



**SLOVENSKI STANDARD**  
**SIST EN 13288:2006+A1:2010**  
**01-marec-2010**

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Glavni namen tega standarda je zagotoviti zahteve za varnost in higieno pri uporabi strojne opreme za dvigovanje in naklinalno dvigovanje posod v živilski industriji.

Food processing machinery - Bowl lifting and tilting machines - Safety and hygiene requirements

Nahrungsmittelmaschinen - Hub- und Kippeinrichtungen für Bottiche - Sicherheits- und Hygieneanforderungen

Machines pour les produits alimentaires - Machines élévateurs/basculateurs de cuve - Prescriptions relatives à la sécurité et à l'hygiène

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Ta slovenski standard je istoveten z: **EN 13288:2005+A1:2009**

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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

**EN 13288:2005+A1**

NORME EUROPÉENNE

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## Food processing machinery - Bowl lifting and tilting machines - Safety and hygiene requirements

Machines pour les produits alimentaires - Machines  
élévateurs/basculateurs de cuve - Prescriptions relatives à la  
sécurité et à l'hygiène

Nahrungsmittelmachines - Hub- und Kippeinrichtungen für  
Bottiche - Sicherheits- und Hygieneanforderungen

This European Standard was approved by CEN on 1 August 2005 and includes Amendment 1 approved by CEN on 1 November 2009.

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 CEN Management Centre or to any CEN member.

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**EN 13288:2005+A1:2009 (E)****Foreword**

This document (EN 13288:2005+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of an identical text or by endorsement, at the latest by June 2010, and conflicting national standards shall be withdrawn at the latest by June 2010.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 2009-11-01.

This document supersedes EN 13288:2005.

The start and finish of text introduced or altered by amendment is indicated in the text by tags  $\square_{A1}$   $\square_{A1}$ .

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).

$\square_{A1}$  For relationship with EU Directive(s), see informative Annexes ZA and ZB, which are integral parts of this document.  $\square_{A1}$

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

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.

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**EN 13288:2005+A1:2009 (E)****1 Scope**

This European Standard specifies safety and hygiene requirements for the design, installation, operation and maintenance of lifting and tilting machines used, in bakeries, for lifting and/or tilting a container or a machine with non removable bowl containing dough or pastry and for tipping the contents at the top end of the stroke.

The lifting and tilting machines can be stationary or movable and are designed for semi-manufactured products (mixtures of flour, water and other ingredients) or raw material (flour, mixtures etc.). The direction of lifting can be vertical, inclined or combined and follows a track fixed by mechanical guides, or articulated arms.

**A1** This European Standard deals with the significant hazards, hazardous situations and events relevant to lifting and tilting machines, when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer (see Clause 4). **A1**

This European Standard does not deal with the hazards due to the mixing or other function of the bowl (for dough mixers see EN 453).

The following machines are excluded:

- experimental and testing machines under development by the manufacturer;
- domestic appliances;
- automatic mobile equipment, for example bucket trucks;
- lift trucks;
- automatic devices working in automatic production lines (where the initiation of the movement is not due to an human action).

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**A1** This European Standard does not deal with powered equipment that may be provided to assist the mobility of mobile bowl lifting and tilting machines. **A1**

When drafting this European Standard, it has been assumed that the machines are not intended to be cleaned with a water jet.

Noise is not considered to be a significant hazard by lifting and tilting machines for bakery. This does not mean that the manufacturer of the machine is absolved from reducing noise and making a noise declaration. A noise test code is therefore given in Annex A.

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

**2 Normative references**

The following referenced documents are indispensable for the application of this European Standard. 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 distance 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.*

**A1** *deleted text* **A1**

EN 574:1996, *Safety of machinery — Two-hand control devices — Functional aspects — Principles for design.*



EN 614-1:2006 <sup>A1</sup>, *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.*

<sup>A1</sup> *deleted text* <sup>A1</sup>

EN 982, *Safety of machinery — Safety requirements for fluid power systems and their components — Hydraulics.*

EN 983, *Safety of machinery — Safety requirements for fluid power systems and their components — Pneumatics.*

EN 1037, *Safety of machinery — Prevention of unexpected start-up.*

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.*

<sup>A1</sup> EN 60204-1:2006, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204:2005, modified)* <sup>A1</sup>

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

EN 61310-1, *Safety of machinery — Indication, marking and actuation — Part 1: Requirements for visual, auditory and tactile signals (IEC 61310-1:1995).*

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 4287, *Geometrical Product Specifications (GPS) — Surface texture: profile method — Terms, definitions and surface texture parameters (ISO 4287:1997).*

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

EN ISO 11201, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a workstation and at other specified positions — Engineering method in an essentially free field over a reflecting plane (ISO 11201:1995).*

EN ISO 12001:1996, *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).*

<sup>A1</sup> EN ISO 13849-1:2008, *Safety of machinery — Safety related parts of control systems — Part 1: General principles for design (ISO 13849-1:2006)* <sup>A1</sup>

## EN 13288:2005+A1:2009 (E)

**3 Terms, definitions and description****3.1 Terms and definitions**

For the purposes of this European Standard, the terms and definitions given in EN ISO 12100-1:2003 and in EN 1672-2:2005 apply.

In this European Standard, the word “bowl” is used for any container.

**3.2 Description – Types of machines dealt with in this European Standard****3.2.1 General**

Lifting and tilting machines include devices which lift and/or overturn an entire mixing machine (mixer) or a container (container: vessel where is the product, it can be e. g. a bowl, a tank, a skip, a trolley).

Three types of mechanisms are used:

- “simple guide” (the bowl or mixing machine can be dismantled and is located on a fork or platform, guided by a single, vertical or inclined mast. Raising or lowering may be by a screw or chain or hydraulic or pneumatic lifting system);
- “double guide” (the bowl or mixing machine moves on two vertical or inclined guides and can be dismantled. The device is generally provided with a cable or chain hoist mechanism); and
- “articulated arm” machines (the bowl or mixing machine can be dismantled and is moved by one or more articulated arms driven mechanically or hydraulically or pneumatically) exist.

**3.2.2 Type A: Lifting and tilting bowl (see Figures 1a, 1b and 1c)**

The bowl can be dismantled from the dough mixer. It moves on vertical or inclined guides or is guided by one or more articulated arms.

The device is generally provided with a cable or chain hoist mechanism.

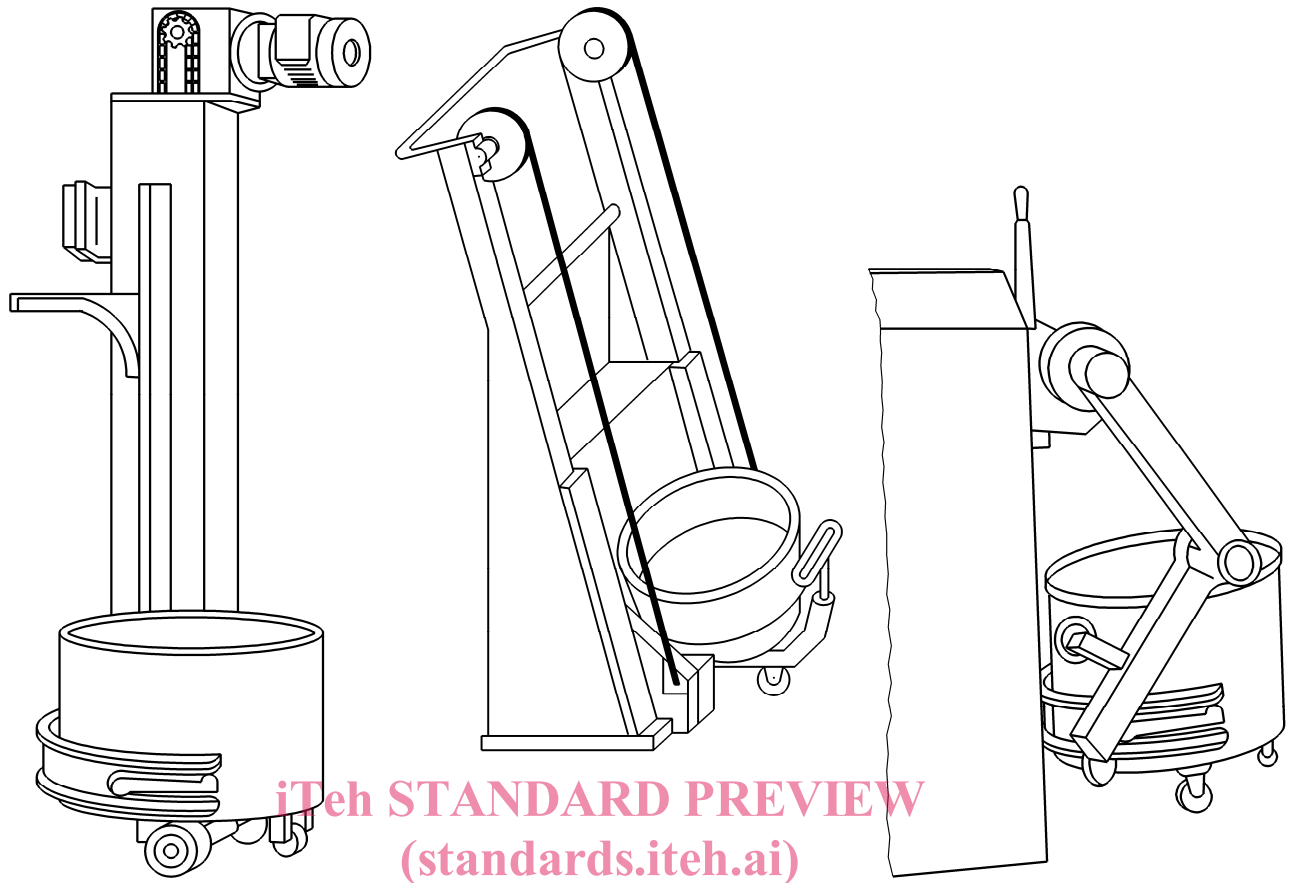


Figure 1a: Type A — Simple guide

Figure 1b: Type A — Double guide

Figure 1c: Type A — Articulated arm

### 3.2.3 Type B: Lifting and tilting mixing machine (see Figures 2a and 2b)

The mixing machine (usually dough mixer) is incorporated to the elevator and guided by a single or double, vertical or inclined mast or even by one or more articulated arms.

Raising or lowering may be by a screw or chain or hydraulic or pneumatic lifting system.

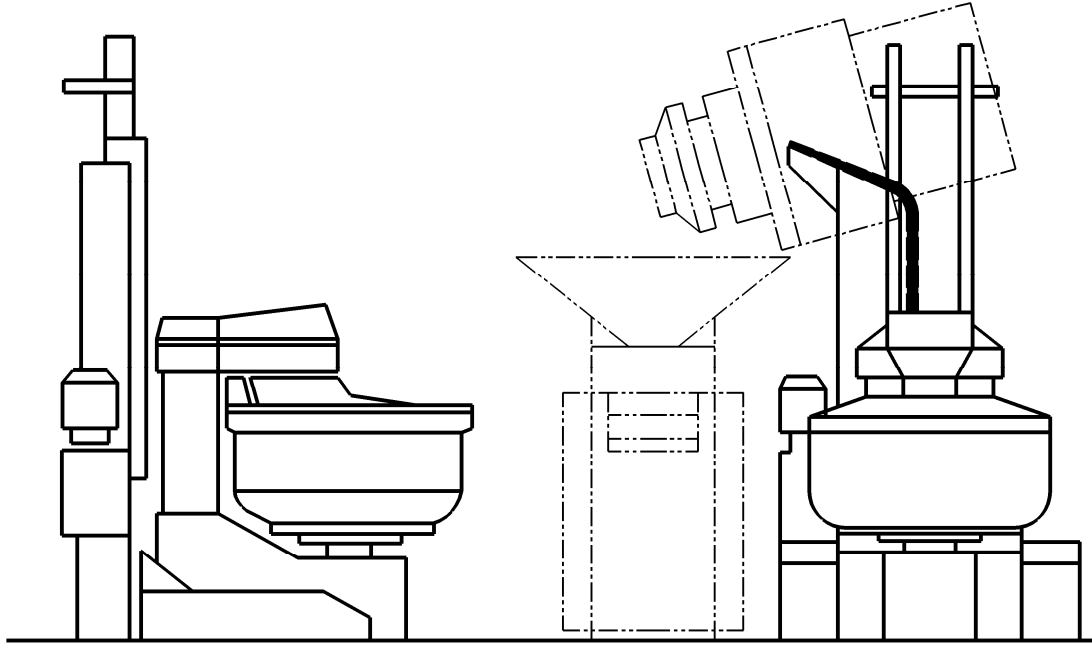


Figure 2a: Type B — Mixing machine incorporated into simple guide elevator

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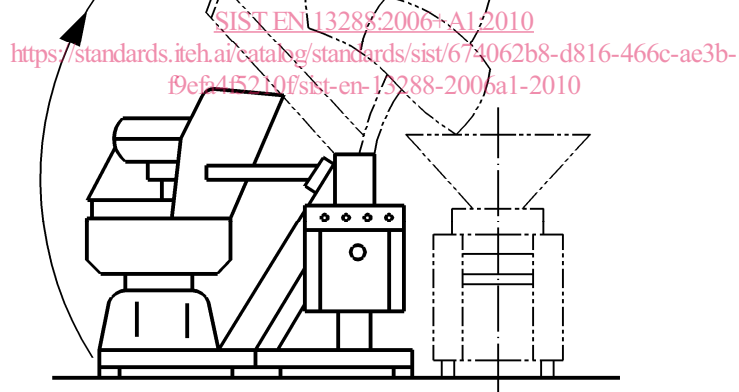


Figure 2b: Type B — Mixing machine incorporated into articulated arm elevator

### 3.2.4 Type C: Tilting bowl (see Figure 3)

The bowl can be dismantled from the dough mixer and is located on a fork or platform. When the bowl is in position, the machine makes a rotation around a fixed axis.

The device is driven mechanically or hydraulically or pneumatically.

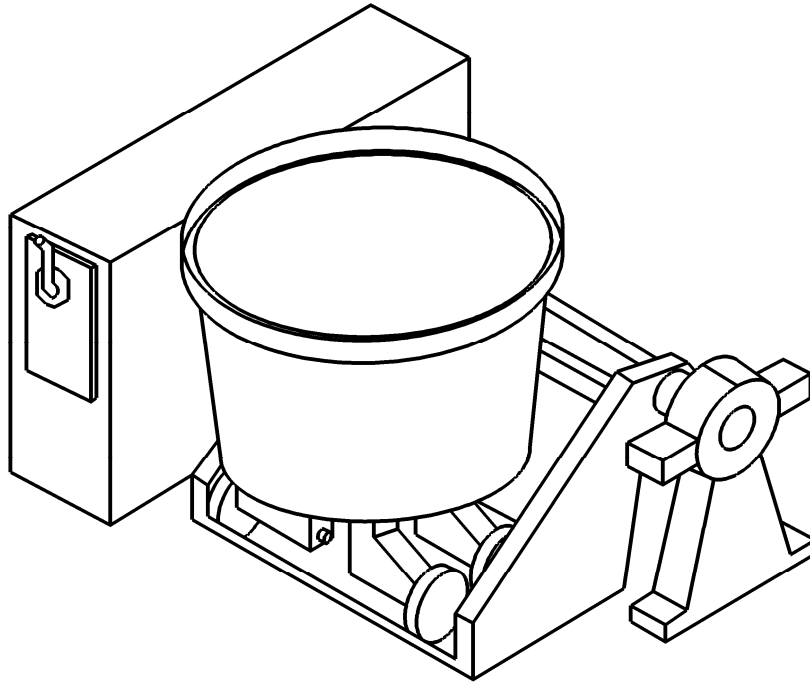


Figure 3: Type C — Tilting bowl machine

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## 4 List of significant hazards

### 4.1 General

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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.

Before using this European Standard it is important to carry out a risk assessment of the lifting and tilting machine to check that its significant hazards are identified in this clause.

### 4.2 Mechanical hazards

Figures 4a, 4b, and 4c indicate the hazard zones. Individual hazards in these zones are as follows:

Zone 1: Area below bowl and/or mixing machine:

- hazards of trapping and crushing at ground level during normal descent;
- hazards of impact or crushing by uncontrolled descent e. g. in the event of mechanical failure or failure of the control system;

Zone 2: Path of movement of bowl and/or mixing machine:

- hazards of impact with moving parts;
- hazards of crushing or shearing between moving and fixed components;

Zone 3: Transmission machinery and (where used) pulleys and chains or wire ropes:

- hazards of drawing in, shearing, crushing or entanglement;