for holding the lock nut, set of cutting tools, worm and feeding screw

3.17

protective position of an interlocked step

step in horizontal position, causing stopping of the machine

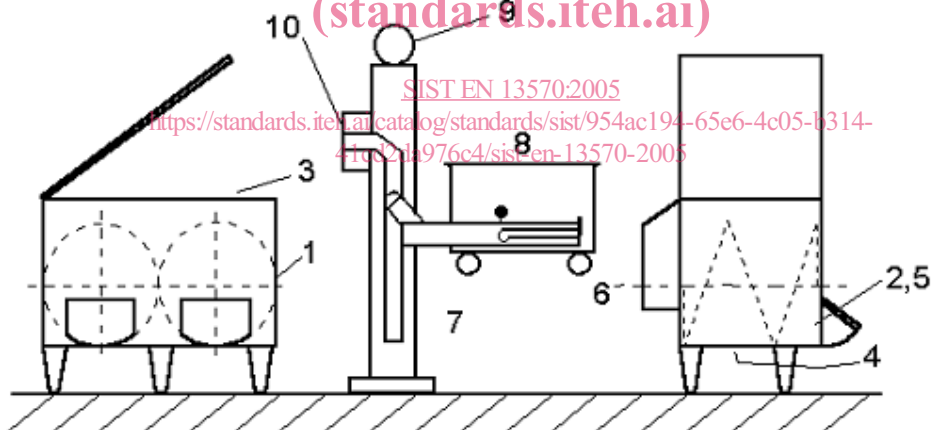
4 List of significant hazards

4.1 General

This Clause and Annex C contains all the significant hazards, hazardous situations and events, as far as they are dealt with in this standard, identified by a risk assessment significant for this type of machine and which require action identified to eliminate or reduce risk.

Before using this standard it is important to carry out a risk assessment according to EN 1050 of the mixing machine to check that it has identified all significant hazards, hazardous situations and events in this Clause.

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KEY

1	Zone 1	6	Zone 6
2	Zone 2	7	Zone 7
3	Zone 3	8	Zone 8
4	Zone 4	9	Zone 9
5	Zone 5	10	Zone 10

Figure 2 — Danger zones on mixing machines

4.2 Mechanical hazards

4.2.1 Mixing machines with a container, one or several mixing shafts and feeding screw

— Zone 1

Rotating feeding screw and/or mixing shaft in mixing container.

Hazards from entanglement, shearing or severing to fingers, hand or fore arm.

4.2.2 Discharge outlet on mixing machines with a stationary mixing container, one or several mixing shafts, front face or bottom discharge

— Zone 2

Rotating mixing shaft(s) in mixing container, access through discharge outlet or draining outlet.

Hazards from entanglement, shearing or severing to fingers, hand or forearm.

— Zone 4

Powered closure of discharge flap or slide.

Crushing hazard to fingers, hand or forearm.

4.2.3 Drive units

— Zone 6

Drive of mixing shaft

Hazards from crushing, shearing or drawing-in to fingers or hand.

— Zone 5

Drive mechanism used to raise or lower the protective hood on discharge.

Hazards from crushing or shearing of upper limbs.

4.2.4 Machine components e. g. cover over mixing container

— Zone 3

Unintentional shutting of closing machine components and intentional closing of machine components.

Hazards from crushing to fingers or hand.

4.2.5 Loading device on mixing machines

— Zone 7

Space below transport carriage or container.

Hazards from trapping or crushing at floor level during descent to the body.

Hazards from impact during uncontrolled descent e. g. in the case of mechanical failures to the body.

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