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Food processing machinery - Bread slicers - Part 2: Safety and hygiene requirements for self-service bread slicers

Nahrungsmittelmaschinen - Brotschneidemaschinen - Teil 2: Sicherheits- und Hygieneanforderungen für Selbstbedienungs-Brotschneidemaschinen

Machines pour les produits alimentaires - Trancheuses à pain - Partie 2: Prescriptions relatives à la sécurité et à l'hygiène des trancheurs de pain en libre service

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Nahrungsmittelmaschinen - Brotschneidemaschinen - Teil 2: Sicherheits- und Hygieneanforderungen für Selbstbedienungs-Brotschneidemaschinen

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European foreword

This document (prEN 13954-2:2022) 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 document is currently submitted to CEN enquiry.

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.

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prEN 13954-2:2022 (E)**Introduction**

There are various types of bread slicing machines for self-service. They are divided mainly into the following types:

- Type 1: Frame cutter machines with multiple blades moving simultaneously and manual loading;
- Type 2: Machines with rotary crescent (sickle) or circular blade fixed to a shaft with oscillating or rotating movement and manual loading;

This European Standard is a type-C-standard as stated in EN ISO 12100:2010.

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 that 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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1 Scope

1.1 This document covers requirements for the safe and hygienic operation of self-service bread slicing machines of Type 1 and Type 2 including: loading, cutting, unloading, cleaning, crumb removal and maintenance.

The intended use of these machines is to cut baked bakery products (e.g. bread) and dry pastry products into slices. This document covers the intended use of the machines by trained personnel as well as by untrained and uninstructed persons (e.g. customers in the self-service area). The intended use for untrained and uninstructed person is only the slicing. All other operations (e.g. maintenance, cleaning) are only intended for trained and instructed personnel.

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

1.2 The following machines are excluded from the scope of this document:

- experimental and testing machines under development by the manufacturer;
- domestic appliances falling under Low Voltage Directive 2014/35/EU;
- rectangular cutting machines for cutting or sawing of panel size products into small pieces;
- baguette slicers according to EN 14655;
- bread slicers according to EN 13954.

1.3 This document is not applicable to bread slicing machines which are manufactured before the date of publication of this document. [oSIST prEN 13954-2:2022](https://standards.iteh.ai/catalog/standards/sist/191ffcf8-ac27-4cd9-9773-9f5978bf462f/osist-13954-2-2022)

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1.4 The following hazards are not covered by this document:

- hazards due to packaging, handling or transport;
- hazards arising from electromagnetic compatibility issues;
- hazards due to dismantling and disassembling.

The significant hazards covered by this document are described in Annex A.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 614-1:2006+A1:2009, *Safety of machinery - Ergonomic design principles - Part 1: Terminology and general principles*

EN 1672-2:2020, *Food processing machinery - Basic concepts - Part 2: Hygiene and cleanability requirements*

EN 60204-1:2018, *Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1:2016, modified)*

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EN 60529:1991, *Degrees of protection provided by enclosures (IP Code) IEC 60529:1989*¹

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 4871:2009, *Acoustics - Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996)*

EN ISO 7010:2020, *Graphical symbols - Safety colours and safety signs - Registered safety signs (ISO 7010:2019, Corrected version 2020-06)*

EN ISO 11688-1:2009, *Acoustics - Recommended practice for the design of low-noise machinery and equipment - Part 1: Planning (ISO/TR 11688-1:1995)*

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 12001:2009, *Acoustics - Noise emitted by machinery and equipment - Rules for the drafting and presentation of a noise test code (ISO 12001:1996)*

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

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

EN ISO 13854:2019, *Safety of machinery - Minimum gaps to avoid crushing of parts of the human body (ISO 13854:2017)*

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

EN ISO 13857:2019, *Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2019)*

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

EN ISO 14120:2015, *Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards (ISO 14120:2015)*

EN ISO 21469:2006, *Safety of machinery - Lubricants with incidental product contact - Hygiene requirements (ISO 21469:2006)*

EN ISO 21920-2:2022, *Geometrical product specifications (GPS) - Surface texture: Profile - Part 2: Terms, definitions and surface texture parameters (ISO 21920-2:2021, Corrected version 2022-06)*

¹ As impacted by EN 60529:1991/A1:2000, EN 60529:1991/A2:2013, EN 60529:1991/AC:2016 and EN 60529:1991/AC:2019.

3 Terms, definitions and description

3.1 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at <https://www.iso.org/obp>

— IEC Electropedia: available at <https://www.electropedia.org>

3.1.1

bread

baked bakery and dry pastry products

3.1.2

self-service bread slicers

bread slicers that are made available for untrained persons in points of sale (e.g. supermarkets) to slice baked bakery (e.g. bread) and dry pastry products. Operating of the machine is done by customers without surveillance by the personnel of the store

3.1.3

type 1 self-service bread slicers

frame cutter machines with reciprocating multiple blades moving simultaneously and manual loading

3.1.4

type 2 self-service bread slicers

machines with rotary crescent (sickle) or circular blade fixed to a shaft with oscillating or rotating movement and usually manual loading

3.1.5

frame

support that carries the set(s) of blades in Type 1 bread slicers. During cutting the whole frame oscillates

3.1.6

crumb tray

container that collects the crumb of the bread produced by slicing

3.1.7

pusher

device used to move the bread or to move the blade to generate the adjusted slice thickness

3.1.8

holder/gripper

device used to hold the bread in position

Note 1 to entry: May be combined with the pusher.

3.1.9

bagging tray

support for bread used to hold the bread in position while the bread is put in a bag

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**3.1.10
stopping time**

time interval between the actuation of the sensing function and the termination of the hazardous machine function

[SOURCE: EN ISO 13855:2010, 3.1.2, modified]

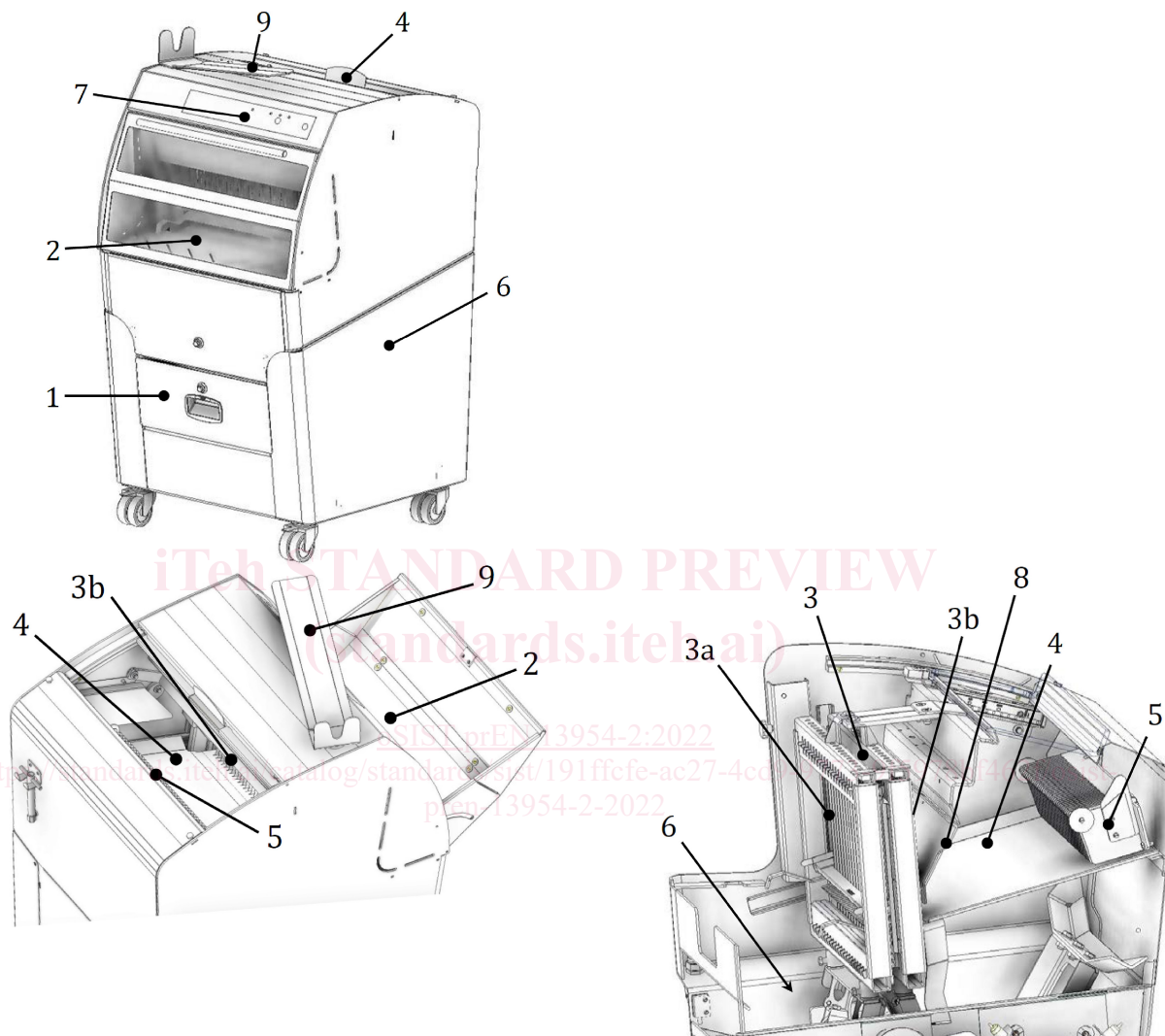
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3.2 Description

3.2.1 Type 1 self-service machines

Type 1 bread slicers usually consist of a machine frame supporting the following main elements (see example in Figure 1).



Key

- 1 crumb tray
- 2 discharge area or device
- 3 frame/s with multiple blades (3a: blunt side of the blades seen from discharge area; 3b: sharp side of the blades seen from infeed area)
- 4 infeed area or device
- 5 pusher, which moves and guides the loaf of bread for the cutting action
- 6 drive mechanisms (behind cover)
- 7 operating panel
- 8 hold-down device (for the bread)
- 9 bagging tray (optional)

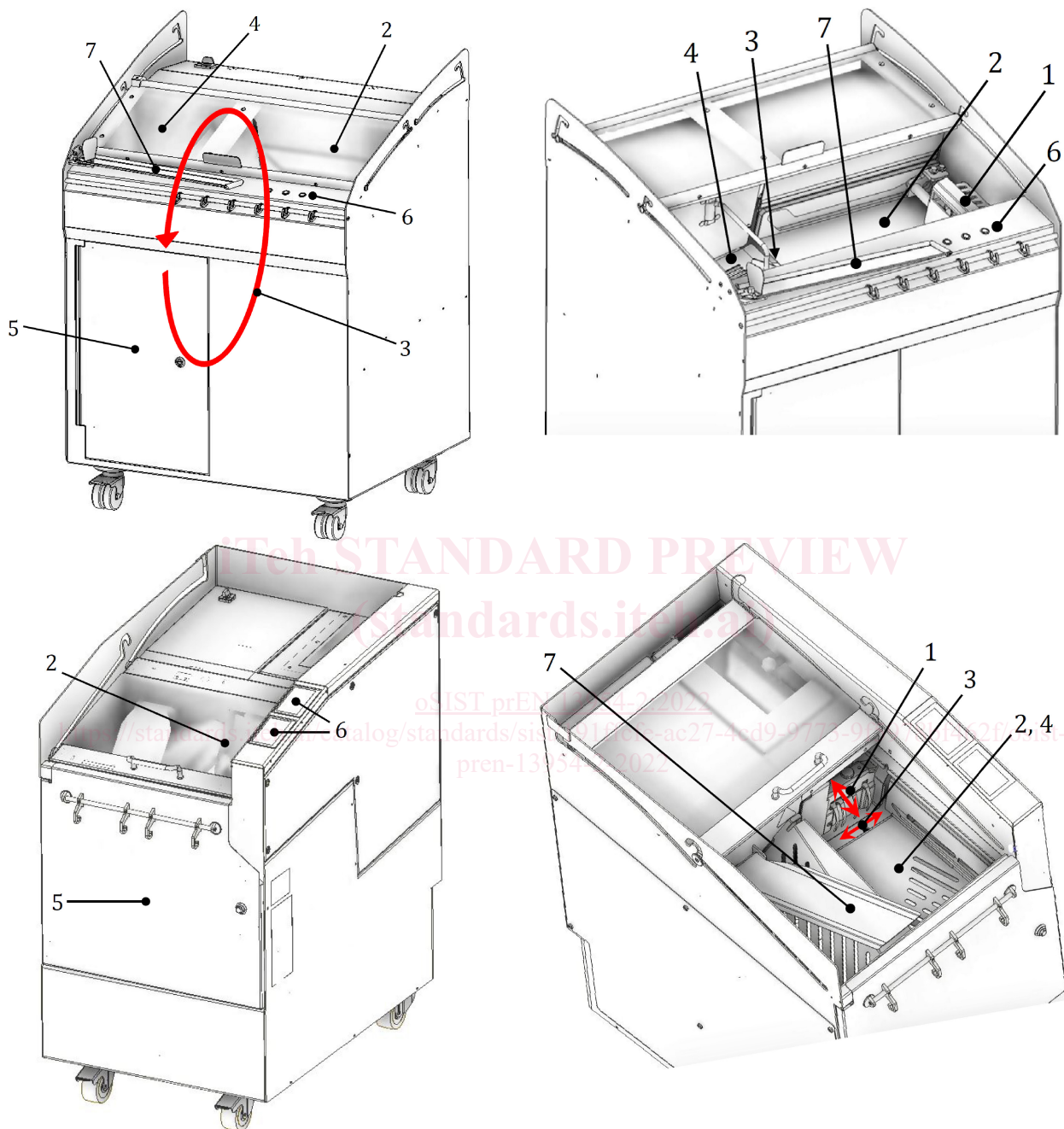
Figure 1 — Example of Type 1 bread slicer

The bread is moved by a power-operated pusher. All slices of the bread are cut at the same time. The pusher is automatically returned to the feeding position.

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3.2.2 Type 2 self-service machines

A type 2 self-service bread slicing machine consists of a machine frame supporting the following main elements (see examples in Figure 2).

**Key**

- 1 pusher and/or holder(gripper)
- 2 infeed area
- 3 (cutting gap of) rotary (sickle) crescent or circular blade
- 4 discharge area
- 5 crumb tray
- 6 operating panel
- 7 bagging tray (optional)

NOTE Infeed and discharge area can be the same

Figure 2 — Examples of Type 2 bread slicer

Either the blade is moved or the bread is moved to cut the bread. The bread is cut sequentially slice by slice.

4 Safety and hygiene requirements and/or protective measures

4.1 General

Machinery shall comply with the safety and hygiene requirements and/or protective measures of this clause.

In addition, the machine shall be designed according to the principles of EN ISO 12100:2010 for relevant but not significant hazards, which are not dealt with by this document.

When fixed guards, or parts of the machine acting as such, are not permanently fixed e.g. by welding, their fixing systems shall remain attached to the guards or to the machinery when the guards are removed. An exception may be made for parts that are necessary for the function of the machine.

Information about residual risks concerning allergens shall be given in the instruction handbook (see 6.1 cm³c)).

Warnings for trained and instructed personnel concerning cleaning and maintenance after cutting of prohibited products shall be provided with the instructions (see 6.1 y))

4.2 Mechanical hazards

4.2.1 Mechanical hazards for Type 1 machine

4.2.1.1 General

4.2.1.1.1 General requirements

Openings in guards shall comply with EN ISO 13857:2019.

Interlocking devices shall comply with EN ISO 14119:2013, Clause 7, and EN ISO 14120:2015.

Information for trained operator's personnel concerning regular visual control shall be provided with the instructions (see 6.1 s)).

Guards shall be so constructed that either the possibility to apply mechanical forces (pull -, push -, torsion force) is prevented or does not lead to a gap that allows to reach the danger zone.

If a closed guard is able to be gripped so that a force of 150 N can be applied, this shall be tested by applying this force at the most unfavourable point and in each direction.

Fasteners of guards within the customer's field of vision shall be secured against loosening by simple means.

Warnings for trained and instructed personnel concerning cleaning and maintenance and concerning the storage of tools shall be provided with the instructions (see 6.1 u))

The manufacturer shall clarify in the instructions which work is to be performed by the trained and instructed personnel and which by the service technician (see 6.1 v)).

The pusher and other machine parts – except those parts that are sharp for functional reasons – shall be designed without sharp edges to avoid bump injuries.

Unless specified otherwise in specific clauses, the parts of the control system associated with interlocking shall meet at least a performance level “c” according to EN ISO 13849-1:2015.

If the interlock is implemented in performance level “c”, the electronic control unit shall also perform the following plausibility check: