



# SLOVENSKI STANDARD

## SIST EN 13289:2002

01-november-2002

---

### Stroji za izdelavo testenin - Sušilniki in ohlajevalniki - Varnostne in higienske zahteve

Pasta processing plants - Dryers and coolers - Safety and hygiene requirements

Maschinen zur Teigwarenherstellung - Trockner und Kühler - Sicherheits- und Hygieneanforderungen

Installations de production de pâtes - Séchoirs et refroidisseurs - Prescriptions relatives à la sécurité et à l'hygiène

SIST EN 13289:2002  
<https://standards.iteh.ai/catalog/standards/sist/b311b381-08ec-46f6-b4f3-237d30dda01f/sist-en-13289-2002>

**Ta slovenski standard je istoveten z: EN 13289:2001**

---

#### **ICS:**

67.260

Tovarne in oprema za  
živilsko industrijo

Plants and equipment for the  
food industry

**SIST EN 13289:2002**

**en**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 13289:2002

<https://standards.iteh.ai/catalog/standards/sist/b311b381-08ec-46f6-b4f3-237d30dda01f/sist-en-13289-2002>

EUROPEAN STANDARD

EN 13289

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2001

ICS 67.260

English version

## Pasta processing plants - Dryers and coolers - Safety and hygiene requirements

Installations de production de pâtes - Séchoirs et refroidisseurs - Prescriptions relatives à la sécurité et à l'hygiène

Maschinen zur Teigwarenherstellung - Trockner und Kühler - Sicherheits- und Hygieneanforderungen

This European Standard was approved by CEN on 10 February 2001.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

[SIST EN 13289:2002](https://standards.iteh.ai/catalog/standards/sist/b311b381-08ec-46f6-b4f3-237d30dda01f/sist-en-13289-2002)

<https://standards.iteh.ai/catalog/standards/sist/b311b381-08ec-46f6-b4f3-237d30dda01f/sist-en-13289-2002>



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

## CONTENTS

<b>FOREWORD</b> .....	<b>3</b>
<b>Introduction</b> .....	<b>4</b>
<b>1 Scope</b> .....	<b>4</b>
<b>2 Normative references</b> .....	<b>4</b>
<b>3 Terms and definitions</b> .....	<b>6</b>
<b>4 List of significant hazards</b> .....	<b>7</b>
4.1 Mechanical hazards .....	7
4.2 Electrical hazards .....	8
4.3 Thermal hazard .....	12
4.4 Noise hazard .....	12
4.5 Vibration hazard .....	12
4.6 Hazard due to slip, trip and fall .....	12
4.7 Hazard due to neglecting of hygienic principles .....	12
4.8 Harmful substance .....	12
<b>5 Safety requirements and/or measures</b> .....	<b>12</b>
5.1 Mechanical hazards .....	12
5.2 Electrical hazards .....	15
5.3 Thermal hazard .....	16
5.4 Noise reduction .....	16
5.5 Vibration hazard .....	17
5.6 Protective measures against slip, trip and fall .....	17
5.7 Protective measures against hazards due to neglecting of hygienic principles .....	17
5.8 Harmful substance .....	19
<b>6 Verification of the safety requirements and/or measures</b> .....	<b>19</b>
<b>7 Information for use (see clause 5 of EN 292-2: 1991)</b> .....	<b>20</b>
7.1 Technical information .....	20
7.2 Indicators .....	20
7.3 Marking .....	21
<b>Annex A (normative) Principles of design to ensure the cleanability of machinery</b> .....	<b>22</b>
A. 1 Terms and definitions .....	22
A.2 Material of construction .....	22
A.3 Design .....	23
<b>ANNEX B (normative) Noise test code - Grade 2 or 3</b> .....	<b>37</b>
<b>Annex ZA (informative) Relationship of this document with EC Directives</b> .....	<b>40</b>
<b>Bibliography</b> .....	<b>41</b>

## FOREWORD

This European Standard has been prepared by Technical Committee CEN/TC 153 "Food processing machinery", 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 October 2001, and conflicting national standards shall be withdrawn at the latest by October 2001.

It is one of a series of safety standards for machines used in continuous pasta processing plants.

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 EC directive(s).

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

The annexes A and B are normative.

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.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 13289:2002](https://standards.iteh.ai/catalog/standards/sist/b311b381-08ec-46f6-b4f3-237d30dda01f/sist-en-13289-2002)

<https://standards.iteh.ai/catalog/standards/sist/b311b381-08ec-46f6-b4f3-237d30dda01f/sist-en-13289-2002>

## Introduction

This European Standard has been prepared to be a harmonized standard providing a means of conforming with essential safety requirements of the "machinery directive" and associated EFTA regulations.

This European Standard is a type C standard as stated in EN 1070. The machinery concerned and the extent to which hazards are covered are indicated in the scope of this standard.

In addition, the machinery shall comply as appropriate with EN 292 for hazards which are not covered by this European Standard.

The machine, for which this European Standard is valid, can cause certain hazardous situations to operators, due to moving parts, drive components and electrical equipment.

Besides the specific hygiene requirements common to all food processing machines, dryers and coolers comply also with the requirements covering cleanability described in the present European Standard.

## 1 Scope

This European Standard applies to shaker pre-dryers, belt dryers, rotary dryers, nest pasta dryers, long pasta dryers and coolers (see clause 3), used in continuous pasta processing plants able to produce more than 100 kg/h.

This European Standard specifies the safety requirements for the design, manufacture and information for use for the machines mentioned above, known with the name of dryers and coolers, classified as stationary units which cannot be moved when in operation.

This European Standard is not applicable to dryers and coolers, static or semiautomatic requiring manual loading as well as those for special application ( i.e. experimental dryers ).

Dryers in a pasta plant are machines which to reduce moisture by means of warm air ventilation. In the drying process the use of a cooler might be necessary in order to reduce the temperature, maintaining constant the correct moisture of the pasta. The cooling can be obtained in the dryer or in a separate similar machine.

The significant hazards covered by this standard are listed in clause 4.

These hazards, as well as the measures for their reduction, are described in the present European Standard

Ancillary equipment, which is not an integral part of the machinery (e.g. hoppers, conveyors, equipments used to produce hot or cold fluids, etc), is not covered by this European Standard.

This European Standard applies to machines which are manufactured after ....( date of issue of approval by CEN).

## 2 Normative references

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

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

EN 294: 1992	Safety of machinery - Safety distances to prevent danger zones being reached by the upper limbs
EN 418	Safety of machinery - Emergency stop equipment, functional aspects - Principles for design
EN 457	Safety of machinery - Auditory danger signals - General requirements, design and testing (ISO 7731:1986, modified)
EN 953: 1997	Safety of machinery - General requirements for the design and construction of fixed and movable guards
EN 954-1:1996	Safety of machinery – Safety related parts of controls system – Part 1: General principles for design
EN 982	Safety of machinery - Safety requirements for fluid power system and components - Hydraulics
EN 983	Safety of machinery - Safety requirements for fluid power system and components - Pneumatics
EN 1070	Safety of machinery - Terminology
EN 1088:1995	Safety of machinery - Interlocking devices associated with guards - Principles for design and selection
EN 1672-2:1997	Food processing machinery - Basic concept -Part 2: Hygiene requirements
EN 60204-1:1997	Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1:1997)
EN 60529:1991	Degrees of protection provided by enclosure (IP code) (IEC 60529:1989)
prEN ISO 14122-1:1999	Safety of machinery - Permanent means of access to machines and industrial plants - Part 1: Choice of a fixed means of access between two levels (ISO/FDIS 14122-1:1999)
prEN ISO 14122-2:1999	Safety of machinery - Permanent means of access to machines and industrial plants - Part 2: Working platforms and gangways (ISO/FDIS 14122-2:1999)
prEN ISO 14122-3:1999	Safety of machinery - Permanent means of access to machines and industrial plants - Part 3: Stairways, stepladders and guard-rails (ISO/FDIS 14122-3:1999)
prEN ISO 14122-4:1999	Safety of machinery - Permanent means of access to machines and industrial plants - Part 4: Fixed ladders (ISO/FDIS 14122-4:1999)
EN ISO 3744	Acoustics - Determination of sound power levels of noise sources using sound pressure – Engineering method employing an enveloping measurement surface in an essentially free field over a reflecting plane (ISO 3744:1994)
EN ISO 3746	Acoustics - Determination of sound power levels of noise sources using sound pressure - Survey method using an enveloping measurement surface over a reflecting plane (ISO 3746:1995)
EN ISO 4871: 1996	Acoustics - Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996)
EN ISO 9614-1:1995	Acoustics - Determination of sound power levels of noise sources using sound intensity–Part 1: Measurement at discrete points (ISO 9614-1:1993)
EN ISO 9614-2	Acoustics - Determination of sound power levels of noise sources using sound intensity–Part 2: Measurement by scanning (ISO 9614-2:1996)

EN ISO 11204	Acoustics - Noise emitted by machinery and equipment - Measurement of emission sound pressure levels at a work station and at other specified positions - Method requiring environmental corrections (ISO 11204:1995)
EN ISO 11688-1	Acoustics – Recommended practice for the design of low-noise machinery and equipment - Part 1: Planning (ISO/TR 11688-1:1995)
ISO 468	Surface roughness - Parameter values and general rules for specifying requirements
ISO 1940-1	Mechanical vibrations - Balance quality requirements of rigid rotors - Part 1: Determination of permissible residual unbalance
ISO 2631-1	Mechanical vibration and shock - Evaluation of human exposure to whole-body vibrations - Part 1: General requirements
IEC 60332-1	Tests on electrical cables under fire conditions – Test on a single vertical insulated wire or cable

### 3 Terms and definitions

For the purposes of this standard the terms and definitions given in EN 1070 apply.

Additional terms and definitions specifically needed for this European Standard are added below:

#### 3.1

##### **dryer**

assembly where the pasta is dried

#### 3.2

##### **shaker pre-dryer**

assembly of metal mesh tables (usually in stainless steel) made to vibrate by different types of systems causing the product to advance towards the outlet. It is used for drying short cut pasta (e.g. macaroni), in the first stages of the process, when the pasta advances in thin layers to allow the evaporation of great quantities of water (see figure 1).

#### 3.3

##### **belt dryer**

assembly of belts, conveying the pasta. It is used for drying short cut pasta, and placed just after the shaker pre-dryers in the drying line (see figure 2).

#### 3.4

##### **rotary dryer**

assembly of a rotating drum which consists of conveying channels placed along the periphery of the drum. As a rule it is used for small dimension short cut pasta and for pastina (e. g. soup pasta, see figure 3).

#### 3.5

##### **nest pasta dryer**

assembly of special containers in which the nest shaped pasta is conveyed through the dryer frame

#### 3.6

##### **long pasta dryer**

assembly in which long cut pasta (e.g. spaghetti) is hung out on sticks which are conveyed through the dryer



**3.7****cooler**

final part of the process having the same handling system as the dryer described in 3.1 to 3.6, but with low inside air temperature in order to reduce the temperature of the pasta; it may be separate from the dryer

**3.8****cabinet**

enclosure where the drying/cooling is carried out

**3.9****insulating booth**

interface between the cabinet and the exterior

**4 List of significant hazards**

This clause covers all the hazards, as far as they are considered in this European Standard, identified by risk assessment to be significant for this type of machinery and requiring an action to eliminate or reduce the risk.

**4.1 Mechanical hazards**

The significant mechanical hazards are:

- crushing hazard;
- cutting or severing hazard;
- entanglement hazard;
- shearing hazard;
- fluid ejection hazard;
- impact hazard;
- trapping hazard;

ITEH STANDARD PREVIEW  
(standards.iteh.ai)

[SIST EN 13289:2002](https://standards.iteh.ai/catalog/standards/sist/b311b381-08ec-46f6-b4f3-237d30dda01f/sist-en-13289-2002)

<https://standards.iteh.ai/catalog/standards/sist/b311b381-08ec-46f6-b4f3-237d30dda01f/sist-en-13289-2002>

The examples shown in figures 1 to 3 illustrate the danger zones associated with these hazards.

**4.1.1 Protruding parts**

Parts jutting out of the basic outline of the machine (e.g. motors or gearbox, valves and pipes of the heating, cooling and humidifying plants) may cause hazards of cutting or severing of body parts, head impact, slipping, tripping and falling with consequent broken bones, see zone 1 figures 2 and 3.

**4.1.2 Moving parts**

**4.1.2.1** Moving parts for pasta conveyance systems, such as sticks, belts, drums, frames, and other containers, may cause hazards of entanglement, cutting, severing and shearing of fingers, hands, arms, and the body; see zone 2, figures 1, 2 and 3.

**4.1.2.2** Moving parts for driving systems such as chains, gears, shafts, etc, may cause hazards of entanglement, cutting, severing, and shearing of fingers or hands; see zone 3, figures 1, 2 and 3.

**4.1.2.3** Fan blades may cause hazards of cutting of fingers, hands, arms, or other parts of body.

**4.1.2.4** Rotating drums may cause hazards of crushing of the body when falling from supports.

**4.1.2.5** Moving parts of air inlet and outlet gates may cause hazards of cutting or severing of fingers and hands.

#### 4.1.3 Mobile parts

Panels of insulation booth may cause hazard of crushing of fingers, arms, or other parts of the body, and ejection of hot air or fluid, which may cause injury to the head or other parts of the body; see zone 4 figures 1, 2 and 3.

#### 4.1.4 Openings

**4.1.4.1** Openings like entrance doors for cleaning and maintenance operations may cause hazards of crushing, cutting or severing of fingers, arms and other parts of the body, trapping of the operator in the booth and hot air and fluid ejection; see zone 5 figures 2 and 3.

**4.1.4.2** Openings for drawing samples may allow contact with moving parts inside the insulation booth with hazard of entanglement, cutting of fingers and hands; hot air or fluid ejection, may cause injury to hands, arms and face. See zone 5 figures 2 and 3.

**4.1.4.3** Openings for air inlet and outlet may cause hazard of hot air ejection with consequent injury to hands, arms and other parts of the body.

#### 4.1.5 Fluid ejection hazards

Failure of heating pipes under hydraulic pressure and failure of power, hydraulic and pneumatic systems may cause hazard of ejection of fluid which may cause injury.

#### 4.1.6 Hazards due to unexpected start or failure of emergency device

Unexpected start up or failure of emergency device may cause hazard of contact with dangerous moving parts, with the consequences listed in 4.1, 4.2, 4.3.

iTeh STANDARD PREVIEW

#### 4.2 Electrical hazards

(standards.iteh.ai)

Hazards of electric shock from direct or indirect contact with live components. This hazard is present in control consoles, driving boards, motor connectors, electrical resistances, etc.

Hazard of external influence on electrical components. This hazard is present in running operation of the dryer (e.g. caused by interference to control signals or by cleaning water or steam) .

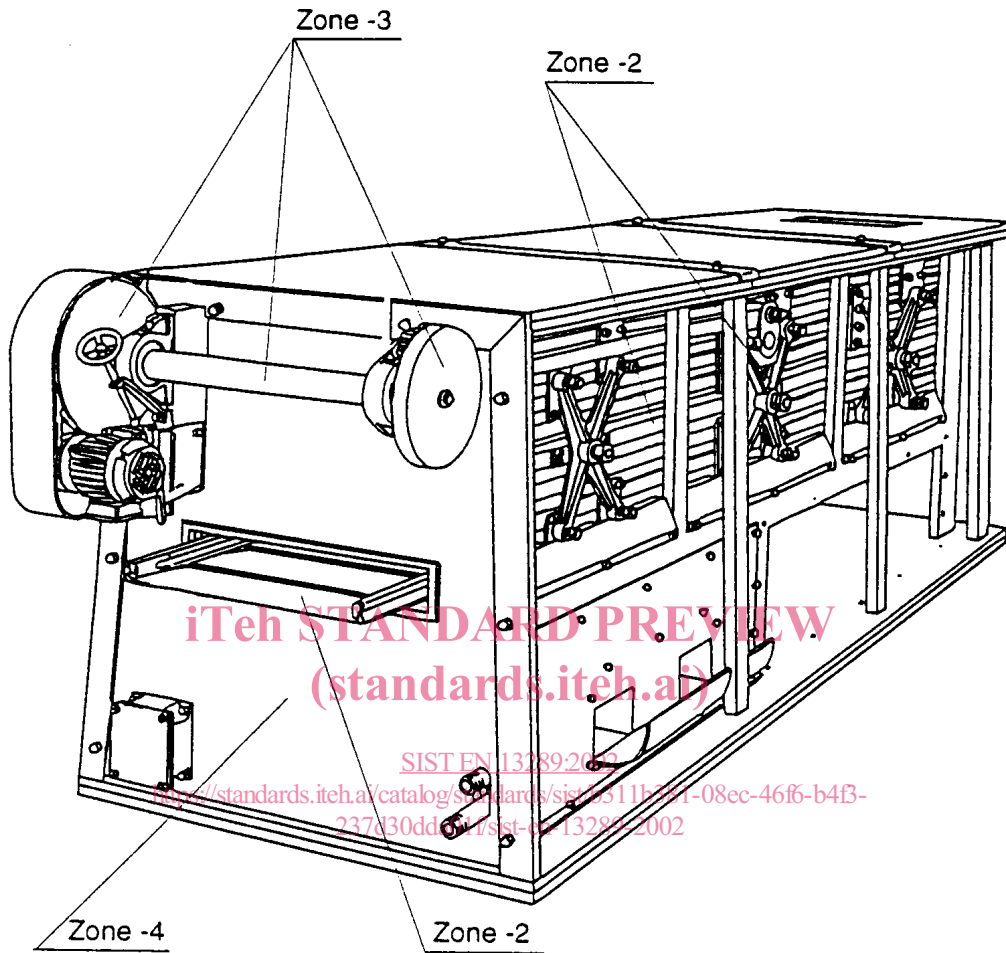


Figure 1 - Shaker pre-dryer



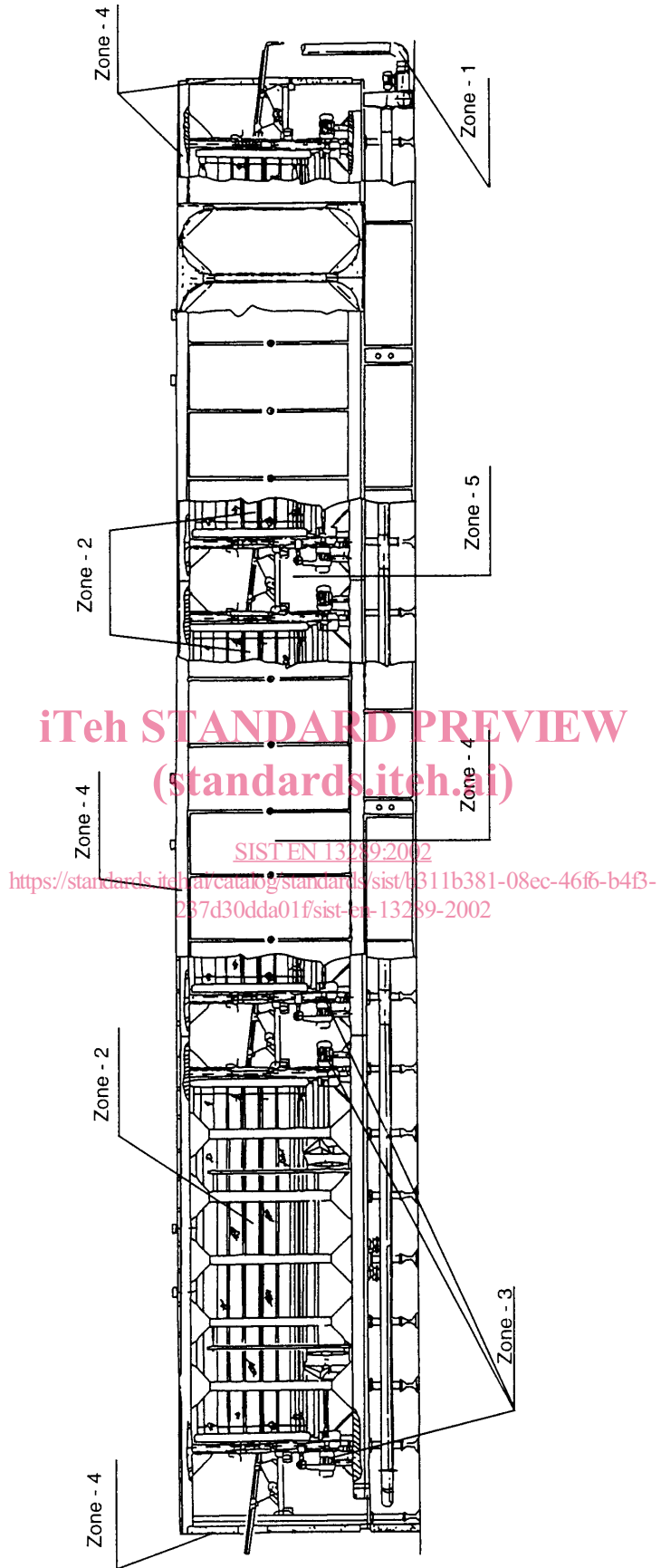


Figure 3 - Rotary dryer