

**TOIDUTÖÖTLEMISMASINAD. KUUBIKUTE LÕIKAMISE
MASINAD. OHUTUS- JA HÜGIEENINÕUDED**

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 13871:2014 sisaldab Euroopa standardi EN 13871:2014 ingliskeelset teksti.	This Estonian standard EVS-EN 13871:2014 consists of the English text of the European standard EN 13871:2014.
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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 13 September 2014.

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Foreword

This document (EN 13871:2014) has been prepared by Technical Committee CEN/TC 153 "Machinery intended for use with foodstuffs and feed", 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of an identical text or by endorsement, at the latest by May 2015 and conflicting national standards shall be withdrawn at the latest by May 2015.

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 supersedes EN 13871:2005+A1:2010.

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 2006/42/EC.

For relationship with EU Directive 2006/42/EC, see informative Annex ZA, which is an integral part of this document.

Significant changes:

The significant changes with respect to the previous edition EN 13871:2005+A1:2010 are listed below:

- Clause 1: clarification of the Scope;
- Clause 2: normative references updated;
- Clause 3: terms partly revised; consistent use throughout the standard;
- Clause 4: new presentation in a table;
- 5.2.1: requirements to interlocking devices and the stopping time; more specific requirements to product pusher, protective rail and blade guide;
- 5.2.2.2: requirements to blade housing and blade guard;
- Clause 6: verification list updated;
- Clause 7: completion of 7.2 with all information referred to in Clause 5, now including operator training; 7.3 now contains the marking;
- Annexes: old Annex C "Common hazards" deleted and shifted into appropriate clauses;
- figures partly renewed.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This document is a type C standard as stated in EN ISO 12100.

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.

1 Scope

1.1 General

This European Standard covers cube cutting machines (see Figure 1 to Figure 6 and Figure 12 to Figure 18) and specifies requirements for the design and manufacture.

The machines covered by this European Standard are used to size reduce fresh meat, meat products and products of the same kind (e.g. fish, vegetables and cheese) by cutting in a cutting chamber.

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

This European Standard deals with the hazards which can arise during all the lifetime of the machine, including the phases of transport, assembly, operation, maintenance, dismantling, disabling and scrapping of the machine.

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

1.2 Types of cube cutting machines covered by this standard

This European Standard covers the following types of cubes cutting machines:

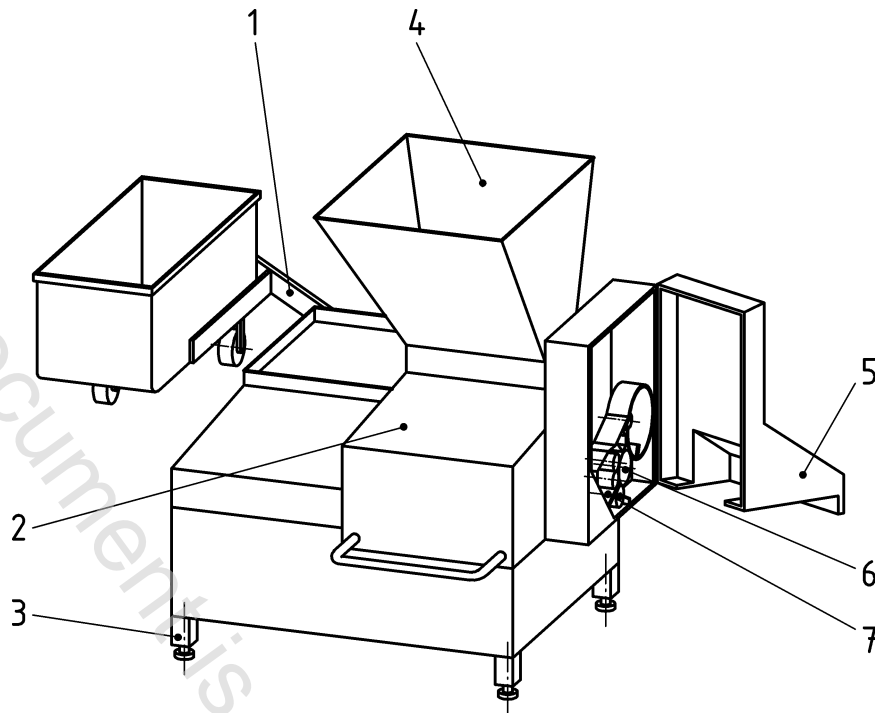
- cubes cutting machines with a forward feed plunger, a lattice and a sickle/multi-segment blade with loading by hand (see Figure 2);
- cubes cutting machines with a forward feed plunger, a lattice, a sickle/multi-segment blade, a feed intake hopper and a loading device (see Figure 1);
- cubes cutting machines with a rotating cutting tool, a sickle/multi-segment blade and a feed conveyor (see Figure 3 and Figure 5);
- cubes cutting machines with a rotating cutting tool and centrifugal force loading (see Figure 6);
- cubes cutting machines with or without integrated conveyor systems.

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/multi-segment blade, an associated drive and electrical, hydraulic and pneumatic components, depending on machine type.

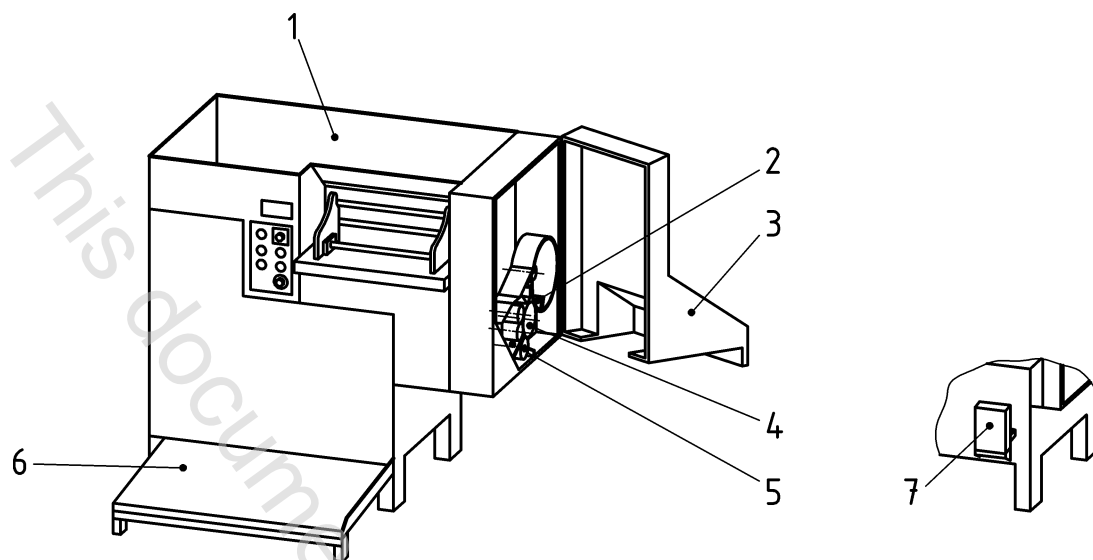
Cubes cutting machines in the scope of this European Standard may be equipped with:

- a lid over the feed intake chamber/magazine;
- a transfer car for the sickle /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/multi-segment blade |
| 3 frame | 7 lattice |
| 4 feed intake hopper | |

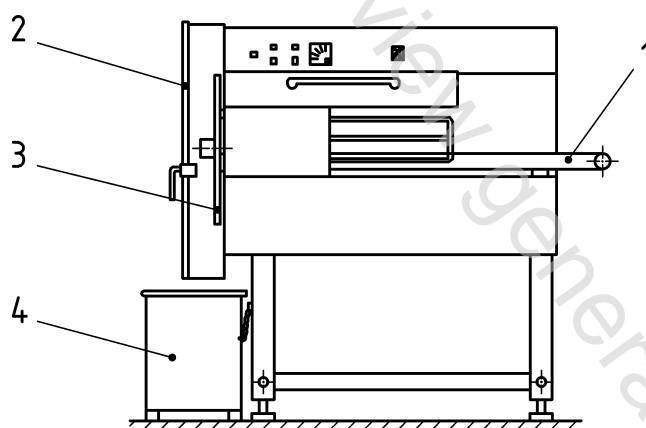
Figure 1 — Cubes cutting machine type with forward feed plunger, lattice, sickle blade, feed intake hopper and loading device



Key

- | | |
|--|--------------------|
| 1 feed intake trough | 5 cutting chamber |
| 2 sickle/multi-segment blade | 6 step |
| 3 cutting chamber door/protective hood | 7 interlocked step |
| 4 lattice | |

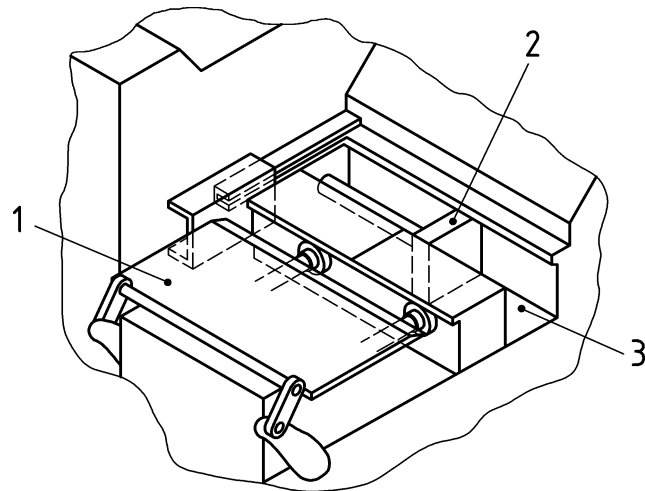
Figure 2 — Cubes cutting machine type with forward feed plunger, lattice and sickle blade and loading by hand



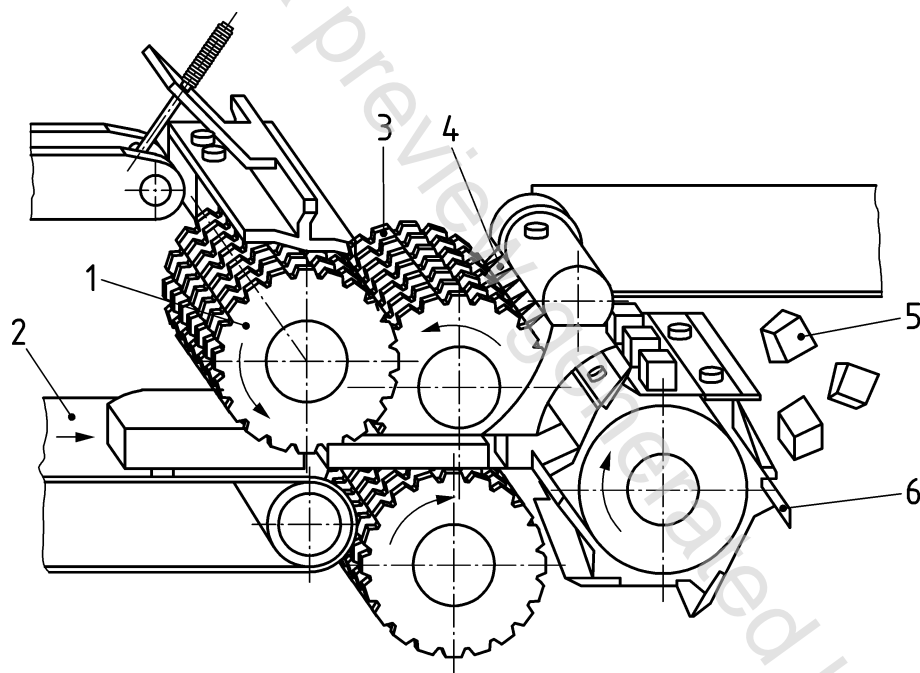
Key

- | |
|------------------------------|
| 1 feed conveyor |
| 2 cutting chamber door |
| 3 sickle/multi-segment blade |
| 4 container |

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

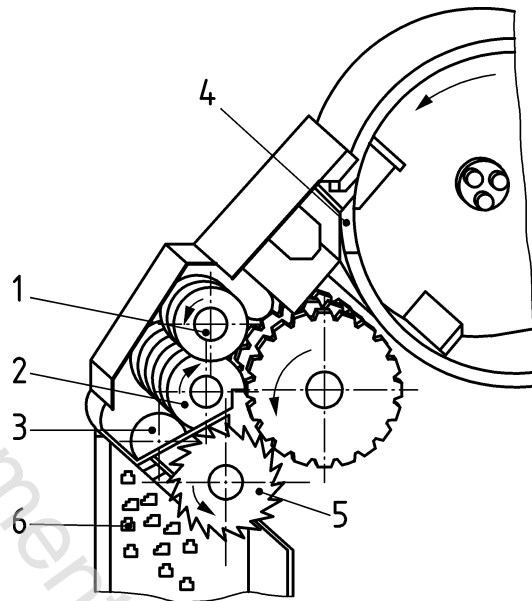
**Key**

- 1 closure gate
- 2 forward feed plunger
- 3 feed intake chamber/magazine

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

- | | |
|-------------------------|-----------------------|
| 1 nip roller | 4 stripper comb |
| 2 feed conveyor | 5 cut product |
| 3 rotating cutting tool | 6 multi-segment blade |

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

**Key**

1 nip roller	4 cutting blade
2 rotating cutting tool	5 multi-segment blade
3 stripper comb	6 cut product

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 12100:2010, 3.23) 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.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 349, *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+A1:2009, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards*

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 machinery operation*

EN 1672-2:2005+A1:2009, *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)*

EN 61496-1:2004, *Safety of machinery — Electro-sensitive protective equipment — Part 1: General requirements and tests (IEC 61496-1:2002, modified)*

EN ISO 3744:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Engineering methods for an essentially free field over a reflecting plane (ISO 3744:2010)*

EN ISO 4413, *Hydraulic fluid power — General rules and safety requirements for systems and their components (ISO 4413)*

EN ISO 4414, *Pneumatic fluid power — General rules and safety requirements for systems and their components (ISO 4414)*

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

EN ISO 11201:2010, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections (ISO 11201:2010)*

EN ISO 11688-1, *Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 1: Planning (ISO/TR 11688-1)*

EN ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction (ISO 12100:2010)*

EN ISO 13849-1, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1)*

EN ISO 13857:2008, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2008)*

EN ISO 14119:2013, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection (ISO 14119:2013)*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010 and the following apply.

3.1

stripper comb

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