



# SLOVENSKI STANDARD

## SIST EN 13871:2005+A1:2010

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Nadomešča:

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**Stroji za predelavo hrane - Stroji za razrezovanje/razkosavanje na kocke - Varnostne in higienske zahteve (vključno z dopolnilom A1)**

Food processing machinery - Cubes cutting machinery - Safety and hygiene requirements

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Machines pour les produits alimentaires - Machines à couper en cubes - Prescriptions relatives à la sécurité et à l'hygiène

**Ta slovenski standard je istoveten z: EN 13871:2005+A1:2010**

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**ICS:**

67.260

Tovarne in oprema za živilsko industrijo

Plants and equipment for the food industry

**SIST EN 13871:2005+A1:2010**

**en,fr,de**

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EUROPEAN STANDARD

**EN 13871:2005+A1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2010

ICS 67.260

Supersedes EN 13871:2005

English Version

## Food processing machinery - Cubes cutting machinery - Safety and hygiene requirements

Machines pour les produits alimentaires - Machines à couper en cubes - Prescriptions relatives à la sécurité et à l'hygiène

Nahrungsmittelmaschinen - Würfelschneidemaschinen - Sicherheits- und Hygieneanforderungen

This European Standard was approved by CEN on 6 August 2004 and includes Corrigendum 1 issued by CEN on 25 May 2005 and Amendment 1 approved by CEN on 20 May 2010.

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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 Management Centre has the same status as the official versions.

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**EN 13871:2005+A1:2010 (E)****Foreword**

This document (EN 13871:2005+A1:2010) 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of an identical text or by endorsement, at the latest by December 2010, and conflicting national standards shall be withdrawn at the latest by December 2010.

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 2010-05-20 and Corrigendum 1, issued by CEN on 2005-05-25.

This document supersedes EN 13871:2005.

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

The modifications of the related CEN Corrigendum have been implemented at the appropriate places in the text and are indicated by the tags  $\boxed{AC}$   $\boxed{AC}^{(1)}$ .

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 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, 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.

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<sup>1)</sup> Applicable to the English version.

## Introduction

This document 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 document.

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 13871:2005+A1:2010 (E)****1 Scope**

This document covers cube cutting machines and accessories.

**1.1** This document specifies requirements for the design and manufacture of cubes cutting machines (see Figures 1 to 6 and 12 to 18).

The machines covered by this document are used to size reduce fresh meat, meat products and products of the same kind by cutting in a cutting unit.

This document deals with all significant hazards, hazardous situations and events relevant to machines, appliances and machinery, when they are used **[A1]** as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer (see Clause 4) **[A1]**.

This document deals with the hazards which can arise during commissioning, operation, maintenance and de-commissioning of the machine.

This document is not applicable to cubes cutting machines which are manufactured before the date of publication of this document by CEN.

**1.2 This document covers the following types of cubes cutting machines:**

- Cubes cutting machines with a forward feed plunger, a lattice and a sickle blade with loading by hand (see Figure 2)
- Cubes cutting machines with a forward feed plunger, a lattice, a sickle blade, a feed intake hopper and a loading device (see Figure 1)
- Cubes cutting machines with a rotating cutting tool, a multi-segment blade and a feed conveyor (see Figures 3 and 5)
- Cubes cutting machines with a rotating cutting tool and centrifugal force loading (see Figure 6)

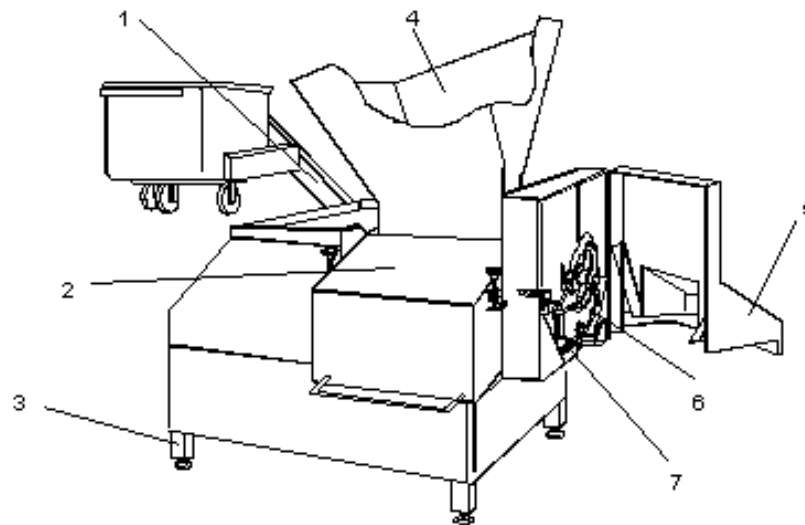
**1.3 Machine construction**

Cubes cutting machines are constructed of a machine frame, a feed intake chamber/magazine, a forward feed plunger or nip roller, a lattice or a rotating cutting tool, a sickle or multi-segment blade, an associated drive and electrical, hydraulic and pneumatic components, depending on machine type.

Cubes cutting machines in the scope of this document may be equipped with:

- a lid over the feed intake chamber/magazine;
- a transfer car for the sickle blade/multi-segment blade, cutting blade and lattice;
- a loading device;
- a feed conveyor.



**Key**

- |                                |                                        |
|--------------------------------|----------------------------------------|
| 1 Loading device               | 5 Cutting chamber door/protective hood |
| 2 Feed intake channel/magazine | 6 Sickle blade/multi-segment blade     |
| 3 Frame                        | 7 Lattice                              |
| 4 Feed intake hopper           |                                        |

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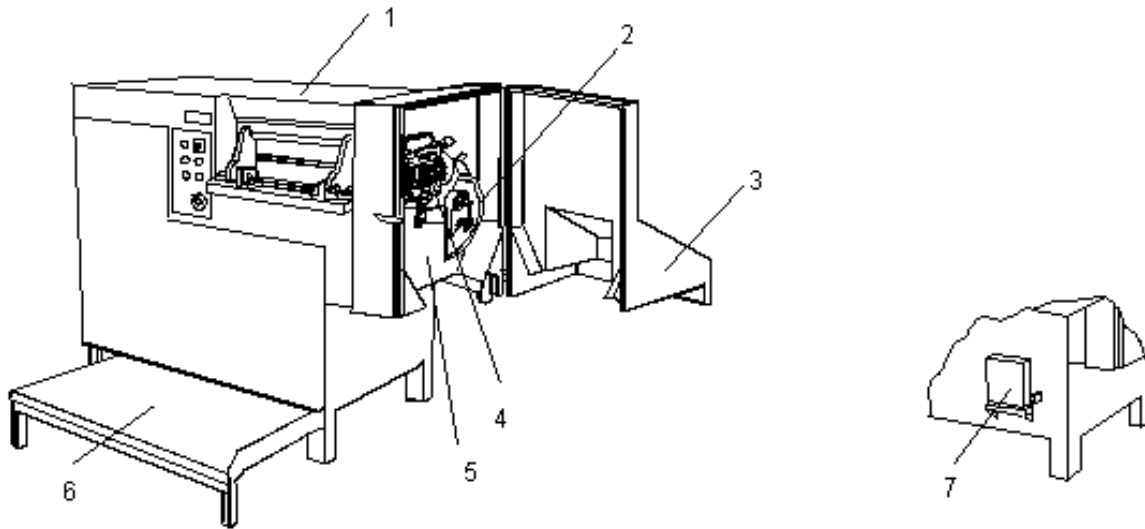
**Figure 1 — Cubes cutting machine type with forward feed plunger, lattice, sickle blade, feed intake hopper and loading device**

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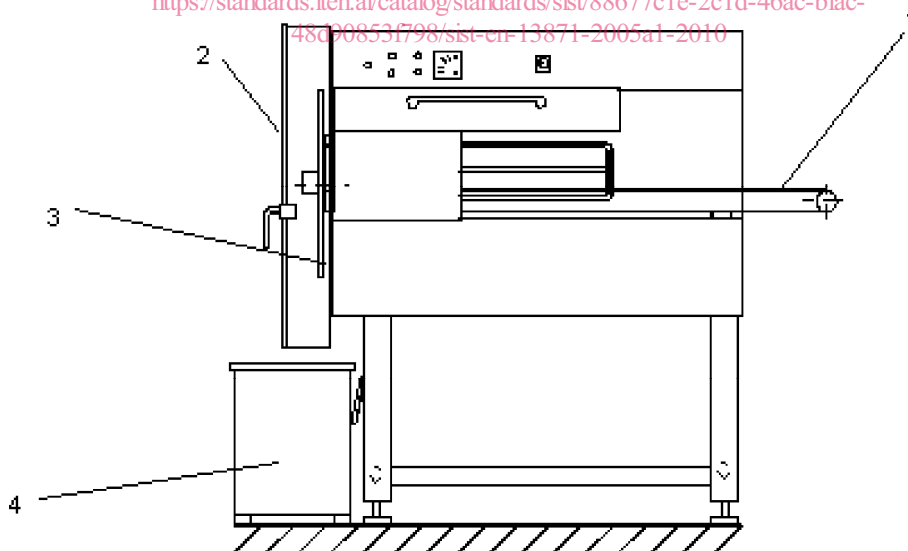
## Key

- |   |                                      |   |                  |
|---|--------------------------------------|---|------------------|
| 1 | Feed intake trough                   | 5 | Cutting chamber  |
| 2 | Sickle blade/multi-segment blade     | 6 | Step             |
| 3 | Cutting chamber door/protective hood | 7 | Interlocked step |
| 4 | Lattice                              |   |                  |

Figure 2 — Cubes cutting machine type with forward feed plunger, lattice and sickle blade and loading by hand <sup>(AC)</sup>

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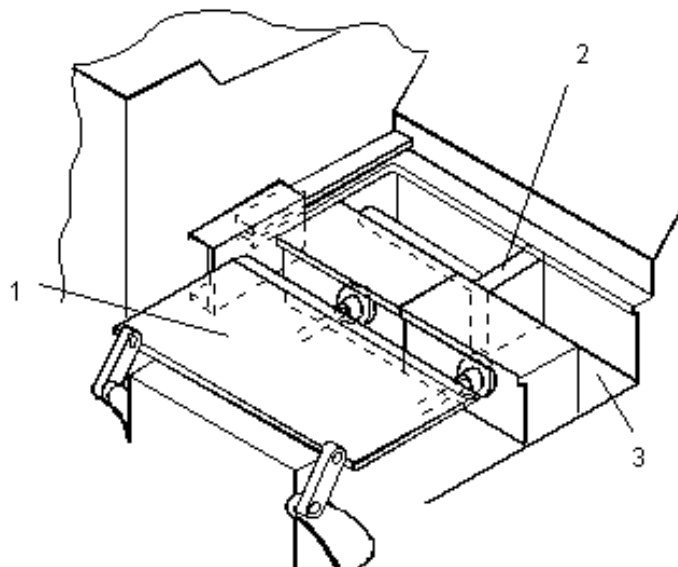
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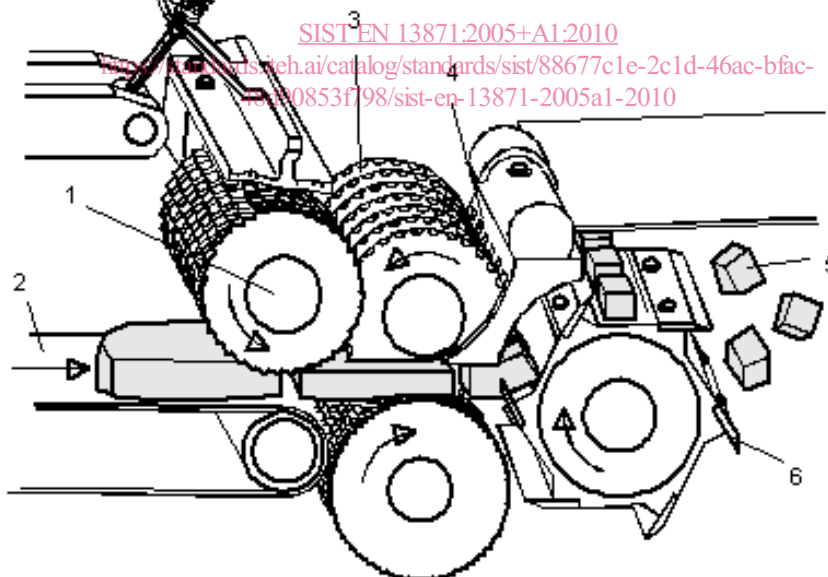
- |   |                                  |
|---|----------------------------------|
| 1 | Feed conveyor                    |
| 2 | Cutting chamber door             |
| 3 | Sickle blade/multi-segment blade |
| 4 | Container                        |

Figure 3 — Cubes cutting machine type with various blades, conveying unit and feed conveyor

**Key**

- 1 Closure gate
- 2 Forward feed plunger
- 3 Feed intake chamber/magazine

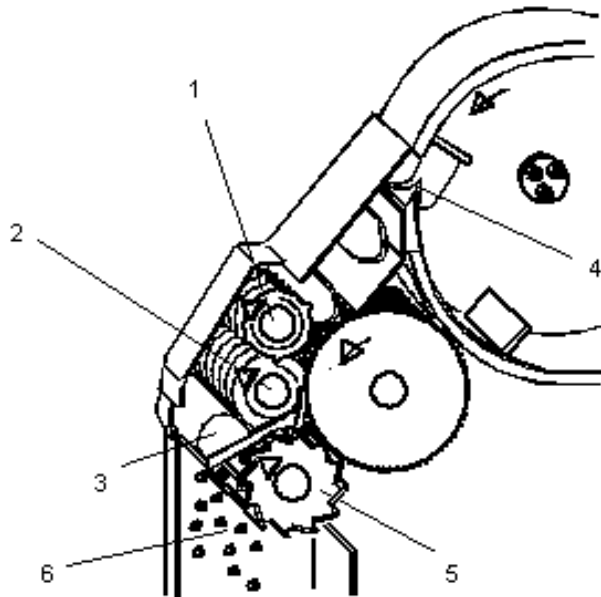
**Figure 4 — Details of feed intake chamber**  
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**Key**

- 1 Nip roller
- 2 Feed conveyor
- 3 Rotating cutting tool
- 4 Stripper comb
- 5 Cut product
- 6 Multi-segment blade

**Figure 5 — Cubes cutting machine type with multi-segment blade and feed conveyor**

## EN 13871:2005+A1:2010 (E)

**Key**

- |                         |                       |
|-------------------------|-----------------------|
| 1 Nip roller            | 4 Cutting blade       |
| 2 Rotating cutting tool | 5 Multi-segment blade |
| 3 Stripper comb         | 6 Cut product         |

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**Figure 6 — Cubes cutting machine type with multi-segment blade and centrifugal force feeding**

**1.4 Intended use**

The intended use (as defined in EN ISO 12100-1:2003, 3.12) of cubes cutting machines as dealt with in this document is described in 1.1.

The product to be cut is fed manually or by the loading device/feed conveyor into the feed intake chamber. The product is fed to the cutting unit by the forward feed plunger and/or by the nip roller or by centrifugal force and size reduced.

Although it should be advised against, the document, 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 349:1993, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*

EN 614-1, *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*

EN 982:1996, *Safety of machinery — Safety requirements for fluid power systems and components — Hydraulics*

- EN 983:1996, *Safety of machinery — Safety requirements for fluid power systems and components — Pneumatics*
- EN 1005-1:2001, *Safety of machinery — Human physical performance — Part 1: Terms and definitions*
- EN 1005-2:2003, *Safety of machinery — Human physical performance — Part 2: Manual handling of machinery and parts of machinery*
- EN 1005-3:2002, *Safety of machinery — Human physical performance — Part 3: Recommended force limits for machinery operation*
- 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 1672-2:2005, *Food processing machinery — Basic concepts — Part 2: Hygiene requirements*
- EN 60204-1:2006, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2005, modified)*
- EN 60529, *Degrees of protection provided by enclosures (IP-Code) (IEC 60529:1989)*
- EN 61496-1:2004, *Safety of machinery — Electro-sensitive protective equipment — Part 1: General requirements and tests (IEC 61496-1:2004, modified)*
- 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 4287, *Geometrical product specifications (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters (ISO 4287:1997)*
- 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 11688-1:1998, *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)*
- EN ISO 13849-1:2008, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2006)*
- EN ISO 13857:2008, *Safety of machinery — Safety distances to prevent danger zones being reached by the upper limbs (ISO 13857:2008) *

**EN 13871:2005+A1:2010 (E)****3 Terms and definitions**

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

**3.1****stripper comb**

comb-shaped rake within the rotating cutting tool for wiping off the product

**3.2****nip roller**

shaft with teeth and passes for transporting of product

**3.3****working platform**

accessible standing area

**3.4****step**

standing area for operating the machine

**3.5****container**

unit for holding processed product

**3.6****loading device**

lifting and/or tilting device for raising and tilting transport trolleys or containers

**3.7****construction height**

height of hopper edge, measured from the floor

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**3.8****lid**

movable unit with safety function on the feed intake chamber

**3.9****feed intake channel**

chamber for holding the meat or product of the same kind to be processed

**3.10****feed intake chamber/ magazine**

chamber between feed forward feed plunger and lattice

**3.11****feed intake trough/ feed intake hopper**

container for receiving product to be processed

**3.12****locking device**

device for fixing the transport trolley or container in the load bearing device

**3.13****transport trolley**

wheel-mounted device for holding product to be processed

**3.14****lattice**

cutting tool with blades arranged in parallel

**3.15****design dimension**

sum of dimensions measured from the floor (standing area), for steps, intermediate steps or ladders are provided, from the standing area to the feed intake hopper edge and to the first danger point in the feed intake hopper

**3.16****load bearing device**

device for holding transport trolleys/vats

**3.17****mast-type loading device**

loading device with a fixed post

**3.18****frame**

basic construction for carrying the machine body including legs

**3.19****product to be cut**

meat or products of the same kind to be processed

**3.20****cutting blade**

blade-shaped stationary cutting tool

**3.21****cutting chamber**

part of the housing for holding the lattice and sickle blade

**3.22****cutting chamber door**

interlocked door to the cutting chamber

**3.23****protective hood/ protective grid**

protective device for preventing access to the danger point at the lattice and sickle blade over the discharge opening

**3.24****restrictor plate**

fixed non-detachable or interlocked movable/ detachable device above the feed intake chamber/magazine

**3.25****hinged arm**

movable part of the lifting and tilting device

**3.26****sickle blade/ multi-segment blade**

rotating cutting tool

**3.27****transport car**

wheel-mounted unit for holding the cutting unit

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