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OHUTUS- JA HÜGIEENINÕUDED**

**Food processing machinery - Forming machines - Safety  
and hygiene requirements**

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See Eesti standard EVS-EN 15165:2014 sisaldab Euroopa standardi EN 15165:2014 ingliskeelset teksti.	This Estonian standard EVS-EN 15165:2014 consists of the English text of the European standard EN 15165:2014.
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English Version

## Food processing machinery - Forming machines - Safety and hygiene requirements

Machines pour les produits alimentaires - Formeuses pour viandes hachées - Prescriptions relatives à la sécurité et l'hygiène

Nahrungsmittelmaschinen - Formmaschinen - Sicherheits- und Hygieneanforderungen

This European Standard was approved by CEN on 6 September 2014.

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

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## Foreword

This document (EN 15165:2014) 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of an identical text or by endorsement, at the latest by April 2015 and conflicting national standards shall be withdrawn at the latest by April 2015.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.

## Introduction

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 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.



# 1 Scope

## 1.1 General

This European Standard applies to forming machines, used for forming food products with a mould into portions, as defined in 1.2.

This document applies to both machines standing on the floor and table top machines, and also to machines integrated in a processing line (i.e. interfaces, when the machine is combined with other machines).

This European Standard covers the following auxiliary devices and interchangeable equipment:

- a) auxiliary devices:
  - 1) paper interleavers;
  - 2) croquette attachment;
  - 3) meat ball rollers;
  - 4) stick inserters;
  - 5) specific material/product conveyors;
  - 6) specific lifting and tilting devices.
- b) interchangeable equipment:
  - 1) croquette attachment;
  - 2) meat ball rollers;
  - 3) stick inserters;
  - 4) specific material/product conveyors;
  - 5) specific lifting and tilting devices.

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

This European Standard deals with the significant hazards, hazardous situations and events arising during the whole lifetime of the machine, including the phases of transport, assembly and installation, commissioning, maintenance, dismantling, disabling and scrapping and use as defined in EN ISO 12100:2010, 5.4.

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

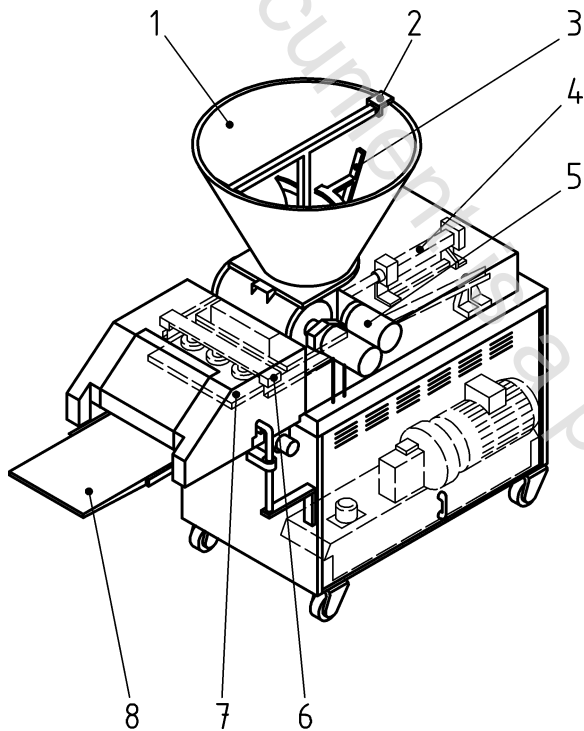
## 1.2 Machine description

This European Standard specifies requirements for the design, manufacture and operating of forming machines, e.g. for rissoles, hamburgers, in the following only referred to as machines.

It specifies safety and hygiene requirements for design and manufacture of forming machines, which are used for forming food products into portions with a mould. The mould may have a sliding or rotary movement and is filled with product in one position and emptied in another.

These machines have a feed provision, which is in the most cases a feed intake hopper (see Figure 1 and Figure 2). Moulds may be filled by the action of rotating worm, rotating paddles or reciprocating hydraulic arms. Machines produce single or multiple lines of products.

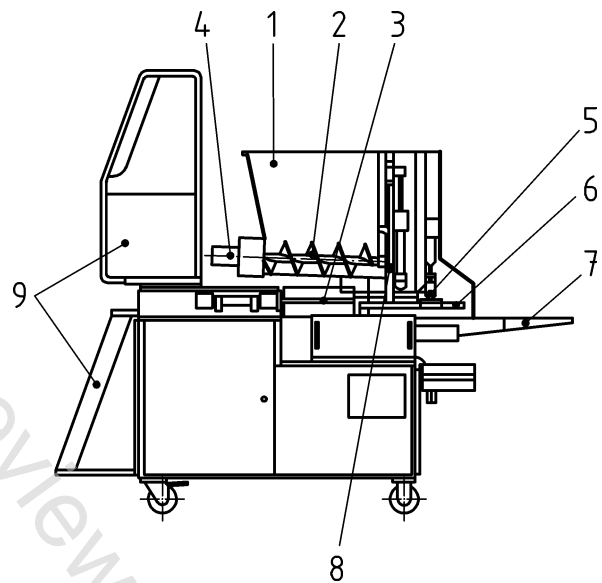
Forming machines are intended for use on ground or minced meat, meat products, fish, vegetables or similar products. Use includes manufacture of product, setting, treating or process changeover, cleaning, fault finding and maintenance.



#### Key

- |   |                   |   |                |
|---|-------------------|---|----------------|
| 1 | hopper            | 5 | feed drive     |
| 2 | hopper insert     | 6 | knock out unit |
| 3 | feed spiral       | 7 | mould plate    |
| 4 | mould plate drive | 8 | conveyor       |

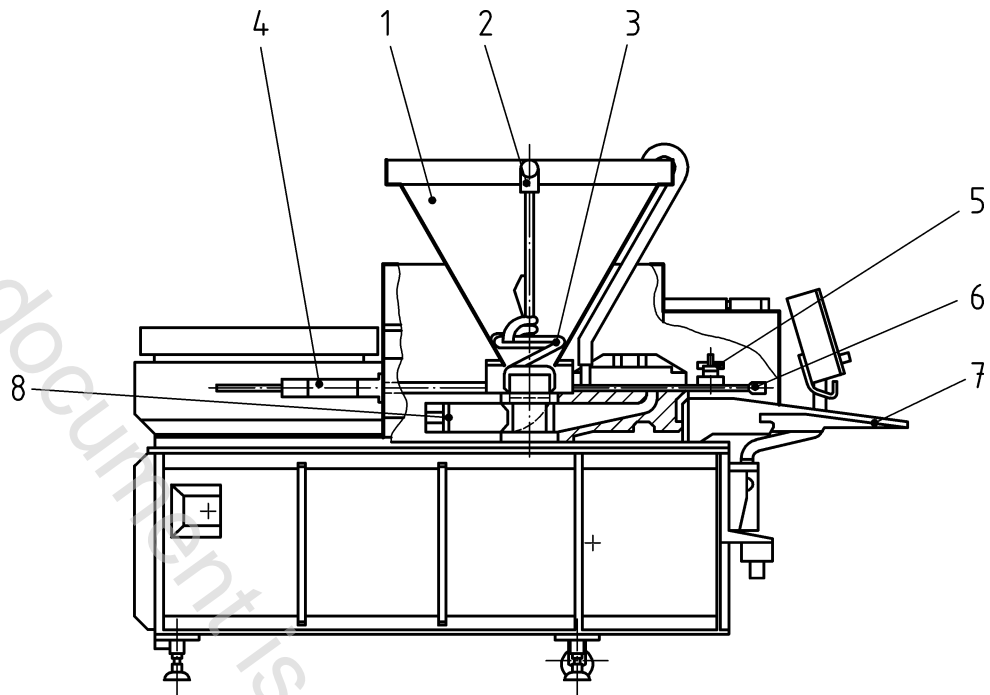
**a) Floor machine with hopper**



#### Key

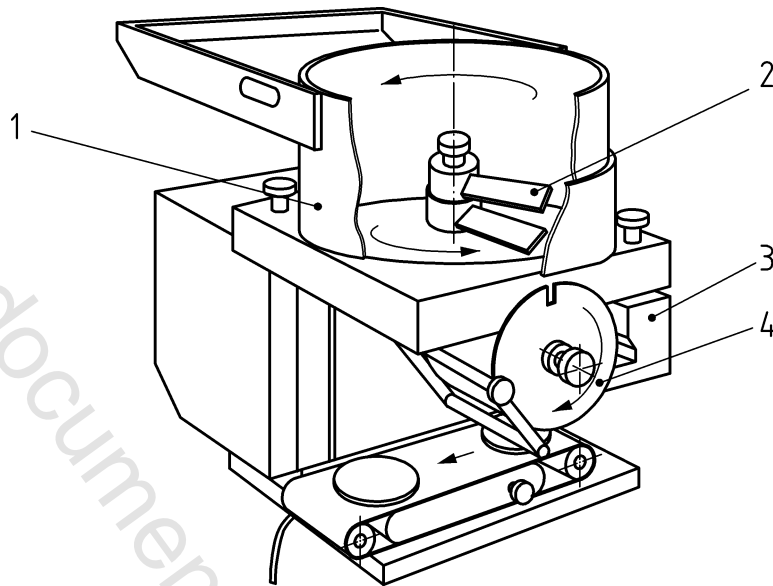
- |   |                   |   |                              |
|---|-------------------|---|------------------------------|
| 1 | trough            | 6 | mould plate                  |
| 2 | feed spiral       | 7 | conveyor                     |
| 3 | mould plate drive | 8 | press block                  |
| 4 | feed drive        | 9 | stairs and cleaning platform |
| 5 | knock out unit    |   |                              |

**b) Floor machine with trough**

**Key**

- |                 |                     |                  |                  |
|-----------------|---------------------|------------------|------------------|
| 1 hopper        | 3 feed spiral       | 5 knock out unit | 7 conveyor       |
| 2 hopper insert | 4 mould plate drive | 6 mould plate    | 8 press plungers |

**c) Floor machine with hopper****Figure 1 — Floor machines**



#### Key

- 1 hopper
- 2 paddles
- 3 interleaver
- 4 drum (mould plate)

**Figure 2 — Table top machine with tray**

### 1.3 Combinations of forming machines and auxiliary devices and/or interchangeable equipment

#### 1.3.1 Definition

A combination of a forming machine with auxiliary devices and/or interchangeable equipment becomes a new machine, when the following requirements are fulfilled / met:

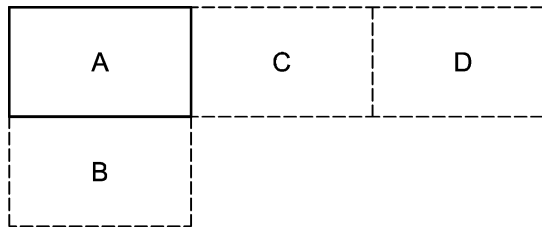
- the (combined) device/equipment works together as an entity, meaning from production related view they form an entity (i.e. the coaction will be focused on a shared aim) and
- they are controlled as an entity, via a shared or linked control system and
- they work – regarding safety – together as an entity and also form a unit in this aspect.

According to this definition a new machine is not existent when in a total complex single autonomous functional machines are connected in relation to function and control, but do not form a unit in relation to safety. This is given e.g. when:

- on the single interfaces / interconnection points none or only minor hazards between the separate machines occur, due to their combination;
- the emergency stop of one machine is connected / looped through to the next machine since the operator's position is only at the next machine.

In such mechanical equipment each single machine can still be regarded autonomous in relation to safety.

### 1.3.2 Example for combinations



#### Key

- A forming machine
- B auxiliary device (optional; e.g. paper interleaver)
- C interchangeable equipment (optional; e.g. croquette attachment)
- D auxiliary device (optional; e.g. product conveyor)

**Figure 3 — Example of combination**

## 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, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*

EN 574, *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 953:1997+A1:2009, *Safety of machinery - Guards — General requirements for the design and construction of fixed and movable guards*

EN 1005-1, *Safety of machinery — Human physical performance — Part 1: Terms and definitions*

EN 1005-2, *Safety of machinery — Human physical performance — Part 2: Manual handling of machinery and component parts of machinery*

EN 1005-3, *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 13288, *Food processing machinery — Bowl lifting and tilting machines — Safety and 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 61496-1, *Safety of machinery — Electro-sensitive protective equipment — Part 1: General requirements and tests (IEC 61496-1)*

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

EN ISO 11204:2010, *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 11204:2010)*

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

EN ISO 13856-2, *Safety of machinery — Pressure-sensitive protective devices — Part 2: General principles for design and testing of pressure-sensitive edges and pressure-sensitive bars (ISO 13856-2)*

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

### 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

##### **mould plate**

tool for forming the product

#### 3.2

##### **ejector mechanism**

equipment e.g. knock out device for discharging, dividing of product

#### 3.3

##### **discharge conveyor**

conveyor belt for evacuation of formed product