



SLOVENSKI STANDARD

SIST EN 13871:2005

01-maj-2005

Strojna predelava hrane - Stroji za razkosavanje - Varnostne in higienske zahteve

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

Nahrungsmittelmaschinen - Würfelschneidemaschinen - Sicherheits- und Hygieneanforderungen

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

<https://standards.iteh.ai/catalog/standards/sist/752699cb-118c-47a6-be45-12471ce62944/sist-en-13871-2005>

Ta slovenski standard je istoveten z: EN 13871:2005

ICS:

67.260

Tovarne in oprema za
živilsko industrijo

Plants and equipment for the
food industry

SIST EN 13871:2005

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 13871:2005](https://standards.iteh.ai/catalog/standards/sist/752699cb-118c-47a6-be45-12471ce62944/sist-en-13871-2005)

<https://standards.iteh.ai/catalog/standards/sist/752699cb-118c-47a6-be45-12471ce62944/sist-en-13871-2005>

EUROPEAN STANDARD

EN 13871

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2005

ICS 67.260

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.

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

[SIST EN 13871:2005](https://standards.iteh.ai/catalog/standards/sist/752699cb-118c-47a6-be45-12471ce62944/sist-en-13871-2005)

<https://standards.iteh.ai/catalog/standards/sist/752699cb-118c-47a6-be45-12471ce62944/sist-en-13871-2005>



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

	Page
Foreword.....	5
Introduction	6
1 Scope	7
2 Normative references	11
3 Terms and definitions	12
4 List of significant hazards	15
4.1 General.....	15
4.2 Mechanical hazards	15
4.3 Electrical hazards	18
4.4 Hydraulic and pneumatic hazards	18
4.5 Hazard from loss of stability.....	18
4.6 Noise hazard.....	18
4.7 Hazards generated by neglecting ergonomic principles.....	19
4.8 Hazards caused by non-compliance with hygiene principles	19
5 Safety and hygiene requirements and/or protective measures.....	19
5.1 General.....	19
5.2 Mechanical hazards	19
5.3 Electrical hazards	33
5.4 Hydraulic and pneumatic hazards	35
5.5 Hazard from loss of stability.....	36
5.6 Noise reduction.....	36
5.7 Ergonomic requirements	36
5.8 Hygiene and cleaning.....	36
6 Verification of safety and hygiene requirements and/or protective measures	40
7 Information for use	41
7.1 Instruction handbook	41
7.2 Training of operators.....	42
7.3 Marking	42
Annex A (normative) Noise test code for cubes cutting machines (grade 2).....	43
A.1 Determination of the emission sound pressure level.....	43
A.2 Installation and mounting conditions.....	43
A.3 Operating conditions.....	43
A.4 Measurement.....	43
A.5 Information to be recorded	43
A.6 Information to be reported	44
A.7 Declaration and verification of the noise emission values	44
Annex B (normative) Design principles to ensure the cleanability of cubes cutting machines	45
B.1 Terms and definitions	45
B.2 Materials of construction	46
B.3 Design	46
Annex C (normative) Common hazards for food processing machines and reduction requirements applicable to cubes cutting machines.....	50
C.1 Cutting hazards.....	50
C.2 Risks from cleaning.....	50
C.3 External influences on electrical equipment	50
C.4 Restoration of energy supply after an interruption; unexpected start-up.....	50

C.5	Hazards from neglecting use of PPE.....	51
C.6	Hazards of materials being processed.....	51
C.7	Hazards of slip and trip.....	51
Annex ZA (informative)	Relationship between this document and the Essential Requirements of EU Directive 98/37/EC	52
Bibliography	53
Figures		
Figure 1	— Cubes cutting machine type with forward feed plunger, lattice, sickle blade, feed intake hopper and loading device.....	8
Figure 2	— Cubes cutting machine type with forward feed plunger, lattice and sickle blade and loading by hand.....	9
Figure 3	— Cubes cutting machine type with various blades, conveying unit and feed conveyor.....	9
Figure 4	— Details of feed intake chamber.....	10
Figure 5	— Cubes cutting machine type with multi-segment blade and feed conveyor	10
Figure 6	— Cubes cutting machine type with multi-segment blade and centrifugal force feeding.....	11
Figure 7	— Danger zones on cubes cutting machine with forward feed plunger, lattice, sickle blade, feed intake hopper and loading device	16
Figure 8	— Danger zones on cubes cutting machine with feed intake chamber/magazine and loading by hand.....	16
Figure 9	— Danger zones on cubes cutting machine with conveying unit and feed conveyor.....	17
Figure 10	— Danger zones on cubes cutting machine with multi-segment blade and feed conveyor ...	17
Figure 11	— Danger zones on cubes cutting machine with multi-segment blade and loading by means of centrifugal force	18
Figure 12	— Safety dimensions on cubes cutting machine: Guard.....	20
Figure 13	— Safety measures on cutting chamber door in conjunction with container	22
Figure 14	— Safety measures on cutting chamber door without container	22
Figure 15	— Safety measure on cutting chamber door in conjunction with transport trolley, safety dimensions	23
Figure 16	— Safety dimensions on cubes cutting machine with a loading device.....	28
Figure 17	— Safety dimensions on feed, discharge opening on cubes cutting machine with a mast-type loading device for feed heights over 2 500 mm.....	29
Figure 18	— Cubes cutting machine with feed conveyor	30
Figure 19	— ON / OFF switch with hood	35
Figure 20	— Hygiene areas on cubes cutting machine.....	37

EN 13871:2005 (E)

Figure 21 — Hygiene areas on cubes cutting machine	37
Figure 22 — Hygiene areas on cubes cutting machine	38
Figure B.1 — Smooth surfaces - food area	45
Figure B.2 — Angles and radii in food area	46
Figure B.3 — Angle in food area	47
Figure B.4 — Adjoining surfaces in food area.....	47
Figure B.5 — Admissible joining elements - head profiles	49
Figure B.6 — Dimensional examples	49

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 13871:2005](https://standards.iteh.ai/catalog/standards/sist/752699cb-118c-47a6-be45-12471ce62944/sist-en-13871-2005)

<https://standards.iteh.ai/catalog/standards/sist/752699cb-118c-47a6-be45-12471ce62944/sist-en-13871-2005>

Foreword

This document (EN 13871:2005) 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 September 2005, and conflicting national standards shall be withdrawn at the latest by September 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(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, Czech Republic, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 13871:2005](#)

<https://standards.iteh.ai/catalog/standards/sist/752699cb-118c-47a6-be45-12471ce62944/sist-en-13871-2005>

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.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 13871:2005](https://standards.iteh.ai/catalog/standards/sist/752699cb-118c-47a6-be45-12471ce62944/sist-en-13871-2005)

<https://standards.iteh.ai/catalog/standards/sist/752699cb-118c-47a6-be45-12471ce62944/sist-en-13871-2005>

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 as intended and under the conditions foreseen by the manufacturer (see clause 4).

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:

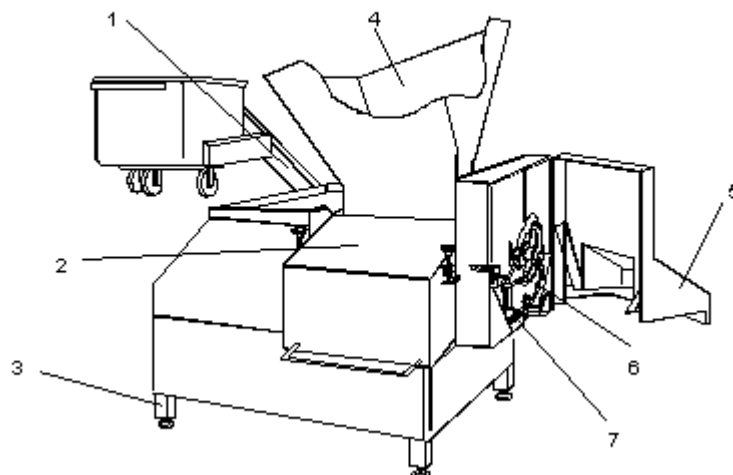
- Cubes cutting machines with a forward feed plunger, a lattice and a sickle blade with loading by hand (see Figure 2)
- Cubes cutting machines with a forward feed plunger, a lattice, a sickle blade, a feed intake hopper and a loading device (see Figure 1)
- Cubes cutting machines with a rotating cutting 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**

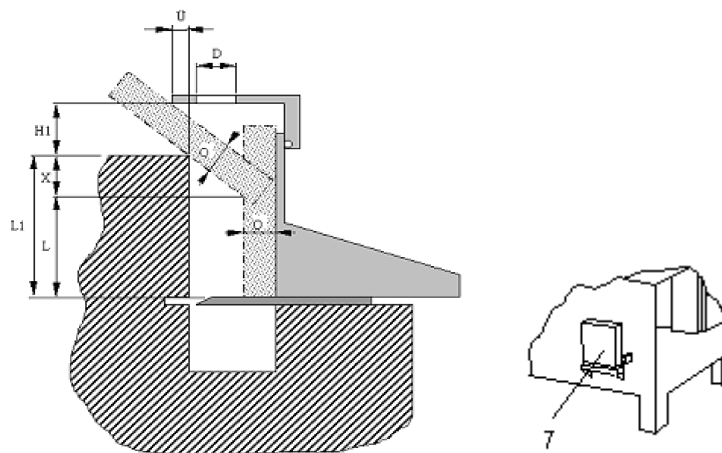
- | | |
|--------------------------------|--|
| 1 Loading device | 5 Cutting chamber door/protective hood |
| 2 Feed intake channel/magazine | 6 Sickle blade/multi-segment blade |
| 3 Frame | 7 Lattice |
| 4 Feed intake hopper | |

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

STANDARD PREVIEW
 (standards.iteh.ai)

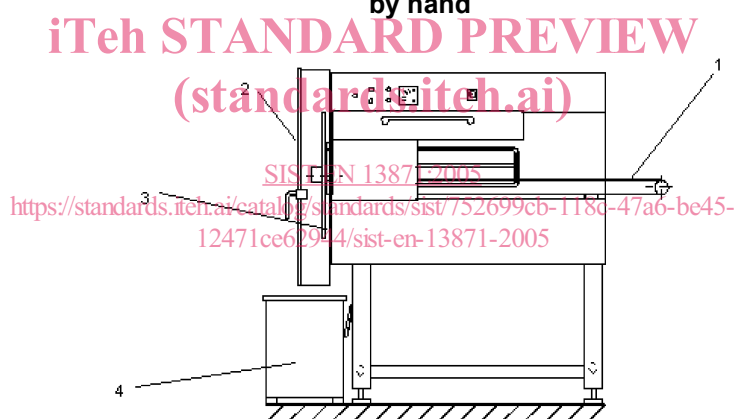
SIST EN 13871:2005

<https://standards.iteh.ai/catalog/standards/sist/752699cb-118c-47a6-be45-12471ce62944/sist-en-13871-2005>

**Key**

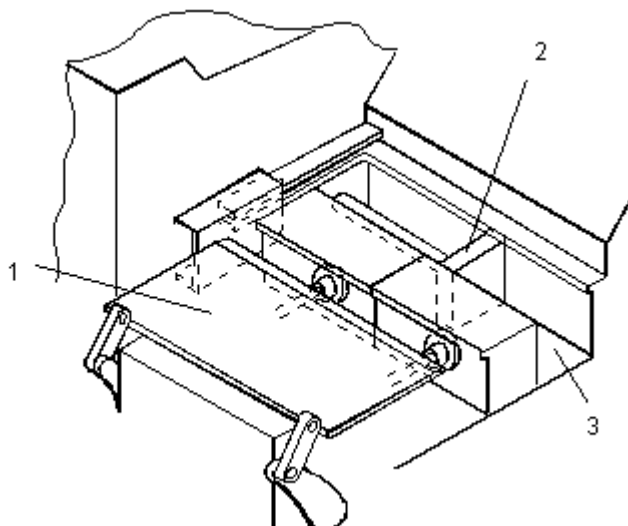
- | | | | |
|---|--------------------------------------|---|------------------|
| 1 | Feed intake trough | 5 | Cutting chamber |
| 2 | Sickle blade/multi-segment blade | 6 | Step |
| 3 | Cutting chamber door/protective hood | 7 | Interlocked step |
| 4 | Lattice | | |

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

**Key**

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

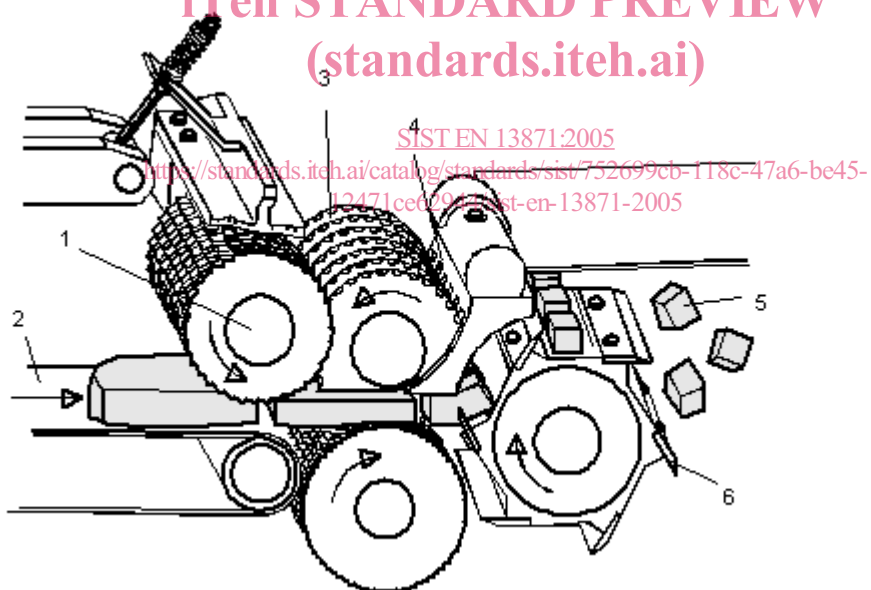
Figure 3 — Cubes cutting machine type with various blades, conveying unit and feed conveyor

**Key**

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

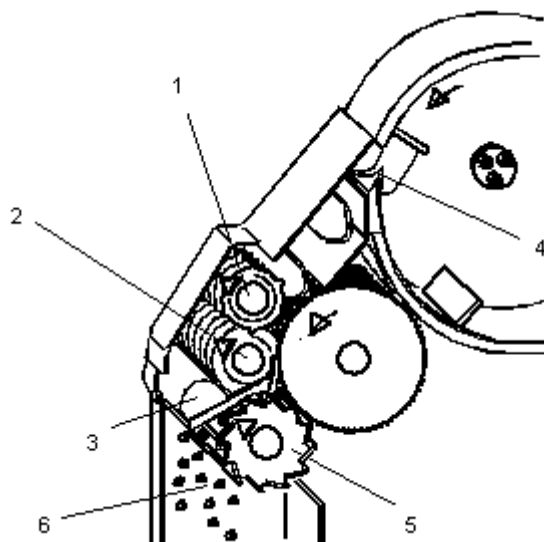
Figure 4 — Details of feed intake chamber

iteh STANDARD PREVIEW
(standards.iteh.ai)

**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



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 12100-1:2003, 3.12) of cubes cutting machines as dealt with in this document is described in 1.1.

[SIST EN 13871:2005](https://standards.iteh.ai/catalog/standards/sist/752699cb-118c-47a6-be45-2471cc929744/sist-en-13871-2005)

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 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.*

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.*

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

EN 13871:2005 (E)

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 machine operation.*

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

EN 1050:1996, *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 machines — Part 1: General requirements (IEC 60204-1:1997).*

EN 60529:1991, *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 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 and specifications (ISO 12100-2:2003).*

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

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 13871:2005
<https://standards.iteh.ai/catalog/standards/sist/752699cb-118c-47a6-be45-12471ce62944/sist-en-13871-2005>