SLOVENSKI STANDARD
SIST EN 1674:2002

01-september-2002

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 a pâte - Prescriptions relatives a la sécurité et l'hygiene

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ICS:

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

SIST EN 1674:2002 **en**

EUROPEAN STANDARD

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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
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Contents

Foreword

This European Standard 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of an identical text or by endorsement, at the latest by March 2001, and conflicting national standards shall be withdrawn at the latest March 2001

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).

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

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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

0 Introduction

The extent to which hazards are covered is indicated in the scope of this standard. In addition, machinery shall comply as appropriate with EN 292 for hazards which are not covered by this standard.

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 facilites, 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.

The standard covers the technical safety requirements for the installation, adjustment, operation, cleaning and maintenance of these machines, as defined in 3.12 of EN 292-1:1991 and in the manufacturer's instruction handbook.

The significant hazards covered by this standard are mechanical (drawing-in, crushing, shearing, cutting, entanglement and loss of stability), electrical, ergonomic and those resulting from inhalation of flour dust and lack of hygiene. The hazards are specifically listed in 5. Noise is not considered to be a significant hazard from dough and pastry brakes. This does not mean that the manufacturer of the machine is absolved from reducing noise and making a noise declaration. Therefore a noise test code is specified in Annex B.

It applies only to machines manufactured after the date of issue of the standard.

The following machines are excluded :

- experimental and testing machines under development by the manufacturer ;
- domestic appliances [1)].

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incoporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 292-1	1991	Safety of machinery - Basic concepts - General principles for design - Part 1 : Basic terminology, methodology
EN 292-2 + A1	1991 1995	Safety of machinery - Basic concepts - General principles for design - Part 2 : Technical principles and specifications

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

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 954-1	1996	Safety of machinery - Safety related parts of control systems - Part 1 : General principles for design
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 - Common requirements - Part 2 : Hygiene requirements
EN 60204-1	1997	Safety of machinery - Electrical equipment of machines - Part 1 : General requirements
EN 60529	1991	Degrees of protection provided by enclosures
EN 60651	1994	Sound level meters
EN ISO 3743-1	1994	Acoustics - Determination of sound levels of noise sources - Engineering methods for special reverberation test rooms
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
EN ISO 11201	1995	Acoustics - Noise emitted by machinery and equipment - Measurement of emission sound pressure levels at the work station and at other specified positions - Engineering method in an essentially free field over a reflecting plane
EN ISO 11688-1	1997	Acoustics - Recommended practice for the design of low-noise machinery and equipment - Part 1 : Planning
EN ISO 12001	1996	Acoustics - Noise emitted by machinery and equipment - Rules for the drafting and presentation of a noise test code
EN 1070	1998	Safety of machinery - Terminology
EN 953	1997	Safety of machinery - General requirements for the design and construction of guards (fixed, movable)

ISO 468	1982	Surface roughness - Parameters values and general rules for specifying requirements

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).

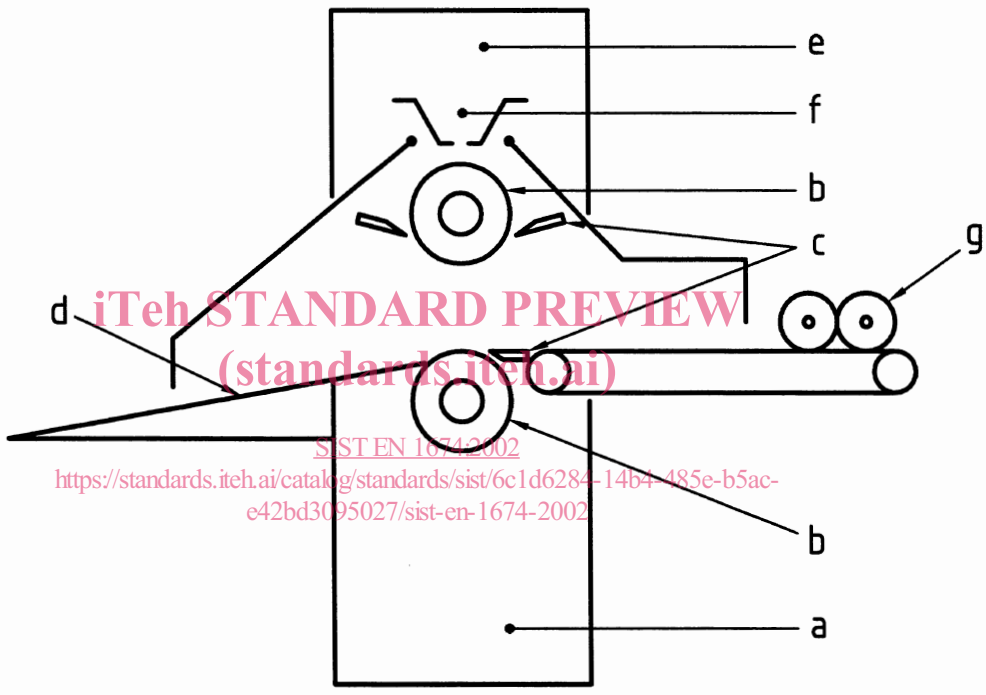

Figure 1 : Main parts of a dough and pastry brake

4 Definition

In addition to ENV 1070 the following definitions apply :

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

automatic operation : Adjustment of the roller gap is by electric motor and it is normally automatically controlled, e.g. by microprocessor.

5 List of hazards

This clause contains those hazards identified by risk assessment (see EN 1050) as specific and significant for dough and pastry brakes and which require action to reduce risk.

5.1 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.

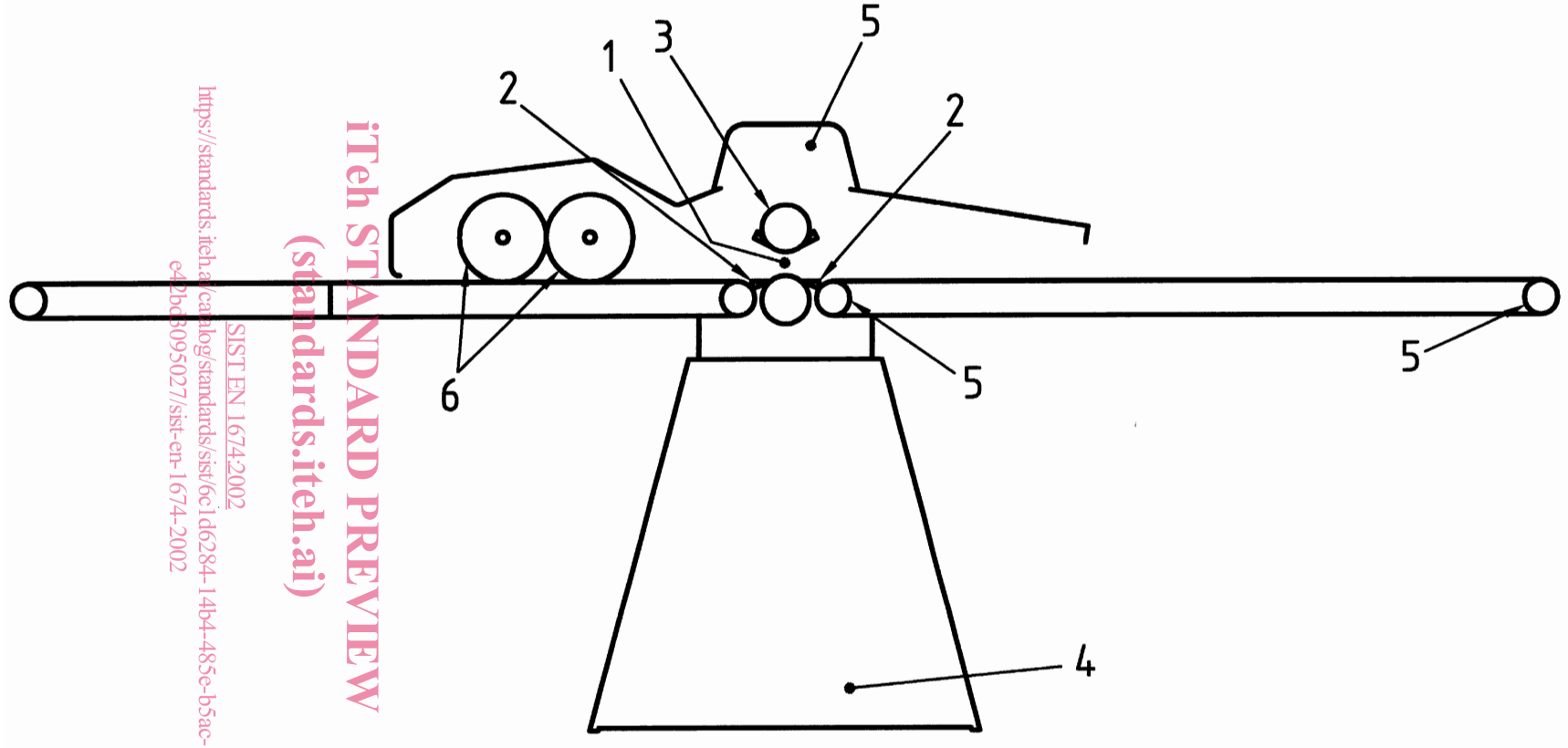

Figure 2 : Danger zones of a dough and pastry brake

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).

5.2 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).

5.3 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.

5.4 Hazard generated by neglecting hygienic design principles

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

5.5 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.

6 Safety and hygiene requirements and/or measures

6.1 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.

6.1.1 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.