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Safety of packaging machines - Part 7: Group and secondary packaging machines

Sicherheit von Verpackungsmaschinen - Teil 7: Sammelpackmaschinen

Sécurité des machines d'emballage - Partie 7: Machines de groupe et d'emballage secondaire

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Safety of packaging machines - Part 7: Group and secondary packaging machines

Sécurité des machines d'emballage - Partie 7: Machines de groupe et d'emballage, secondaire

Sicherheit von Verpackungsmaschinen - Teil 7: Sammelpackmaschinen

This European Standard was approved by CEN on 20 April 2006 and includes Amendment 1 approved by CEN on 25 May 2008.

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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 CEN Management Centre has the same status as the official versions.

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Foreword

This document (EN 415-7:2006+A1:2008) has been prepared by Technical Committee CEN/TC 146, "Packaging machines - Safety", the secretariat of which is held by UNI.

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of an identical text or by endorsement, at the latest by January 2009, and conflicting national standards shall be withdrawn at the latest by January 2009.

This document includes Amendment 1, approved by CEN on 2008-05-25.

This document supersedes EN 415-7:2006.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

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 Directives.

For the relationship with EC Directives, see informative Annex ZA, which is an integral part of this document.

Other standards produced by the Technical Committee are:

EN 415 Safety of packaging machines;

- Part 1: Terminology and classification of packaging machines and associated equipment.

- Part 2: Pre-formed rigid container packaging machines.
- Part 3: Form, fill and seal machines.
- Part 4: Palletisers and depalletisers.
- Part 5: Wrapping machines.
- Part 6: Pallet wrapping machines.
- Part 8: Strapping machines.

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 United Kingdom.

Introduction

Group and secondary packaging machines are used extensively in Europe, in an increasingly wide range of industries. They contain several significant hazards and have the potential to cause serious injury.

This document is a type C standard as defined in the Introduction of EN ISO 12100-1:2003.

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.

1 Scope

This European Standard applies to the following groups of machines:

Group and secondary packaging machines and the collating systems associated with them.

The individual machines are described in 3.2 of this European Standard.

This European Standard deals with safety requirements for machine design, construction, installation, commissioning, operation, adjustment, maintenance and cleaning of group and secondary packaging machines.

The extent to which hazards, hazardous situations and events are covered, are indicated in Clause 4.

Exclusions

This European Standard is not applicable to the following machines:

— machines that were manufactured before the date of publication of this document by CEN;

— strapping machines. These machines are covered by EN 415-8;

— crate loaders and un-loaders for pre-formed rigid containers. These machines are covered by EN 415-2;

— cartoning machines. Cartoning machines are covered by EN 415-3.

This European Standard does not consider the following hazards:

— use of group and secondary packaging machines in potentially explosive atmospheres;

— health, safety or hygiene hazards associated with the products that may be handled by the machines, but does include general advice on this subject;

— hazards that may be associated with electromagnetic emissions from group and secondary packaging machines;

— hazards that may be associated with decommissioning group and secondary packaging machines.

2 Normative references

The following referenced documents are indispensable for the application 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 294:1992, *Safety of machinery — Safety distances 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*

EN 415-1:2000, *Packaging machines safety — Part 1: Terminology and classification for packaging machines and associated equipment*

EN 418, *Safety of machinery — Emergency stop equipment, functional aspects, principles for design*

EN 563, *Safety of machinery — Temperatures of touchable surfaces — Ergonomics data to establish temperature limit values for hot surfaces*

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

EN 614-1:1995, *Safety of machinery — Ergonomic design principles — Part 1: Terminology and general principles*

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

EN 626-1, *Safety of machinery — Reduction of risks to health from hazardous substances emitted by machinery — Part 1: Principles and specifications for machinery manufacturers*

EN 626-2, *Safety of machinery — Reduction of risk to health from hazardous substances emitted by machinery — Part 2: Methodology leading to verification procedures*

EN 775, *Manipulating industrial robots — Safety (ISO 10218:1992, modified)*

EN 811, *Safety of machinery — Safety distances to prevent danger zones being reached by the lower limbs*

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

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

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

EN 953:1997, *Safety of machinery — Guards - General requirements for the design and construction of fixed and moveable guards*

EN 954-1:1996, *Safety of machinery — Safety related parts of control systems — Part 1: General principles for design*

EN 982:1996, *Safety of machinery — Safety requirements for fluid power systems and their components — Hydraulics*

EN 983:1996, *Safety of machinery — Safety requirements for fluid power systems and their components — Pneumatics*

EN 999, *Safety of machinery — The positioning of protective equipment in respect of approach speeds of parts of the human body*

EN 1005-2:2003, *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 1005-4:2005, *Safety of machinery — Human physical performance — Part 4: Evaluation of working postures and movements in relation to machinery*

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

EN 1050, *Safety of machinery — Principles for risk assessment*

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*

EN 1760-1, *Safety of machinery — Pressure sensitive protective devices — Part 1: General principles for the design and testing of pressure sensitive mats and pressure sensitive floors*

EN 1760-2, *Safety of machinery — Pressure sensitive protective devices — Part 2: General principles for the design and testing of pressure sensitive edges and pressure sensitive bars*

EN 13478, *Safety of machinery — Fire prevention and protection*

EN 60204-1:1997, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:1997)*

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

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

EN 61310-3, *Safety of machinery — Indication marking and actuation — Part 3: Requirements for the location and operation of actuators (ISO 61310-3:1999)*

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

CLC/TS 61496-3, *Safety of machinery — Electro-sensitive protective equipment — Part 3: Particular requirements for Active Opto-electronic Protective Devices responsive to Diffuse Reflection (AOPDDR) (IEC 61496-3:2001)*

EN 61508-1, *Functional safety of electrical/electronic/programmable electronic safety-related systems — Part 1: General requirements (IEC 61508-1:1998 + Corrigendum 1999)*

EN 61508-2, *Functional safety of electrical/electronic/programmable electronic safety-related systems — Part 2: Requirements for electrical/electronic/programmable electronic safety-related systems (IEC 61508-2:2000)*

EN 61508-3, *Functional safety of electrical/electronic/programmable electronic safety-related systems — Part 3: Software requirements (IEC 61508-3:1998 + Corrigendum 1999)*

EN 62061:2005 *Safety of machinery — Functional safety of safety-related electrical, electronic and programmable electronic control systems (IEC 62061:2005)*

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 3746:1995, *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 3747:2000, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Comparison method for use in situ (ISO 3747:2000)*

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

EN ISO 9614-2:1996, *Acoustics — Determination of sound power levels of noise sources using sound intensity — Part 2: Measurement by scanning (ISO 9614-2:1996)*

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

EN ISO 11202:1995, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a work station and at other specified positions — Survey method in situ (ISO 11202:1995)*

EN ISO 11204:1995, *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 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)*

EN ISO 14122-1:2001, *Safety of machinery — Permanent means of access to machinery — Part 1: Choice of fixed means of access between two levels (ISO 14122-1:2001)*

EN ISO 14122-2, *Safety of machinery — Permanent means of access to machinery — Part 2: Working platforms and walkways (ISO 14122-2:2001)*

EN ISO 14122-3, *Safety of machinery — Permanent means of access to machinery — Part 3: Stairs, stepladders and guard-rails (ISO 14122-3:2001)*

EN ISO 14122-4, *Safety of machinery — Permanent means of access to machinery — Part 4: Fixed ladders (ISO 14122-4:2004)*

IEC 60417-1:2002, *Graphical symbols for use on equipment — Part 1: Overview and application*

ISO 7000, *Graphical symbols for use on equipment — Index and synopsis*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in Clause 3 of EN ISO 12100-1:2003, EN 415-1:2000 and the following apply.

3.1 Definition of terms

3.1.1
pack, package
assembly of product and packaging materials produced by a packaging machine

3.1.2
group package
package comprising a number of products, grouped together for distribution

NOTE Group packages include cases, trays, crates and carton board sleeves

3.1.3
secondary package
package comprising one or a number of products, grouped together for distribution

NOTE Secondary packages include cases, trays, crates and carton board sleeves

3.1.4
product
substance, article or articles (including packs or packages) that are handled in the packaging machine

3.1.5
packaging material
material used to make a package

EXAMPLE corrugated board, carton board

3.1.6
carton
container that is made from carton board, generally between 250 μm and 1 000 μm in thickness, and is usually delivered to the user in the form of a carton blank or folded and side seam glued

3.1.7
carton blank
individual carton in the flat after cutting and creasing and with the strippings removed

3.1.8
carton tray
rectangular open carton with sides and ends made from carton board generally between 250 μm and 1 000 μm in thickness and usually delivered to the user in the form of a carton blank

3.1.9
carton board
paper board used for folding cartons generally between 250 μm and 1 000 μm thick and pliable enough so that it can be folded along score lines without cracking the material

3.1.10
case
container, which is generally made from corrugated board that is used to contain groups of packages and is delivered to the user in the form of a glued or stitched case or a flat blank

3.1.11
corrugated board
material comprising one or more sheets of fluted paper stuck between flat sheets of paper

3.1.12
tray
open topped container, typically made from carton board or corrugated board and supplied to the user as a flat blank or pre-glued and folded

3.1.13
tuck erection
process in which carton board or corrugated board packages are formed or closed by pushing pre-cut tabs into slots

3.1.14
side seam
longitudinal seal which is made, usually by the carton or case manufacturer by stapling, heat-sealing or applying adhesive, when a carton or case blank is formed into a flat carton or case

3.1.15
wraparound case
case, usually made from corrugated board, which is supplied to the user as a flat blank and is folded and glued around the product in a wraparound case packing machine to produce the finished pack

3.1.16
wraparound lid

lid, usually made from corrugated board, which is supplied to the user as a flat blank and is folded and glued around a group package in a wraparound lidding machine to produce the finished transit pack

3.1.17
wraparound sleeve

package, usually made from either carton board or corrugated board, which is supplied to the user as a flat blank and is folded and secured around the product in a wraparound sleeving machine to produce the finished pack

3.1.18
wraparound tray
tray, usually made from corrugated board, which is supplied to the user as a flat blank and is folded and glued around the product in a wraparound tray packing machine to produce the finished pack

3.1.19
cold adhesive
adhesive that is liquid at room temperature, e.g. PVA adhesive

3.1.20
PVA adhesive
water dispersible emulsion adhesive made from polyvinyl acetate

3.1.21
hot melt adhesive
adhesive that is solid at room temperature and which is melted and applied at elevated temperature

3.1.22
pressure sensitive tape
tape usually made from a thin plastic film, which is coated in an adhesive that requires only pressure to form a bond