SLOVENSKI STANDARD
SIST EN 1674:2002+A1:2010

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Stroji za predelavo hrane - Stroji za valjanje testa - Varnostne in higienske zahteve

Food processing machinery - Dough and pastry brakes - Safety and hygiene requirements

Nahrungsmittelmaschinen - Teigausrollmaschinen - Sicherheits-und Hygieneanforderungen

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

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ICS:

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

SIST EN 1674:2002+A1:2010 **en,fr**

EUROPEAN STANDARD

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EN 1674:2000+A1

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ICS 67.260

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English Version

Food processing machinery - Dough and pastry brakes - Safety and hygiene requirements

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

Nahrungsmittelmaschinen - Teigausrollmaschinen - Sicherheits-und Hygieneanforderungen

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Contents

Page

Foreword

This document (EN 1674:2000+A1:2009) 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of an identical text or by endorsement, at the latest by June 2010, and conflicting national standards shall be withdrawn at the latest by June 2010.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 24 October 2009.

This document supersedes EN 1674:2000.

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

This European Standard 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).

A1〉 For relationship with EU Directive(s), see informative Annexes ZA and ZB, which are integral parts of this document. 〈A1

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, 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 the United Kingdom.

Introduction

〈A1〉 This European Standard 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 European Standard.

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. 〈A1〉

1 Scope

This standard specifies safety and hygiene requirements for the design and manufacture of dough and pastry brakes used in the food industry and shops (bread-making, pastry-making, sweet industries, bakeries, confectioners, delicatessens, catering facilities, etc) for reducing the thickness of a solid mass of dough or pastry by rolling it out. The operation is generally carried out by passing the dough back and forth between the rollers whose distance apart is reduced progressively either by manual adjustment or automatically.

〈A1〉 The standard covers the technical safety requirements for the transport, installation, adjustment, operation, cleaning and maintenance of these machines. 〈A1〉

〈A1〉 This standard deals with all significant hazards, hazardous situations and events relevant to dough and pastry brakes, when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer (see Clause 5).

Noise is not considered to be a significant hazard. This does not mean that the manufacturer is absolved from reducing noise and making a noise declaration. Therefore a noise test code is given in Annex B. 〈A1〉

The following machines are excluded:

— experimental and testing machines under development by the manufacturer;

— domestic appliances[1)]

〈A1〉 This standard is not applicable to dough and pastry brakes which are manufactured before the date of its publication as EN. 〈A1〉

2 〈A1〉 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*

1) EN 60335-1 and EN 60335-2-64 are applicable.

EN 614-1:2006, *Safety of machinery — Ergonomic design principles — Part 1: Terminology and general principles*

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

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 60204:2005, modified)*

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

EN ISO 3743-1:2009, *Acoustics — Determination of sound power levels of noise sources — Engineering methods for small, movable sources in reverberant fields — Part 1: Comparison method for hard-walled test rooms (ISO 3743-1:1994)*

EN ISO 3744:2009, *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 4287:1998, *Geometrical Product Specifications (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters (ISO 4287:1997)*

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

EN ISO 11201:2009, *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, including Cor 1:1997)*

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 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 12100-1:2003, *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)* A1

3 Description

A dough and pastry brake usually consists of a machine frame mounted on a mobile or fixed base or placed on a table or a support. The frame supports the following components:

a) the electric motor which drives the rollers;

b) two superimposed rollers. The height of the lower one is fixed, the height of the upper one can be adjusted to obtain dough of the desired thickness. The two rollers rotate in opposite directions;

c) scraping devices to remove dough residue from the rollers;

d) a table or a conveyor on either side of the rollers;

e) the control system which includes an on/off switch, a device for reversing the direction of rotation, and a roller gap adjustment control;

f) an optional attachment to spread flour;

g) optional devices to cut dough and to roll dough. The cutting device is used at the end of the rolling phase to cut predetermined forms from the dough. The system is often composed of a roller fitted with circular knives for making bands, and of a roller fitted with imprints to make special forms such as croissants, chocolate filled pastry tartlets, etc.

The capacity of the machine is defined by:

— the width of the infeed table (or conveyors).

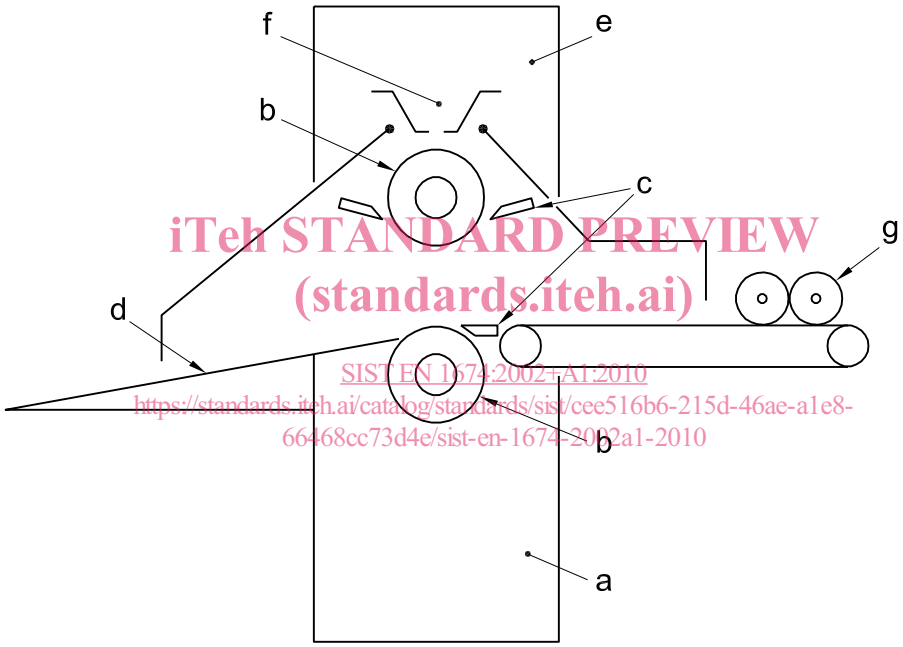


Figure 1 — Main parts of a dough and pastry brake

[A1]

4 Terms and definitions

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

4.1
manual operation
the rollers and conveyor belts are driven by electric motor and the roller gap is adjusted by hand control

4.2
automatic operation
adjustment of the roller gap is by electric motor and it is normally automatically controlled, e.g. by microprocessor [A1]

5 A1 List of significant hazards

5.1 General

This clause contains all the significant hazards, hazardous situations and events, as far as they are dealt with in this standard, identified by risk assessment as significant for this type of machinery, and which require action to eliminate or reduce the risk. A1

5.2 Mechanical hazards

The significant mechanical hazards, are:

— drawing-in and crushing hazard;

— shearing hazard;

— cutting hazard;

— entanglement hazard;

— loss of stability.

The example in figure 2 shows danger zones.

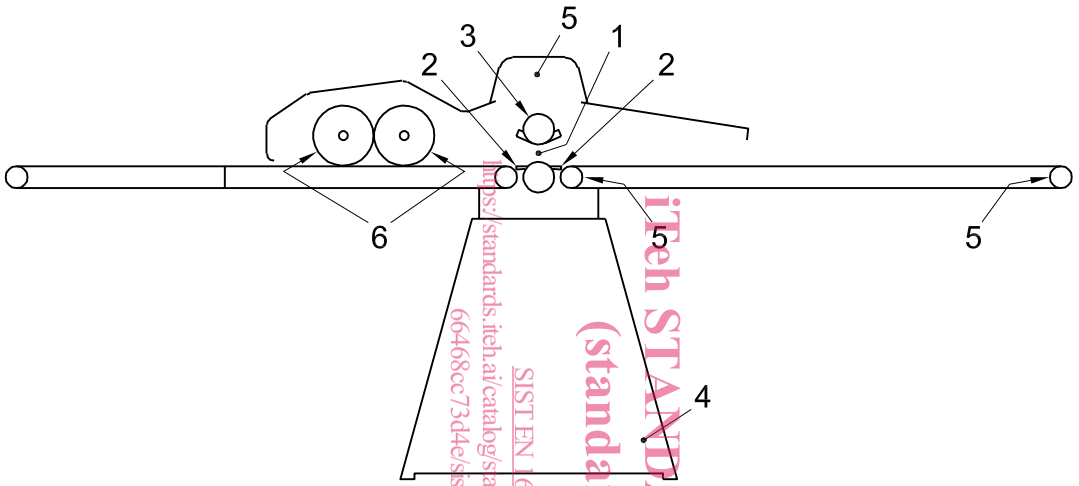


Figure 2 — Danger zones of a dough and pastry brake

Zone 1: gap between the two rollers on the inrunning side (hazards:drawing-in and crushing);

Zone 2: gap between a roller and the input and output tables or conveyor belts on each side of the rollers (hazards:drawing-in and crushing);

Zone 3: gap between the rollers and the side guards (hazard:crushing);

Zone 4: drive mechanism (hazards:shearing and entanglement);

Zone 5: input and output devices:gap between conveyor belts and their drive or guide rollers.(hazards:drawing-in and crushing);

Zone 6: power driven cutting devices (hazard:cutting);

Zone 7: removable attachment to spread flour (hazard:drawing-in and crushing).

5.3 Electrical hazards

Hazard of electric shock from direct or indirect contact with live components.

Hazard of external influences on electrical equipment (e.g. cleaning with water).

5.4 Hazards resulting from inhalation of dust

Use of dough and pastry brakes exposes operators to dust including flour and ingredients which may be harmful to their health, causing rhinitis (running noses), watering eyes and possibly occupational asthma.

The major sources of airborne dust on these machines are as follows:

— flour used directly to prevent dough sticking to the belt, table or rollers;

— flour generated during filling of the dusting reservoir and during cleaning of the machine.

5.5 Hazard generated by neglecting hygienic design principles

The neglecting of hygienic principles can create unacceptable modification of foodstuff and therefore a risk to human health, i.e. through physical, chemical or microbial pollution.

5.6 Hazards generated by neglecting ergonomic principles

During operation, cleaning and maintenance, there is a risk of injury or chronic damage to the body resulting from awkward body postures.

〈A1〉

6 Safety and hygiene requirements and/or protective measures 〈A1〉

〈A1〉

6.1 General

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

In addition, the machine shall be designed according to the principles of EN ISO 12100-2 for relevant but not significant hazards, which are not dealt with by this document.

For hazards which are to be reduced by the application of the type B-standards such as EN 294, EN 614-1, EN 954-1, EN 1088, EN 60204-1, EN 60529, EN ISO 12100 and EN ISO 13849-1, the manufacturer shall carry out a risk assessment to establish the requirements of the type B-standard. This specific risk assessment shall be part of the general risk assessment of the machine.

Interlocking guards shall be at least interlocking without guard locking as defined in EN 1088:1995, 4.2.1 and they shall comply with EN 1088:1995, Clauses 5 and 6.

The safety related parts of the control systems shall meet at least category 1 of 6.2.2 of EN 954-1:1996 or present at least a performance level c defined in accordance with EN ISO 13849-1:2008.

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. A1

6.2 Mechanical hazards

Where reference is made to interlocking devices throughout clause 6, they shall comply with clause 4.2.1 and clauses 5 and 6 of EN 1088:1995.

Safety related control systems shall be to category 1 of EN 954-1:1996.

6.2.1 Zone 1, zone 2 and zone 3

The rollers shall be fitted on both sides with guards, see figure 3, which are:

— fixed and dimensioned according to EN 294:1992;

— or movable and interlocking, with the following dimensions:

Table 1 — Dimensions of the guard

Dimensions in millimetres

A max.	35	40	45	50	55	60	65	70	105
B min.	200	225	250	300	350	400	450	500	550
C min.							300	300	300
D min.	EN 294 Table 4								

The interlocking mechanism, shall be housed within the machine body or otherwise protected, to ensure that its operation is not adversely affected by for example dough or flour.

Movable interlocking guards shall be free to move at their ends furthest from the rollers in order to act like a trip device if an operator attempts to reach under any guard.

If the guard is not solid, the distance between bars or mesh shall comply with table 4 of EN 294:1992.

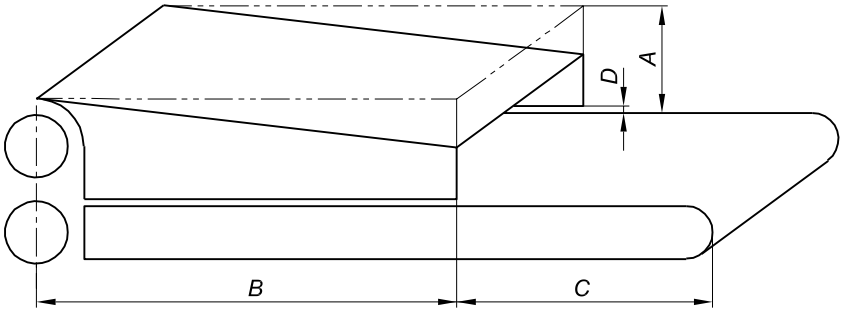


Figure 3 — Guard dimensions

A:distance between the table and the front opening of the guard when the interlocking device is actuated;

B:distance between the edge of the guard and the vertical plane through the axes of the rollers;

C:distance between the end of guard and end of belt;

D:distance between the lower edge of the guard and the table or conveyor belt.

Lifting of the guard shall within one second:

— either cause the machine to stop. In this case restarting shall only be possible by intentionally actuating the starting control;

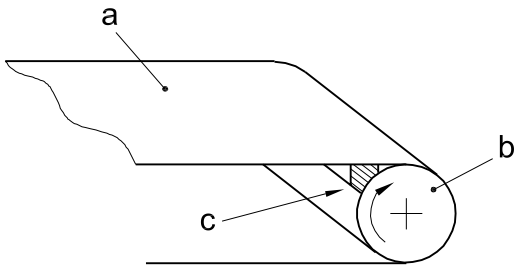
— or it shall result in the reversal of the rotation of the rollers so that the operator cannot be drawn in, i.e. that the nip between the rollers is outrunning.

6.2.2 Zone 4

The drive mechanism shall be located either within the machine frame or safeguarded by means of a fixed guard ▌A1⟩ (see EN 953) ⟨A1▐.

6.2.3 Zone 5

Access to the inrunning nip of the conveyors shall be prevented, e.g. by a guard such as the one marked (c) in figure 4.



a) Input or output conveyor
b) Roller
c) Inrunning nip guard

Figure 4 — Inrunning nip guard