



**SLOVENSKI STANDARD**  
**oSIST prEN 16881:2015**  
**01-september-2015**

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**Stroji za predelavo hrane - Pasterizatorji, kadi in kuhalniki za pripravo kreme - Varnostne in higienske zahteve**

Food processing machinery - Pasteurizers, vats and cream cookers - Safety and hygiene requirements

Nahrungsmittelmaschinen - Pasteurisierungsgeräte, Bottiche und Eismaschinen - Sicherheits- und Hygieneanforderungen

Machines pour les produits alimentaires - Pasteurisateurs, cuves et cuiseurs de crème - Prescriptions relatives à la sécurité et l'hygiène

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**Ta slovenski standard je istoveten z: prEN 16881**

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**ICS:**

67.260

Tovarne in oprema za  
živilsko industrijo

Plants and equipment for the  
food industry

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EUROPEAN STANDARD  
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## Food processing machinery - Pasteurizers, vats and cream cookers - Safety and hygiene requirements

Machines pour les produits alimentaires - Pasteurisateurs, cuves et cuiseurs de crème - Prescriptions relatives à la sécurité et l'hygiène

Nahrungsmittelmaschinen - Pasteurisiergeräte, Bottiche und Eismaschinen - Sicherheits- und Hygieneanforderungen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 153.

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**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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prEN 16881:2015 (E)

## Foreword

This document (prEN 16881:2015) 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 the CEN Enquiry.

This document 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 document.

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## Introduction

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 hazardous 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.

Complementary to the hygiene requirements common to all food processing machines, specific requirements for cleanability and sanitation of the machines in the scope are formulated.

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**prEN 16881:2015 (E)****1 Scope**

This European Standard applies to machines of ice cream mixes, pasty liquid products for gelato, pastry, chocolate and food processing, as described in Clause 3.

The European Standard applies to fixed and movable artisan machinery (not designed to be moved during operation), with a rated capacity of not more than 600 l.

This European Standard deals with all significant hazards, hazardous situations and events relevant to the 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 transport, assembly, commissioning, operation, cleaning, use, maintenance, decommissioning, dismantling, disabling and scrapping of the machine.

This European Standard covers the following types of machines:

- pasteurizers;
- ageing vats;
- cream cookers.

This European Standard does not apply to equipment feeding and dosing, equipment, supply of inert gas and heating and cooling equipment and any extraction (container, extraction belt etc.).

This European Standard is not applicable to cream cookers without cooling systems

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

**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.

EN 349:1993+A1:2008, *Safety of machinery - Minimum gaps to avoid crushing of parts of the human body*

EN 574:1996+A1:2008, *Safety of machinery - Two-hand control devices - Functional aspects - Principles for design*

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

EN 953, *Safety of machinery – Guards – General requirements for the design and construction of fixed and movable guards*

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 60529, *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)*



EN ISO 4287, *Geometrical product specifications (GPS) - Surface texture: Profile method - Terms, definitions and surface texture parameters (ISO 4287)*

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

EN ISO 11201, *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)*

EN ISO 11688-1, *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)*

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

EN ISO 13732-3, *Ergonomics of the thermal environment - Methods for the assessment of human responses to contact with surfaces - Part 3: Cold surfaces (ISO 13732-3)*

EN ISO 13849-1:2008, *Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design (ISO 13849-1:2006)*

EN ISO 13850, *Safety of machinery - Emergency stop - Principles for design (ISO 13850)*

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)*

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### 3 Terms and definitions and description of machines

#### 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.

##### 3.1.1

##### **hopper lid**

mobile guard used to lock the hopper which contain the mixing device of the product

Note 1 to entry: The hopper lid is also used to restart the work cycle.

##### 3.1.2

##### **mixing device**

suitable device to ensure mixing and circulation of the mixture

##### 3.1.3

##### **draw-off device**

suitable device to allow the extraction of the finished product

##### 3.1.4

##### **hopper**

part of the machinery suitable to store the mixture during the work cycle

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## 3.1.5

**compression type machines**

machines where the cooling is performed by means of a refrigerant liquid at low pressure in a heat exchanger (evaporator), the steam thus formed becomes a liquid by a mechanical compression higher pressure and cooling in another heat exchanger (condenser)

## 3.1.6

**condenser**

heat exchanger in which after compression, the vaporized refrigerant is liquefied, giving off heat to external cooling system

## 3.1.7

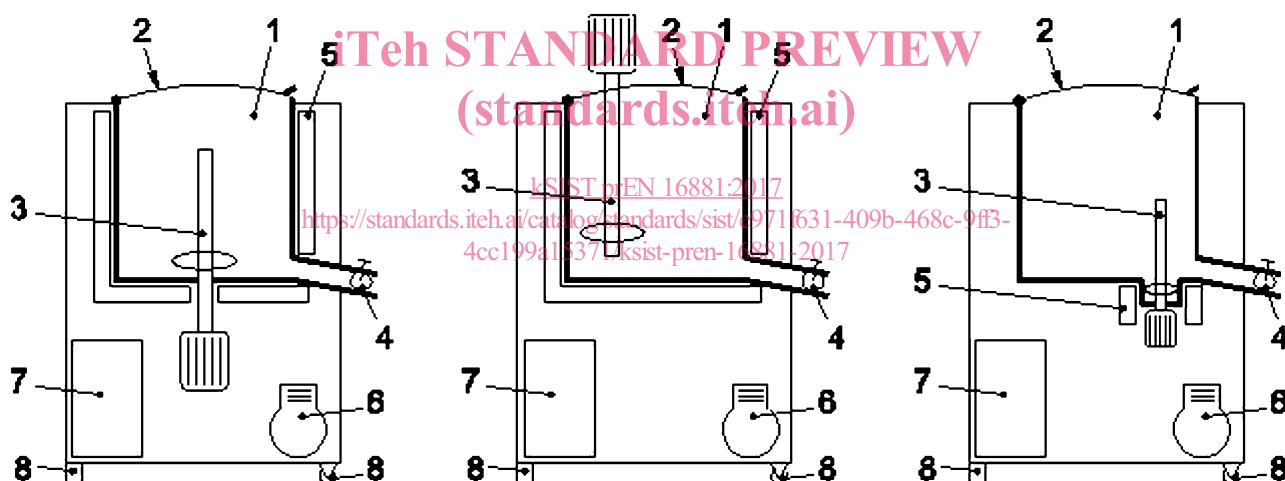
**evaporator**

heat exchanger in which, after the reduction of pressure, the refrigerant is vaporized by absorbing heat from the medium which shall be cooled

## 3.2 Description of machines

## 3.2.1 Pasteurizers

Machine used for mixing, heating, cooling ingredients in order to produce and store the mix for artisan gelato (see Figure 1), operated step by step or fully automatically, whose hopper can be heated or cooled by air or water condensing unit, internal or remote.

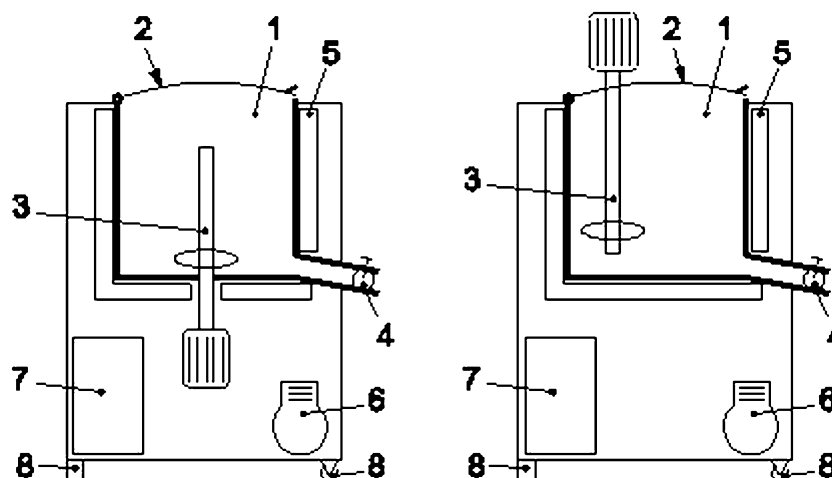
**Key**

- 1 hopper
- 2 hopper lid (cover)
- 3 mixing device
- 4 draw-off device
- 5 heated or cooled device
- 6 compressor
- 7 condensing unit
- 8 castors/pins

Figure 1 — Typical layout of pasteurizers

### 3.2.2 Ageing Vats

Machine used for the storage and ageing the mix for artisan gelato (see Figure 2), operated step by step or fully automatically, whose hopper can be heated or cooled by air or water condensing unit, internal or remote.



#### Key

- 1 hopper
- 2 hopper lid (cover)
- 3 mixing device
- 4 draw-off device
- 5 heated or cooled device
- 6 compressor
- 7 condensing unit
- 8 castors/pins

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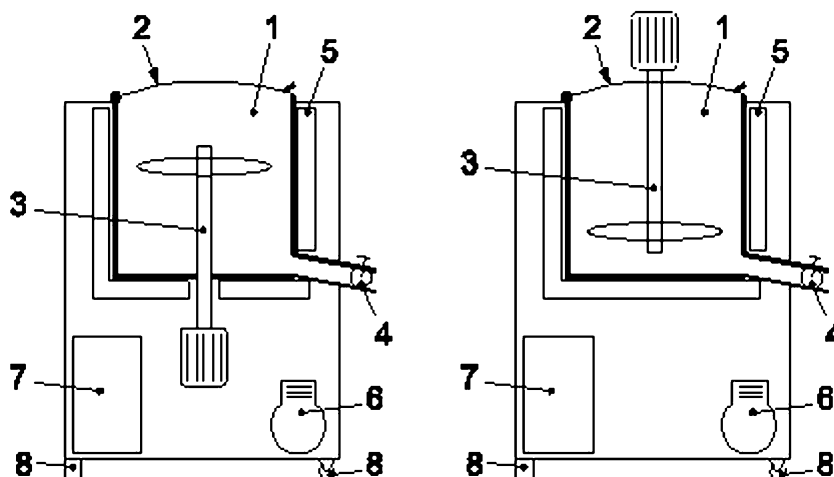
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**Figure 2 — Typical layout of vats**

### 3.2.3 Cream cookers

Pasteurizer intended for use with liquid and thick mixes (see Figure 3), operated step by step or fully automatically, whose hopper can be heated or cooled by air or water condensing unit, internal or remote.



### Key

- 1 hopper
- 2 hopper lid (cover)
- 3 mixing device
- 4 draw-off device
- 5 heated or cooled device
- 6 compressor
- 7 condensing unit
- 8 castors/pins

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 Figure 3 — Typical layout of cream cookers

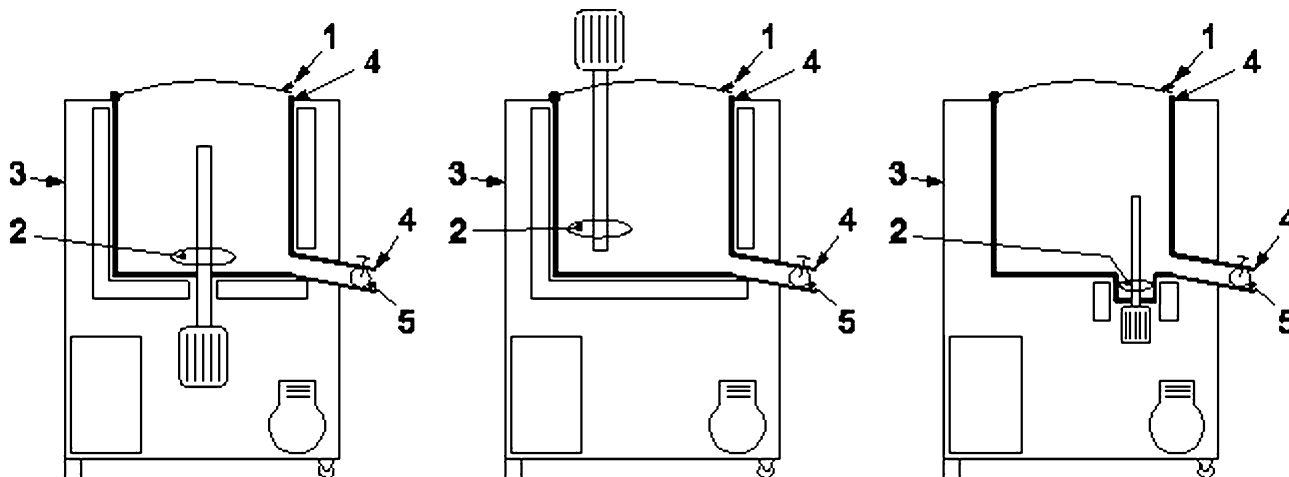
## 4 List of significant hazards

### 4.1 General

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

### 4.2 Mechanical hazards

The example shown in Figure 4 illustrates danger zones associated with these hazards:



### Key

- 1 Zone 1
- 2 Zone 2
- 3 Zone 3
- 4 Zone 4
- 5 Zone 5

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Figure 4 — Danger zones

Zone 1: Access to trapping points between the lid and the hopper/tank:

- crushing hazard of fingers and hands between the edge hopper and the lid;

Zone 2: Access to the rotating devices through the feed opening:

- hazards of trapping and shearing of arms between the blades of mixing device and the hopper/tank;

Zone 3: Loss of stability of machine - access to areas adjacent to the machine:

- hazard of trapping and crushing of whole or part of body if machine overturns;

Zone 4: Access to high temperature surfaces:

- hazard of scalds and burns, in case of accidental contact;

Zone 5: Access to the rotating parts through the draw-off opening:

- hazard of trapping and shearing of arms between the blades of rotating device.

### 4.3 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). If liquids such as spilled products or cleaning agents such as water come into contact with the electrical conductors, there is a danger of electric shock.

### 4.4 Thermal hazards

High temperature of external parts and hand operated components creates a hazard of scalds and burns. This hazard can be present also when the machinery is switched off.