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**Varnost pakirnih naprav - 3. del: Oblikovalne, polnilne in zapiralne naprave; polnilne in zapiralne naprave**

Safety of packaging machines - Part 3: Form, fill and seal machines; fill and seal machines

Sicherheit von Verpackungsmaschinen - Teil 3: Form-, Füll- und Verschließmaschinen; Füll- und Verschließmaschinen

Sécurité des machines d'emballage - Partie 3 : Machines d'emballage à former, remplir et sceller ; machines d'emballage à remplir et sceller

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**Ta slovenski standard je istoveten z: prEN 415-3**

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**ICS:**

55.200

Pakirni stroji

Packaging machinery

**oSIST prEN 415-3:2018**

**en,fr,de**

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EUROPEAN STANDARD  
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**prEN 415-3**

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English Version

## Safety of packaging machines - Part 3: Form, fill and seal machines; fill and seal machines

Sécurité des machines d'emballage - Partie 3 :  
Machines d'emballage à former, remplir et sceller ;  
machines d'emballage à remplir et sceller

Sicherheit von Verpackungsmaschinen - Teil 3: Form-,  
Füll- und Verschleißmaschinen; Füll- und  
Verschleißmaschinen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 146.

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

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

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## European foreword

This document (prEN 415-3:2018) has been prepared by Technical Committee CEN/TC 146 “Packaging machines – Safety”, the secretariat of which is held by UNI.

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.

EN 415 *Safety of packaging machines* consists of the following parts:

- *Part 1: Terminology and classification of packaging machines and associated equipment;*
- *Part 2: Pre-formed rigid container packaging machines;*
- *Part 4: Palletizers and depalletizers;*
- *Part 5: Wrapping machines;*
- *Part 6: Pallet wrapping machines;*
- *Part 7: Group and secondary packaging machines;*
- *Part 8: Strapping machines;*
- *Part 9: Noise measurement methods for packaging machines, packaging lines and auxiliary equipment, grade of accuracy 2 and 3;*
- *Part 10: General requirements.*

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## Introduction

Form, fill and seal machines and fill and seal machines are used extensively in Europe, in an increasingly wide range of industries. They contain many hazards and have the potential to cause serious injury.

The extent to which hazards are covered is indicated in Clause 1 and Clause 4 of this standard.

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## 1 Scope

This document establishes safety requirements for the main types of form, fill and seal machines, fill and seal machines and auger fillers, volumetric cup fillers, nett weighers and multi-head weighers which are frequently fitted to these machines.

Form fill and seal machines:

- flow wrapping machine;
- vertical form, fill and seal machine;
- horizontal sachet form, fill and seal machine;
- thermoform, fill and seal machine;
- tubular bag form, fill and seal machine;
- mandrel form, fill and seal machine.

Fill and seal machines:

- pre-made bag, erect, fill and seal machine;
- cup or tub fill and seal machine;
- sack fill and seal machine.

Filling machines commonly fitted to form, fill and seal machines and fill and seal machines:

- auger filler;
- volumetric cup filler;
- nett weigher;
- multi-head weigher.

Other types of form, fill and seal machine which are described in 3.3 have similar hazards to these machines and Clause 4 indicates which clauses of this standard are applicable to these machines.

This document covers the safety requirements for machine design, construction and all phases of life of the machines including installation, commissioning, operation, adjustment, maintenance and cleaning.

This document applies to machines manufactured after the date of issue of this document.

### Exclusions

This standard does not apply to:

- blow mould fill and seal machines;
- bulk container fill and seal machines;
- cartoning machines;
- food depositors, including volumetric piston depositors;

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— thermoforming machines.

This document does consider hazards due to dust from the products being packed in these machines and modified atmosphere gases, but does not consider other hazards caused by the product being packed.

**2 Normative references**

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. 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 415-1:2014, *Safety of packaging machines — Part 1: Terminology and classification of packaging machines and associated equipment*

EN 415-9:2009, *Safety of packaging machines — Part 9: Noise measurement methods for packaging machines, packaging lines and associated equipment, grade of accuracy 2 and 3*

EN 415-10:2014, *Safety of packaging machines — Part 10: General Requirements*

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

EN 618:2002+A1:2010, *Continuous handling equipment and systems — Safety and EMC requirements for equipment for mechanical handling of bulk materials except fixed belt conveyors*

EN 620:2002+A1:2010, *Continuous handling equipment and systems — Safety and EMC requirements for fixed belt conveyors for bulk materials*

EN 1005-2:2003+A1:2008, *Safety of machinery — Human physical performance — Part 2: Manual handling of machinery and component parts of machinery*

EN 1005-3:2002+A1:2008, *Safety of machinery — Human physical performance — Recommended force limits for machinery operation*

EN 1005-4:2005+A1:2008, *Safety of machinery — Human physical performance — Part 4: Evaluation of working postures and movements in relation to machinery*

EN 1127-1:2011, *Explosive atmospheres — Explosion prevention and protection — Part 1: Basic concepts and methodology*

EN 1672-2:2005+A1:2009, *Food processing machinery — Basic concepts — Part 2: Hygiene requirements*

EN 15180:2014, *Food processing machinery — Food depositors — Safety and hygiene requirements*

EN 60079-14:2014, *Explosive atmospheres — Part 14: Electrical installations design, selection and erection (IEC 60079-14:2013)*

EN 60204-1:2006, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2005)*

EN 60204-1:2006/A1:2009, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2005/AMD 1:2008)*

EN 60825-4:2006, *Safety of laser products — Part 4: Laser guards (IEC 60825-4:2006)*

EN 60825-4:2006/A1:2008, *Safety of laser products — Part 4: Laser guards (IEC 60825-4:2006/AMD 1:2008)*

EN 60825-4:2006/A2:2011, *Safety of laser products — Part 4: Laser guards (IEC 60825-4:2006/AMD 2:2011)*

EN 61496-1:2013, *Safety of machinery — Electro-sensitive protective equipment — Part 1: General requirements and tests (IEC 61496-1:2012)*

EN 61496-2:2013, *Safety of machinery — Electro-sensitive protective equipment — Part 2: Particular requirements for equipment using active opto-electronic protective devices (AOPDs) (IEC 61496-2:2013)*

EN ISO 4413:2010, *Hydraulic fluid power — General rules and safety requirements for systems and their components (ISO 4413:2010)*

EN ISO 4414:2010, *Pneumatic fluid power — General rules and safety requirements for systems and their components (ISO 4414:2010)*

EN ISO 7010:2012, *Graphical symbols — Safety colours and safety signs — Registered safety signs (ISO 7010:2011)*

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EN ISO 7010:2012/A5:2015, *Graphical symbols — Safety colours and safety signs — Registered safety signs (ISO 7010:2011/Amd 5:2014)*

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EN ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction (ISO 12100:2010)*

EN ISO 13732-1:2008, *Ergonomics of the thermal environment — Methods for the assessment of human responses to contact with surfaces — Part 1: Hot surfaces (ISO 13732-1:2006)*

EN ISO 13849-1:2015, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2015)*

EN ISO 13855:2010, *Safety of machinery — Positioning of safeguards with respect to the approach speeds of parts of the human body (ISO 13855:2010)*

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 14122-2:2016, *Safety of machinery — Permanent means of access to machinery — Part 2: Working platforms and walkways (ISO 14122-2:2016)*

EN ISO 14122-3:2016, *Safety of machinery — Permanent means of access to machinery — Part 3: Stairs, stepladders and guard-rails (ISO 14122-3:2016)*

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EN ISO 14122-4:2016, *Safety of machinery — Permanent means of access to machinery — Part 4: Fixed ladders (ISO 14122-4:2016)*

EN ISO 14123-1:2015, *Safety of machinery — Reduction of risks to health resulting from hazardous substances emitted by machinery - Part 1: Principles and specifications for machinery manufacturers (ISO 14123-1:2015)*

**3 Terms and definitions**

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010, EN 415-1:2014 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

**3.1 Definition of terms****3.1.1****bag**

flat or gusseted flexible container longitudinally seamed and closed at one or both ends made from paper, plastic film, foil, laminate, etc.

Note 1 to entry: Bags produced on form, fill and seal machines will typically have a seal at both ends and a longitudinal seal running down the centre of the rear face of the bag.

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**3.1.2****cup; tub**

thin walled tapered container

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**3.1.3****deformable material**

material which can be formed by the application of pressure alone

**3.1.4****film reel; packaging material reel**

continuous sheet of paper, carton board, plastics film, metal foil or flexible laminate wound on a cylindrical core

**3.1.5****film web**

continuous sheet of paper, plastics film, metal foil or laminate

**3.1.6****hot melt adhesive**

adhesive that is solid at room temperature and which is melted and applied at elevated temperature

**3.1.7****longitudinal seal**

seal made on a package in line with the direction of material travel in the machine

**3.1.8****pack; package**

assembly of product and packaging materials produced by a packaging machine

**3.1.9****pre-made bag**

pre-formed flat or gusseted flexible container longitudinally seamed and closed at one end made from paper, plastic film, foil, laminate or a woven material

**3.1.10****pre-made sack**

pre-formed flat or gusseted sack longitudinally seamed and closed at one or both ends made from paper, plastic film, laminate, or a woven material

**3.1.11****product**

substance, article pack or package that is handled in the packaging machine

**3.1.12****sachet**

flat package which when formed from two webs of flexible material is sealed on four sides and when formed from one web is sealed on three or four sides

**3.1.13****transverse seal**

seal made on a package at right angles to the direction of material travel in the machine

**3.1.14****change parts**

machine parts designed to handle a specific product, packaging material or pack size that need to be changed when the machine is set up to handle a different product, packaging material or pack size

**3.1.15****magazine**

mechanical assembly designed to hold stacks of cartons, carton blanks, pre-made bags, pre-made sacks, leaflets, labels, lids or stackable containers

**3.1.16****mandrel**

mechanical assembly around which a flexible package or carton is formed

**3.1.17****modified atmosphere**

atmosphere where the normal atmosphere within a package is completely or partially replaced by one or more selected gases

Note 1 to entry: Usually the objective is to extend shelf or storage life of the packaged products.

**3.1.18****packaging material**

material used to make a package

EXAMPLES Corrugated board, carton board, stretch film, paper, polypropylene.

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