



**SLOVENSKI STANDARD**  
**SIST EN 15180:2015**  
**01-januar-2015**

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**Stroji za predelavo hrane - Dodajalne naprave - Varnostne in higienske zahteve**

Food processing machinery - Food depositors - Safety and hygiene requirements

Nahrungsmittelmaschinen - Nahrungsmittelportioniermaschinen - Sicherheits- und Hygieneanforderungen

Machines pour les produits alimentaires - Doseuses alimentaires - Prescriptions relatives à la sécurité et l'hygiène

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Ta slovenski standard je istoveten z: **EN 15180:2014**  
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**ICS:**

67.260

Tovarne in oprema za  
živilsko industrijo

Plants and equipment for the  
food industry

**SIST EN 15180:2015**

**en,fr,de**

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EUROPEAN STANDARD

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## Food processing machinery - Food depositors - Safety and hygiene requirements

Machines pour les produits alimentaires - Doseuses alimentaires - Prescriptions relatives à la sécurité et l'hygiène

Nahrungsmittelmaschinen - Nahrungsmittelportioniermaschinen - Sicherheits- und Hygieneanforderungen

This European Standard was approved by CEN on 13 September 2014.

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COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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

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**EN 15180:2014 (E)****Foreword**

This document (EN 15180:2014) 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of an identical text or by endorsement, at the latest by May 2015 and conflicting national standards shall be withdrawn at the latest by May 2015.

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 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 2006/42/EC.

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 organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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## Introduction

Food depositors are used extensively in Europe, in commercial and industrial food preparation applications. They present some health and safety hazards that have the potential to cause serious injury.

This document 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 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 15180:2014 (E)****1 Scope****1.1 General**

This European Standard deals with all significant hazards, hazardous situations and events relevant to food depositors as defined in 1.2.2 to 1.2.6 and the equipment typically integrated into them, i.e. product pumps, product elevators, conveyors and indexing mechanisms, 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 significant hazards, hazardous situations and events during transport, assembly and installation, commissioning, use and decommissioning as defined in EN ISO 12100.

NOTE 1 According to the clause which is referred to, "use" includes "setting, teaching/programming or process changeover, operation, cleaning, fault finding and maintenance".

NOTE 2 Although this standard is intended to apply to depositors used in the food industry, many of its requirements can also be used for similar machines used in other industries.

This European Standard is not applicable to the following machines:

- auger depositors or auger fillers and gravimetric filling machines, safety requirements for these machines are contained in EN 415-3;
- automatic dough dividers, safety requirements for these machines are contained in EN 12042;
- filling machines for sausages, safety requirements for these machines are contained in EN 12463;
- mincing machines, safety requirements for these machines are contained in EN 12331;
- food depositors that are powered exclusively by manual effort.

This document does not deal with the hazards related to the use of food depositors in a potentially explosive atmosphere.

This European Standard is not applicable to food depositors that were manufactured before the date of its publication as a European Standard.

**1.2 Types of food depositors****1.2.1 General**

This European Standard deals with five different types of food depositors. These machines can be free standing machines or be assemblies incorporated into other machines e.g. pie and tart machines. Food depositors may work fully automatically integrated with a product conveyor or product indexing mechanism or semi-automatically discharging a deposit when required by an operator.

**1.2.2 Piston depositor**

A piston depositor typically comprises a hopper, a rotary valve, a product measuring chamber in the form of a piston and a product dispensing valve. Some piston depositors incorporate several product measuring chambers and dispensing valves. Some designs dispense the product directly from the rotary valve without the use of a separate product dispensing valve. The volume of product dispensed is varied by altering the stroke of the product measuring chamber piston. Piston depositors are used to fill liquids, liquids containing solids in suspension and pastes. The product dispensing valve may be attached rigidly to the depositor or



using a flexible pipe and in some cases is held by the operator. Figure 1 shows the typical cross section of a piston depositor.

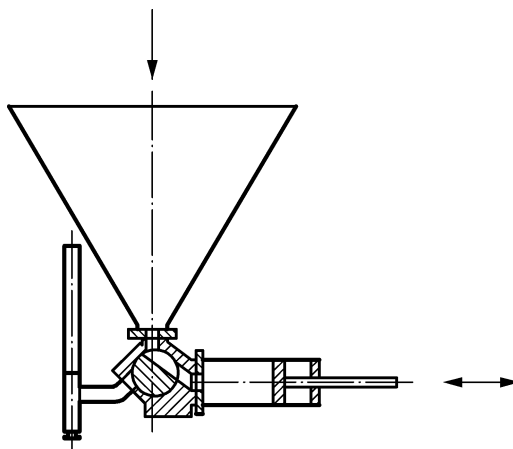


Figure 1 — Piston depositor

### 1.2.3 Chamber depositor

A chamber depositor comprises a hopper feeding one or more product measuring chambers that are filled under gravity from the top. When the chamber has been filled with product the flow of product is stopped either by moving the chamber or using a product cutting device. The chamber is then discharged through the bottom of the chamber either by moving the chamber or by moving a plate in the base of the chamber. The volume of product dispensed is varied by altering the volume of the chamber. Chamber depositors are typically used to deposit free-flowing products like cooked rice or pasta. Figure 2 shows the typical cross section of a chamber depositor.

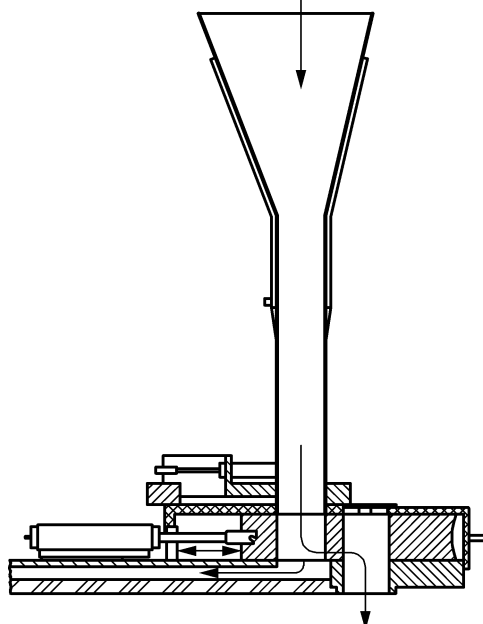
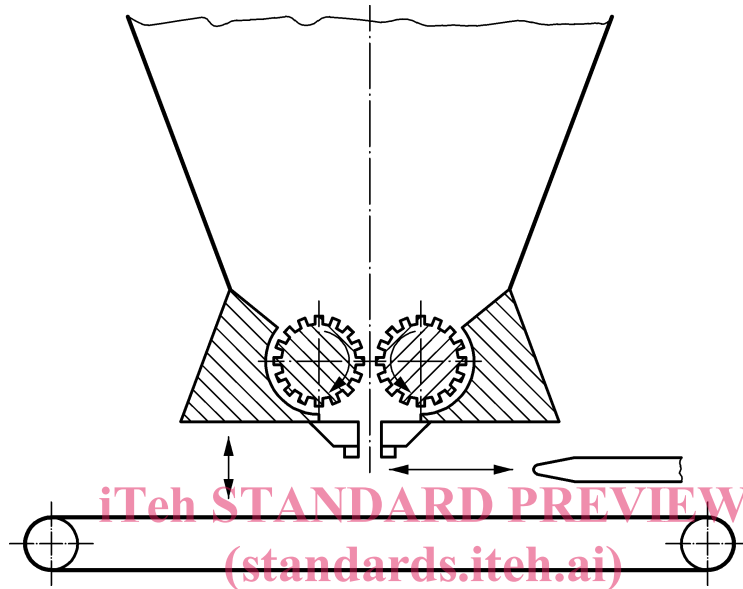


Figure 2 — Chamber depositor

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## 1.2.4 Roller depositor

A roller depositor typically comprises a hopper that feeds product to two or more fluted contra-rotating rollers. These rollers force the product through one or more dies that shape the product. The product is then separated using a product cutting device like a wire cut mechanism. On some designs of the machine the dies are moved while the product is dispensed to produce a shaped product. The volume of product dispensed is varied by altering the timing of the product cut-off device. Roller depositors are typically used to deposit dough or confectionery products. Figure 3 shows the typical cross section of a roller depositor.



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 Figure 3 — Roller depositor  
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## 1.2.5 Pump depositor

A pump depositor comprises a hopper that feeds a pump which in turn feeds pipe-work on which are mounted one or more product dispensing valves. The dispensing valves may remain fixed, move up and down or from side to side in synchronization with a product conveyor. The volume of product dispensed is varied by altering the length of time that the dispensing valves are open. Pump depositors are typically used to deposit liquids or liquids containing finely divided solids. Figure 4 shows the typical cross section of a pump depositor.

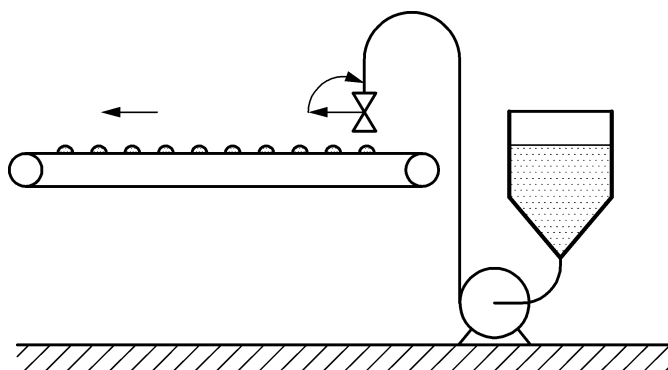
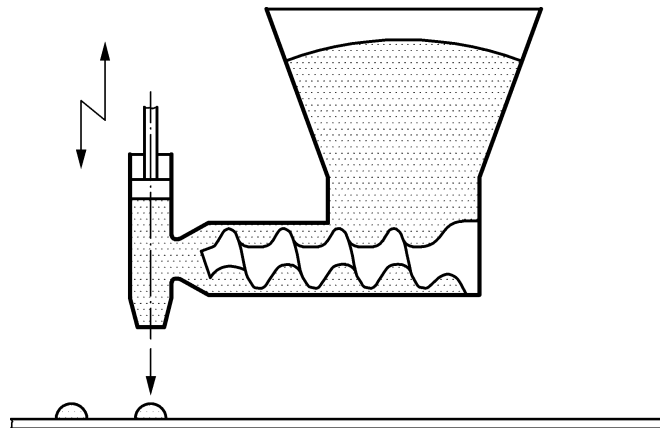


Figure 4 — Pump depositor

### 1.2.6 Screw depositor

A screw depositor comprises a hopper in which a screw is mounted. When the screw rotates it draws product from the hopper into a pipe. The hopper may be equipped with stirrers to move the product towards the screw and a product measuring chamber or product dispensing valve may be fitted to the discharge of the screw. The volume of product can be varied by increasing or decreasing the speed of the screw, by varying the volume of the measuring chamber or by controlling the actuation of the product dispensing valve. Screw depositors are typically used to deposit dough, pastes or creams. Figure 5 shows the typical cross section of a screw depositor.



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**Figure 5 — Screw depositor**  
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## 2 Normative references

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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, *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 (all parts), *Safety of machinery — Ergonomic design principles*

EN 618, *Continuous handling equipment and systems — Safety and EMC requirements for equipment for mechanical handling of bulk materials except fixed belt conveyors*

EN 619, *Continuous handling equipment and systems — Safety and EMC requirements for equipment for mechanical handling of unit loads*

EN 620, *Continuous handling equipment and systems — Safety and EMC requirements for fixed belt conveyors for bulk materials*

EN 894-1, *Safety of machinery — Ergonomics requirements for the design of displays and control — Part 1: General principles for human interactions with displays and control actuators*

EN 894-2, *Safety of machinery — Ergonomics requirements for the design of displays and control — Part 2: Displays*

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EN 894-3, *Safety of machinery — Ergonomics requirements for the design of displays and control — Part 3: Control actuators*

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

EN 1005-3, *Safety of machinery — Human physical performance — Part 3: Recommended force limits for machinery operation*

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

EN 1672-2, *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 60204-1:2005, modified)*

EN 60529, *Degrees of protection provided by enclosures (IP Code) (IEC 60529)*

EN 61310-1:2008, *Safety of machinery — Indication, marking and actuation — Part 1: Requirements for visual, acoustic and tactile signals (IEC 61310-1:2007)*

EN 61310-3, *Safety of machinery — Indication, marking and actuation — Part 3: Requirements for the location and operation of actuators (IEC 61310-3)*

EN 61496-1:2004, *Safety of machinery — Electro-sensitive protective equipment — Part 1: General requirements and tests (IEC 61496-1:2002, modified)*

EN ISO 3744, *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)*

EN ISO 4413, *Hydraulic fluid power — General rules and safety requirements for systems and their components (ISO 4413)*

EN ISO 4414, *Pneumatic fluid power — General rules and safety requirements for systems and their components (ISO 4414)*

EN ISO 4871:2009, *Acoustics — Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996)*

EN ISO 11201:2010, *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 11201:2010)*

EN ISO 11202:2010, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions applying approximate environmental corrections (ISO 11202:2010)*

EN ISO 11204, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions applying accurate environmental corrections (ISO 11204)*

EN ISO 12001:2009, *Acoustics — Noise emitted by machinery and equipment — Rules for the drafting and presentation of a noise test code (ISO 12001:1996)*

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 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 13855, *Safety of machinery — Positioning of safeguards with respect to the approach speeds of parts of the human body (ISO 13855)*

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)*

EN ISO 14122-1, *Safety of machinery — Permanent means of access to machinery — Part 1: Choice of fixed means of access between two levels (ISO 14122-1)*

EN ISO 14122-2, *Safety of machinery — Permanent means of access to machinery — Part 2: Working platforms and walkways (ISO 14122-2)*

EN ISO 14122-3, *Safety of machinery — Permanent means of access to machinery — Part 3: Stairs, stepladders and guard-rails (ISO 14122-3)*

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### 3 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

##### **product**

material processed in a food depositor which may be a liquid, e.g. sauce, liquid containing suspended solids, e.g. batter, paste, e.g. biscuit dough or solids, e.g. cooked rice

#### 3.2

##### **food depositor**

machine that dispenses a food product in a predetermined volume or shape

#### 3.3

##### **product cutting device**

mechanism that separates portions of food from a bulk supply of product

Note 1 to entry: Typical devices include rotary valves, wire-cut mechanisms, shear blades and iris valves.

#### 3.4

##### **product dispensing valve**

mechanism that controls the flow of product at the point of product delivery

Note 1 to entry: Typical devices include rotary valves, seating valves and slide valves.

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**3.5 product measuring chamber**  
chamber that is filled with product to measure out a predetermined volume of product and that will typically incorporate a mechanism that allows the volume of the chamber to be varied so that the volume of product dispensed can be changed

**3.6 rise and fall mechanism**  
mechanism which is used to raise and lower a product dispensing valve to suit a particular container or dispensing requirement

**3.7 D-valve**  
rotary valve with a rotating element, which has a D-shaped cross-section (see Figure 1), used in a piston depositor to move product from the hopper to the product measuring chamber and from the product measuring chamber to the product dispensing valve

**4 List of significant hazards****4.1 General**

This clause contains all the significant hazards, hazardous situations and events, identified by risk assessment as significant for this type of machinery and which require action to eliminate or reduce the risk (see Table 1) in Annex B.

The hazards that can occur on all food depositors are listed in 4.2, and the hazards that are specific to particular types of food depositor are listed in 4.3 to 4.7.

**4.2 General food depositor hazards****4.2.1 Introduction**

The following hazards can occur on all food depositors.

**4.2.2 Mechanical hazards****4.2.2.1 Moving parts**

Food depositors incorporate moving parts which present a variety of mechanical hazards including crushing, shearing, cutting, entanglement, friction, drawing-in. Some of these hazards may persist after the power supply has been cut off, due to stored energy.

**4.2.2.2 Risks that may arise from hygienic design features****4.2.2.2.1 Use of quick release fixings**

Food depositors are frequently fitted with quick release fixings that can be undone without the use of tools, so that machines can be dismantled quickly for cleaning. A risk can arise if undoing these quick release fixings allows access to danger zones.

**4.2.2.2.2 Cleaning under machines**

There is a risk from danger zones on food depositors, when operators reach under guards to clean the machine or the floor under the machine when it is in motion.

#### 4.2.2.2.3 Spillage trays

Food depositors may be fitted with trays to collect spillages of food from the machine. It is good hygienic design practice for spillage trays to be easily removable so that product can be emptied frequently; however, when the trays are removed, the operator may be exposed to danger zones on the machine.

#### 4.2.2.3 High pressure fluid injection or ejection hazards

Where food depositors contain pressurized product there is a risk of this product ejecting in an uncontrolled way during troubleshooting or cleaning.

If compressed air or pressurized hydraulic fluid comes into contact with the skin, it can enter the skin or blood stream and result in a variety of health damaging effects.

#### 4.2.3 Electrical hazards

##### 4.2.3.1 Electrical equipment

Electrical equipment on the machine generates a potential electric shock and burn hazard.

In the presence of combustible materials there is a potential fire hazard. Electrical systems may act as an ignition source. In the presence of flammable substances or products that may create explosive atmospheres, this could give rise to an explosion hazard.

If liquids, e.g. product spillage or cleaning substances like water, come into contact with the electrical conductors, there is a risk of electric shock.

##### 4.2.3.2 Electrostatic phenomena

Electrostatic discharges can be a source of ignition for flammable substances or explosive atmospheres, e.g. flour dust.

#### 4.2.4 Thermal hazards

Some food products are deposited while hot. Scalding hazards may be caused by direct contact with the product, and burning hazards may be caused by contact with hot surfaces on the machine.

#### 4.2.5 Noise

The main sources of noise on food depositors are drive mechanisms and compressed air exhaust.

Food depositors may generate noise which can result in hearing damage, in accidents due to interference with speech communication and interference with the perception of acoustic signals.

#### 4.2.6 Hazards generated by materials and substances

##### 4.2.6.1 Hazards from products

Food depositors are used to deposit a wide range of products, some of which may be potentially hazardous to people operating or in the vicinity of the machine.

Hazards generated by the product can include:

- a) inhalation of harmful substances, e.g. wheat flour, spices;
- b) burning or scalding hazards, e.g. from hot products.