



SLOVENSKI STANDARD
SIST EN 13870:2015+A1:2022

01-februar-2022

Stroji za predelavo hrane - Stroji za razrezovanje/razkosavanje na zrezke/zarebrnice - Varnostne in higienske zahteve

Food processing machinery - Portion cutting machines - Safety and hygiene requirements

Nahrungsmittelmaschinen - Portionsschneidemaschinen - Sicherheits- und Hygieneanforderungen

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

Ta slovenski standard je istoveten z: EN 13870:2015+A1:2021

[SIST EN 13870:2015+A1:2022
http://standards.iteh.ai/catalog/standards/sist/76da6512-66c7-49fc-a9f2-6d90fd6f5ab0/sist-en-13870-2015a1-2022](http://standards.iteh.ai/catalog/standards/sist/76da6512-66c7-49fc-a9f2-6d90fd6f5ab0/sist-en-13870-2015a1-2022)

ICS:

67.260	Tovarne in oprema za živilsko industrijo	Plants and equipment for the food industry
--------	--	--

SIST EN 13870:2015+A1:2022

en,fr,de

**iTeh STANDARD
PREVIEW
(standards.iteh.ai)**

SIST EN 13870:2015+A1:2022

<https://standards.iteh.ai/catalog/standards/sist/78da8512-66c7-49fc-a9f2-6d90fd6f5ab0/sist-en-13870-2015a1-2022>

EUROPEAN STANDARD

EN 13870:2015+A1

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2021

ICS 67.260; C

Supersedes EN 13870:2015

English Version

Food processing machinery - Portion cutting machines - Safety and hygiene requirements

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

Nahrungsmittelmaschinen -
Portionsschneidemaschinen - Sicherheits- und
Hygieneanforderungen

This European Standard was approved by CEN on 1 August 2015 and includes Amendment 1 approved by CEN on 12 April 2021.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

[SIST EN 13870:2015+A1:2022](https://standards.iteh.ai/catalog/standards/sist/78da8512-66c7-49fc-a9f2-6d90fd6f5ab0/sist-en-13870-2015a1-2022)

<https://standards.iteh.ai/catalog/standards/sist/78da8512-66c7-49fc-a9f2-6d90fd6f5ab0/sist-en-13870-2015a1-2022>



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword.....	4
Introduction	5
1 Scope	6
1.1 General.....	6
1.2 Types of machinery	6
1.3 Machine construction	8
1.4 Intended use	8
2 Normative references	9
3 Terms and definitions	10
4 List of significant hazards	13
5 Safety and hygiene requirements and/or protective measures	17
5.1 General.....	17
5.2 Mechanical hazards.....	17
5.2.1 General.....	17
5.2.2 Zone 1 - Powered components in the feed zone.....	18
5.2.3 Zone 2 - Powered components in the discharge zone.....	21
5.2.4 Zone 3 - Movable guards.....	23
5.2.5 Zone 4 - Blade protection.....	24
5.2.6 Zone 5 - Blade mounting.....	25
5.2.7 Zone 6 - Locking slide / Hold-down unit.....	25
5.2.8 Zone 7 - Grippers.....	25
5.2.9 Zone 8 - Transport conveyor belts.....	26
5.2.10 Sorting stations.....	26
5.2.11 Drive components in the machine housing.....	27
5.2.12 Interlocks of guards for preventing access to the moving blade	27
5.3 Electrical hazards.....	28
5.3.1 General.....	28
5.3.2 Emergency stop.....	28
5.3.3 Protection against water ingress.....	29
5.4 Hydraulic and pneumatic hazards.....	30
5.5 Hazard from loss of stability	30
5.6 Noise reduction.....	30
5.7 Ergonomic requirements	31
5.8 Hygiene and cleaning.....	31
5.8.1 General.....	31
5.8.2 Food area.....	32
5.8.3 Splash area.....	33
5.8.4 Non-food area.....	33
5.8.5 Surface condition	33
5.8.6 Cleaning.....	33
6 Verification of safety and hygiene requirements and/or protective measures	34
7 Information for use	36
7.1 General.....	36
7.2 Instruction handbook.....	36

7.3 Marking	38
Annex A (normative) Noise test code for portion cutting machines (grade 2)	39
Annex B (normative) Design principles to ensure cleanability of portion cutting machines and their auxiliary components	42
Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2006/42/EC aimed to be covered	47
Bibliography	49

**iTeh STANDARD
PREVIEW
(standards.iteh.ai)**

SIST EN 13870:2015+A1:2022

<https://standards.iteh.ai/catalog/standards/sist/78da8512-66c7-49fc-a9f2-6d90fd6f5ab0/sist-en-13870-2015a1-2022>

EN 13870:2015+A1:2021 (E)**European foreword**

This document (EN 13870:2015+A1:2021) 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 2022, and conflicting national standards shall be withdrawn at the latest by May 2022.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document includes Amendment 1 approved by CEN on 12 April 2021.

This document supersedes **A1** EN 13870:2015 **A1**.

The start and finish of text introduced or altered by amendment is indicated in the text by tags **A1** **A1**.

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For relationship with EU Directive(s) / Regulation(s), see informative Annex ZA, which is an integral part of this document.

The significant changes with respect to the previous edition EN 13870:2005+A1:2010 are listed below:

- Clause 1: types of machines have been adapted to the current state of the art; pictures of the types of machines have been renewed; exclusion of automatic industrial slicing machines;
- Clause 3: clarify of some definitions and use of this wording in the document;
- Clause 4: transferred to a table;
- inclusion of automatic loading;
- better description of the requirements for protective equipment;
- better description of risk areas, such as inlet tunnel (including dimension table);
- new components have been added, such as pusher and rocker.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This document is a type-C-standard as stated in [A1](#) EN ISO 12100:2010 [A1](#).

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 13870:2015+A1:2022](#)

<https://standards.iteh.ai/catalog/standards/sist/78da8512-66c7-49fc-a9f2-6d90fd6f5ab0/sist-en-13870-2015a1-2022>

EN 13870:2015+A1:2021 (E)**1 Scope****1.1 General**

This European Standard covers portion cutting machines and accessories.

This European Standard does not apply to automatic industrial slicing machines (see [EN 16743:2016](#)) and band saw machines (see [EN 12268:2014](#)).

This European Standard defines requirements for the design and manufacture of portion cutting machines.

The machines covered by this European Standard are used for continuous portioning of fresh, smoked or frozen meat with and without bones or of similar products by separation by means of a blade.

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 commissioning, operation, maintenance and decommissioning of the machine.

The European Standard does not deal with the specific hazards of loading devices.

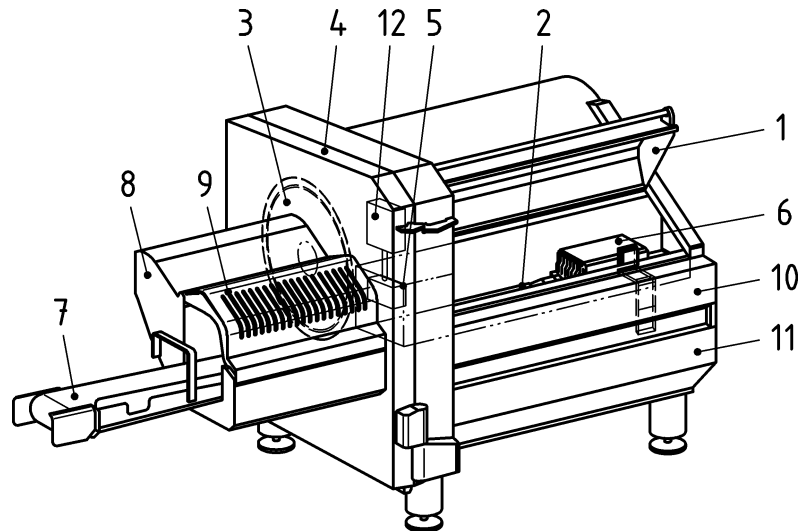
This European Standard is not applicable to portion cutting machines which are manufactured before the date of publication of this document by CEN.

1.2 Types of machinery

This European Standard covers the following types of machinery:

- portion cutting machines with manual loading (see Figure 1);
- portion cutting machines with automatic loading (see Figure 2).

SIST EN 13870:2015+A1:2022
<https://standards.iteh.ai/catalog/standards/sist/78da8512-66c7-49fc-a9f2-6d90fd6f5ab0/sist-en-13870-2015a1-2022>

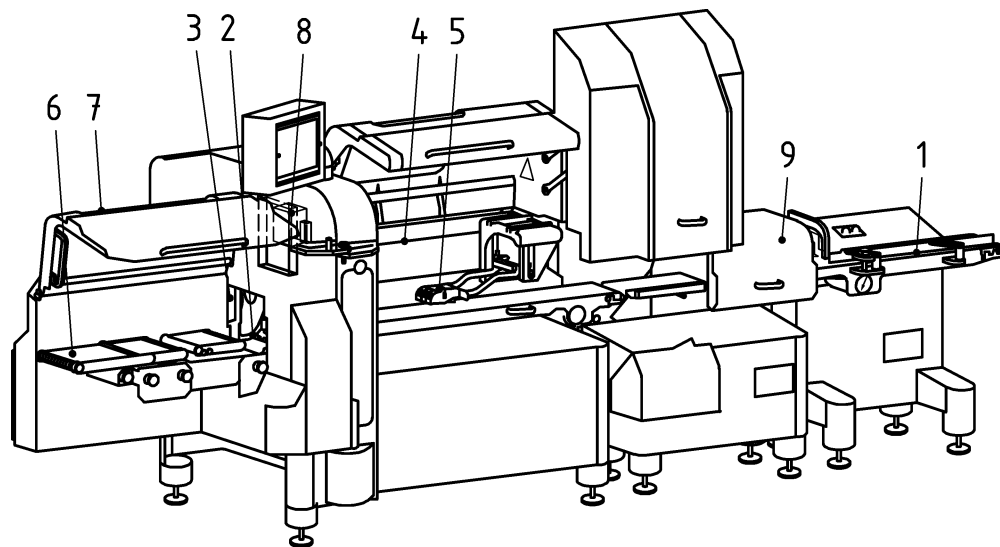
**Key**

- | | | | |
|---|--|----|--|
| 1 | loading protection hood | 7 | discharge conveyor belt (optional) |
| 2 | product base | 8 | discharge chute |
| 3 | round/sickle blade | 9 | discharge chute hood |
| 4 | blade protection hood/cutting space | 10 | feed protection hood |
| 5 | cutting zone | 11 | machine housing |
| 6 | cutting material holder/feeding carriage | 12 | locking slide/hold-down unit (depending on machine type) |

Figure 1 — Portion cutting machine with manual loading (exemplary embodiment)

SIST EN 13870:2015+A1:2022

<https://standards.iteh.ai/catalog/standards/sist/78da8512-66c7-49fc-a9f2-6d90fd6f5ab0/sist-en-13870-2015a1-2022>

**Key**

1	product base	6	discharge conveyor belt
2	blade	7	discharge chute hood
3	blade protection hood/cutting space	8	hold-down unit
4	machine housing	9	pre-weighing unit (optional)
5	cutting material holder/feeding carriage		

Figure 2 — Portion cutting machine with automatic loading (exemplary embodiment)

1.3 Machine construction

SIST EN 13870:2015+A1:2022

Portion cutting machines depending on the construction consist of: machine housing (machine frame), fixed or moving product bases, automatic or manually operated grippers, hold-down unit, blade housing, blade, discharge device, associated drives, electrical, hydraulic or pneumatic components.

Portion cutting machines in the scope of this document may be equipped with the following auxiliary components:

- loading aid;
- discharge conveyor belt;
- laying unit;
- measurement or scanning devices;
- scales;
- sorting station (e.g. rocker, pusher);
- movement devices (e.g. castors).

1.4 Intended use

The intended use (as defined in EN ISO 12100:2010, 3.23) of portion cutting machines as dealt with in this document is described in 1.1.

The product is manually placed on the product base or automatically fed to the product base with a loading device. The product is supplied to the blade by automatic or manually operated grippers or conveyor slide or belt and the cutting process begins. The portion falls onto a discharge conveyor or a laying unit.

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.

☐^{A1} EN 614-1:2006+A1:2009 ☐^{A1}, *Safety of machinery — Ergonomic principles for design — 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*

☐^{A1} EN 1005-1:2001+A1:2008 ☐^{A1}, *Safety of machinery — Human physical performance — Part 1: Terms and definitions*

☐^{A1} EN 1005-2:2003+A1:2008 ☐^{A1}, *Safety of machinery — Human physical performance — Part 2: Manual handling of machinery and component parts of machinery*

☐^{A1} EN 1005-3:2002+A1:2008 ☐^{A1}, *Safety of machinery — Human physical performance — Part 3: Recommended force limits for machinery operation*

☐^{A1} EN 1672-2:2020 ☐^{A1}, *Food processing machinery — Basic concepts — Part 2: Hygiene and cleanability requirements*

EN 60204-1:2006, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2005 modified)*

☐^{A1} EN 60529:1991¹ ☐^{A1}, *Degrees of protection provided by enclosures (IP Code) (IEC 60529)*

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)*

☐^{A1} EN ISO 3746:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Survey method using an enveloping measurement surface over a reflecting plane (ISO 3746:2010)* ☐^{A1}

☐^{A1} EN ISO 4413:2010 ☐^{A1}, *Hydraulic fluid power — General rules and safety requirements for systems and their components (ISO 4413)*

☐^{A1} EN ISO 4414:2010 ☐^{A1}, *Pneumatic fluid power — General rules and safety requirements for systems and their components (ISO 4414)*

☐^{A1} EN ISO 4871:2009 ☐^{A1}, *Acoustics — Declaration and verification of noise emission values of machinery and equipment (ISO 4871)*

¹ As impacted by EN 60529:1991/A1:2000 and EN 60529:1991/A2:2013.

EN 13870:2015+A1:2021 (E)

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)*

A1 EN ISO 11202:2010, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a workstation and at other specified positions applying approximate environmental corrections (ISO 11202:2010)*

A1 EN ISO 11688-1:2009 **A1**, *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)*

A1 EN ISO 13849-1:2015 **A1**, *Safety of machinery — Safety-related parts of control systems —Part 1: General principles for design (ISO 13849-1)*

A1 EN ISO 13855:2010 **A1**, *Safety of machinery — Positioning of safeguards with respect to the approach speeds of parts of the human body (ISO 13855)*

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)*

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 laying unit

device for grouping of portions

3.2 discharge protection hood

fixed and/or movable guard at the discharge opening

3.3 discharge conveyor belt

device for transporting the portions away from the cutting zone

Note 1 to entry: The discharge conveyor belt also allows portions to be positioned in a simple arrangement.

3.4 discharge zone

area of the machine, in which the portion leaves the machine

Note 1 to entry: Depending on the design of the machine, this could be equipped with a discharge chute, a discharge shaft or a discharge conveyor belt.

3.5 automatic loading

the product is fed by a loading device to the product base and aligned there

3.6**loading aid**

optional equipment at manual loading to lift the product to the level of the product base

Note 1 to entry: e.g. lifting arm.

3.7**loading protection hood / Loading protection door**

movable guard with safety function around the feed area

3.8**inlet/outlet opening**

opening through which the product enters or exits from the machine

3.9**grippers**

device for holding and locating the product during the feed into the cutting zone

3.10**loading device**

optional equipment at automatic loading to feed the product mechanically to the product base

3.11**manual loading**

the product is placed by hand on the product base and aligned

3.12**machine stand/machine housing/machine frame**

device for supporting machine parts

3.13**blade**

device for cutting the product at the cutting frame

3.14**blade housing**

housing in which the powered blade is moved

3.15**blade protection hood**

movable guard with cutting function on the blade housing

3.16**hold-down unit**

device to press down the product onto the product base

Note 1 to entry: This will ensure safe transport to the cutting zone and safe holding during the cutting process.

3.17**portion**

processed product

iTech STANDARD
PREVIEW
(standards.iteh.ai)

[SIST EN 13870:2015+A1:2022](https://standards.iteh.ai/catalog/standards/sist/78da8512-66c7-49fc-a9f2-6d90fd6f5ab0/sist-en-13870-2015a1-2022)

<https://standards.iteh.ai/catalog/standards/sist/78da8512-66c7-49fc-a9f2-6d90fd6f5ab0/sist-en-13870-2015a1-2022>

EN 13870:2015+A1:2021 (E)**3.18****product base**

device for receiving the product to be cut in the feed area

Note 1 to entry: The product base can be implemented stationary or mobile, e.g. as feeding conveyor belt.

3.19**cutting zone**

area of the machine, in which the product is cut

3.20**product**

food to be processed before cutting

3.21**cutting frame**

device which serves as a counter-edge to the blade in order to stabilize the product

Note 1 to entry: This is in order to achieve a smooth cut.

3.22**cutting shaft**

area of the machine in which the product is supplied to the cutting zone

3.23**cut resistant gloves**

personal protective equipment made from cut resistant material

Note 1 to entry: e.g. metallic thread reinforced fabric or Kevlar fabric.

3.24**sorting station**

device for the vertical or horizontal sorting or sorting out of the portions after the scales

Note 1 to entry: e.g. rocker, pusher.

3.25**locking slide**

device for closing the cutting shaft during the loading process

Note 1 to entry: The locking slide may possibly serve as a movable guard and/or as a limit stop for the product.

3.26**scales**

device for weighing the portions

3.27**feeding area**

area of the machine that receives the material to be cut by loading

Note 1 to entry: The machine can be loaded with the product manually or automatically.

3.28**feeding conveyor belt**

transport conveyor for loading the portion cutter with product and/or for supply the cutting zone with product

4 List of significant hazards

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

Figures 3 and 4 show the significant hazard zones of portion cutting machines.

**iTeh STANDARD
PREVIEW
(standards.iteh.ai)**

SIST EN 13870:2015+A1:2022

<https://standards.iteh.ai/catalog/standards/sist/78da8512-66c7-49fc-a9f2-6d90fd6f5ab0/sist-en-13870-2015a1-2022>