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Nadomešča:

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Stroji za predelavo hrane - Peči z vrtljivim vozičkom - Varnostne in higienske zahteve

Food processing machinery - Rotary rack ovens - Safety and hygiene requirements

Nahrungsmittelmaschinen - Stikken-Backöfen - Sicherheits- und Hygieneanforderungen

Machines pour les produits alimentaires - Fours à chariot rotatif - Prescriptions relative à la sécurité et l'hygiène

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97.040.20	Štedilniki, delovni pulti, pečice in podobni aparati	Cooking ranges, working tables, ovens and similar appliances

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EUROPEAN STANDARD

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Food processing machinery - Rotary rack ovens - Safety and hygiene requirements

Machines pour les produits alimentaires - Fours à chariot rotatif - Prescriptions relative à la sécurité et l'hygiène

Nahrungsmittelmaschinen - Stikken-Backöfen - Sicherheits- und Hygieneanforderungen

This European Standard was approved by CEN on 2 November 2020.

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

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Contents

	Page
European foreword.....	4
Introduction	5
1 Scope.....	6
2 Normative references.....	6
3 Terms, definitions and classification.....	7
3.1 Terms and definitions	7
3.2 Description	8
4 Safety and hygiene requirements and/or protective measures.....	9
4.1 General.....	9
4.2 Mechanical hazards.....	10
4.2.1 Zone 1: Drive mechanism.....	10
4.2.2 Zone 2: Mechanical parts in movement inside the baking chamber	10
4.2.3 Zone 2: Space between the rack and any baking chamber door frame	11
4.2.4 Zone 4: Area in the front of any baking chamber door.....	11
4.2.5 Loss of stability	11
4.3 Electrical hazards.....	14
4.4 Thermal hazards	14
4.4.1 Escape of steam by opening any baking chamber door	14
4.4.2 Hot external surfaces.....	14
4.4.3 Fire hazards due to overheating.....	16
4.5 Hazard from being trapped inside the baking chamber.....	16
4.6 Hazards from remote control	17
4.7 Hazards from automatic start and/or unexpected start and process restart.....	17
4.8 Hygiene requirements.....	17
4.8.1 General.....	17
4.8.2 Food area.....	17
4.8.3 Non-food area	17
4.9 Hazards generated by neglecting ergonomic principles	18
5 Verification of the safety and hygiene requirements and/or measures.....	18
6 Information for use	20
6.1 General.....	20
6.2 Information and warnings on the machine	20
6.3 Instruction handbook.....	21
6.4 Marking.....	22
7 Environmental aspects.....	23
Annex A (normative) Force measurement method	24
A.1 General.....	24
A.2 Measuring instrumentation	24
A.3 Method of measurement.....	24
Annex B (normative) Calculation of the kinetic energy	25
B.1 Data	25

B.2 Calculation.....	25
Annex C (informative) List of significant hazards.....	26
Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2006/42/EC aimed to be covered.....	29
Bibliography	32

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SIST EN 1673:2021

<https://standards.iteh.ai/catalog/standards/sist/bbd1baa8-ed0d-4e81-9930-02b1f4b38acc/sist-en-1673-2021>

EN 1673:2020 (E)**European foreword**

This document (EN 1673:2020) 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 2021, and conflicting national standards shall be withdrawn at the latest by June 2021.

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 supersedes EN 1673:2000+A1:2009.

The significant changes with respect to the previous version EN 1673:2000+A1:2009 of edition EN 1673:2000 are listed below:

- upgraded list of significant hazards and danger zones removed in a new informative Annex C;
- safety requirements were revised with regard to the new list of significant hazards (steam emission, hot surfaces, etc.);
- new clause regarding environmental aspects;
- Annex ZA was revised to be in line with European Commission recommendation.

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 2006/42/EC. <https://standards.iteh.ai/catalog/standards/sist/bbd1baa8-ed0d-4e81-9930-02b1f4b38acc/sist-en-1673-2021>

For relationship with EU Directive 2006/42/EC, see informative Annex ZA, which is an integral part of this document.

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 EN ISO 12100:2010.

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

- machine manufacturers (small, medium and large enterprises);
- health and safety bodies (regulators, accident prevention organizations, market surveillance etc.).

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

- machine users/employers (small, medium and large enterprises);
- machine users/employees (e.g. trade unions, organizations for people with special needs);
- service providers, e.g. for maintenance (small, medium and large enterprises);
- consumers (in case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate at the drafting process of this document. The machinery concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the Scope of this document.

When requirements of this type-C standard are different from those which are stated in type-A- or type-B-standards, the requirements of this type-C-standard take precedence over the requirements of the other standards for machines that have been designed and built according to the requirements of this type-C-standard.

EN 1673:2020 (E)**1 Scope**

This document specifies safety and hygiene requirements for the design and manufacture of rotary rack ovens which can be used with one or more mobile racks.

These ovens are intended for professional use in the food industry and workshops (bakeries, pastry-making, etc.) for the batch baking of foodstuffs containing flour, water and other ingredients and/or additives. This document applies to ovens used only for food products except for those containing volatile flammable ingredients (volatile organic compound, e.g. alcohol, oil, ...). This document applies to ovens where the steam is generated by an evaporation process of drinking water on hot surfaces.

The following machines are excluded:

- experimental and testing machines under development by the manufacturer;
- machines for non-professional uses.

NOTE Due to the fact that rotary rack ovens are intended for professional uses, EN 60335-1 and EN 60335-2-42 are not applicable.

This document covers the technical safety requirements for the transport, installation, operation, cleaning and maintenance of these machines (see EN ISO 12100:2010, Clause 6).

This document deals with all significant hazards, hazardous situations and events relevant to rotary rack ovens when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer (see informative Annex C).

The following hazards are not covered by this document:

- hazards from the use of gaseous fuel by gas appliances;
- hazards arising from electromagnetic compatibility issues;
- hazards from the use of trays made of or coated by silicone;
- hazards due to dismantling, disabling and scrapping.

This document does not deal with noise emitted by the machine.

This document is not applicable to rotary rack ovens which were manufactured before the date of its publication as an EN.

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 203-2-2:2006, *Gas heated catering equipment - Part 2-2: Specific requirements - Ovens*

EN 614-1:2006+A1:2009, *Safety of machinery - Ergonomic design principles - Part 1: Terminology and general principles*

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

EN 1672-2:2005+A1:2009, *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 ISO 12100:2010, *Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)*

EN ISO 13732-1:2008, *Ergonomics of the thermal environment - Methods for the assessment of human responses to contact with surfaces - Part 1: Hot surfaces (ISO 13732-1:2006)*

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 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)*

SIST EN 1673:2021

<https://standards.iteh.ai/catalog/standards/sist/bbd1baa8-ed0d-4e81-9930->

3 Terms, definitions and classification en-1673-2021

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 terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO online browsing platform: available at <https://www.iso.org/obp>

3.1.1

overpressure

positive difference between the pressure in the baking chamber and the pressure in the room where the oven operates

3.1.2

steam generator

system which generates steam through the evaporation process of drinking water on hot surfaces

3.1.3

baking chamber

space where the baking process is carried out, including the frame of every baking chamber door

EN 1673:2020 (E)**3.1.4****baking chamber door**

movable guard which shall be open for introducing a rack into the baking chamber

3.1.5**process restart**

starting after a stoppage:

- a) during a baking cycle execution;
- b) between two baking cycles without changing anything in the baking process;
- c) after the end of the baking cycle only for maintaining the temperature level in the baking chamber

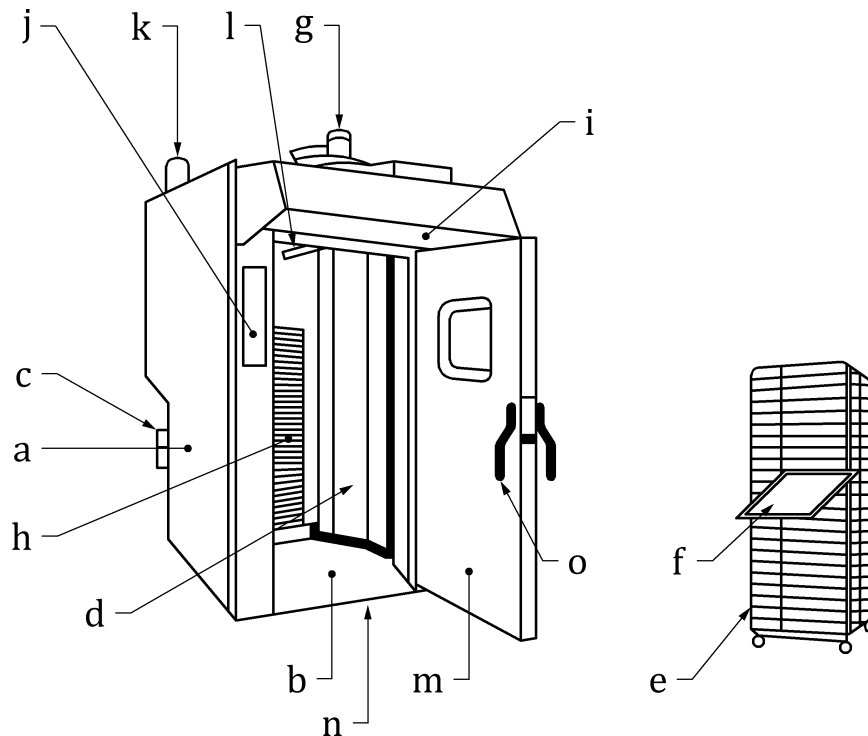
3.2 Description

A rotary rack oven usually consists of the following parts (see Figure 1):

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**Key**

- a container built with insulated panels
 b baking chamber
 c heat production unit
 d hot air circulation system
 e rack
 f trays
 g drive unit for rack rotation
 h steam generator
 i steam extractor
 j control panel
 k miscellaneous devices (e.g. combustion product flue where gas or fuel fired) (optional)
 l device to hold and/or rotate the removable rotary racks
 m baking chamber door
 n loading area
 o internal handle

NOTE Rack (e) and trays (f) are either provided by the manufacturer or the user.

Figure 1 — Example of parts of a rotary rack oven

4 Safety and hygiene requirements and/or protective measures

4.1 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 12100:2010 for relevant but not significant hazards, which are not dealt with by this document.

EN 1673:2020 (E)

Every electrical control circuits with safety functions shall meet at least a performance level “c” defined in accordance with EN ISO 13849-1:2015, unless it is differently specified in 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.

A normal stop device shall be provided, and it shall control a stop of category 1 according to EN 60204-1:2006, 9.2.2, except the normal stop controlled by releasing a hold-to-run control which shall be category 0.

No emergency stop is required unless it is differently specified in this document.

Where reference is made to interlocking guards, the associated interlocking devices shall comply with EN ISO 14119:2013. If an interlocking device type 2 or type 4, as defined in EN ISO 14119:2013, is used it can be of low level provided that the requested PL is achieved.

4.2 Mechanical hazards**4.2.1 Zone 1: Drive mechanism**

Access to the transmission parts outside of the baking chamber shall be prevented by:

- a) fixed enclosing guards according to EN ISO 13857:2019 and EN ISO 14120:2015; and/or
- b) distance guards according to EN ISO 13857:2019, Table 1, and EN ISO 14120:2015.

If there are openings in the guard, they shall comply with EN ISO 13857:2019, Table 3 and/or Table 4.

4.2.2 Zone 2: Mechanical parts in movement inside the baking chamber**4.2.2.1 General**

To avoid any mechanical hazards due to the movement of the rack inside the oven, the following requirements shall be apply:

- a) Every baking chamber door shall be interlocked, except in case of 4.2.2.2;
- or
- b) The force to stop the rotating of the rack shall be ≤ 150 N and the energy required to stop the rotating rack shall be ≤ 10 J. In this case, an emergency stop shall be provided and it shall be easily reachable from any opening intended for the introduction of the rack in the baking chamber when the relevant baking chamber door is open. The relevant control circuit shall meet at least a performance level “c” defined in accordance with EN ISO 13849-1:2015

Where the driving force is provided by mechanical friction, the force to stop the rotating rack shall be measured according to Annex A.

The energy required to stop the rotating rack shall be calculated according to Annex B.

Opening any interlocking baking chamber door shall activate the stop of the rack movement when the opening clearance is not greater than 20 mm.