

SLOVENSKI STANDARD

SIST EN 1034-27:2012

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Varnost strojev - Varnostne zahteve za načrtovanje in konstrukcijo strojev in opreme za izdelavo papirja - 27. del: Sistemi za ravnanje z zvitki

Safety of machinery - Safety requirements for the design and construction of paper making and finishing machines - Part 27: Roll handling systems

Sicherheit von Maschinen - Sicherheitstechnische Anforderungen an Konstruktion und Bau von Maschinen der Papierherstellung und Ausrüstung - Teil 27: Rollentransportsysteme

Sécurité des machines - Prescriptions de sécurité pour la conception et la construction de machines de fabrication et de finition du papier - Partie 27: Installations pour manutention des bobines

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85.100	Oprema za papirno industrijo	Equipment for the paper industry

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Safety of machinery - Safety requirements for the design and construction of paper making and finishing machines - Part 27: Roll handling systems

Sécurité de machines - Exigences techniques de sécurité pour la conception et la construction de machines de fabrication et de finition du papier - Partie 27: Installations pour manutention de bobines

Sicherheit von Maschinen - Sicherheitstechnische Anforderungen an Konstruktion und Bau von Maschinen der Papierherstellung und Ausrüstung - Teil 27: Rollentransportsysteme

This European Standard was approved by CEN on 13 July 2012.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

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EN 1034-27:2012 (E)

Foreword

This document (EN 1034-27:2012) has been prepared by Technical Committee CEN/TC 198 "Printing and Paper machinery - Safety", 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of an identical text or by endorsement, at the latest by February 2013, and conflicting national standards shall be withdrawn at the latest by February 2013.

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(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

EN 1034, *Safety of machinery — Safety requirements for the design and construction of paper making and finishing machines* consists of the following parts:

- *Part 1: Common requirements*
- *Part 2: Barking drums*
- *Part 3: Rereelers and winders*
- *Part 4: Pulpers and their loading facilities*
- *Part 5: Sheeters*
- *Part 6: Calender*
- *Part 7: Chests*
- *Part 8: Refining plants*
- *Part 13: Machines for de-wiring bales and units*
- *Part 14: Reel splitter*
- *Part 16: Paper and board making machines*
- *Part 17: Tissue making machines*
- *Part 21: Coating machines*
- *Part 22: Wood grinders*
- *Part 26: Roll packaging machines*
- *Part 27: Roll handling systems* (the present 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 12100:2010. The machinery concerned and the extent to which hazards, hazardous situations and events are covered are indicated in the scope of this document. For machines that have been designed and built according to the provisions of this C standard, the following stipulation applies: where provisions of this type C standard are different from those which are stated in type A or B standards, or from provisions made in EN 1034-1:2000+A1:2010, the provisions of this type C standard take precedence over the provisions of the other standards.

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1 Scope

This European Standard applies to roll handling systems for use in paper finishing and applies together with EN 1034-1:2000+A1:2010. It deals with all significant hazards, hazardous situations and hazardous events relevant to roll handling systems, when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer (see Clause 4).

This European Standard does not apply to:

- machine reel handling systems;
- stacker trucks, industrial trucks and driverless industrial trucks;
- separate storage systems with cranes and high bay storage systems;
- portable devices for moving rolls.

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

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 349:1993+A1:2008, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*

EN 614-1:2006+A1:2009, *Safety of machinery — Ergonomic design principles — Part 1: Terminology and general principles*

EN 614-2:2000+A1:2008, *Safety of machinery — Ergonomic design principles — Part 2: Interaction between the design of machinery and work tasks*

EN 619:2002+A1:2010, *Continuous handling equipment and systems — Safety and EMC requirements for equipment for mechanical handling of unit loads*

EN 894-1:1997+A1:2008, *Safety of machinery — Ergonomic requirements for the design of displays and control actuators — Part 1: General principles for human interactions with displays and control actuators*

EN 894-2:1997+A1:2008, *Safety of machinery — Ergonomic requirements for the design of displays and control actuators — Part 2: Displays*

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

EN 1034-1:2000+A1:2010, *Safety of machinery — Safety requirements for the design and construction of paper making and finishing machines — Part 1: Common requirements*

EN 1037:1995+A1:2008, *Safety of machinery — Prevention of unexpected start-up*

EN 1088:1995+A2:2008, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*

EN 1525:1997, *Safety of industrial trucks — Driverless trucks and their systems*

EN 1760-1:1997+A1:2009, *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 1760-2:2001+A1:2009, *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 1760-3:2004+A1:2009, *Safety of machinery — Pressure sensitive protective devices — Part 3: General principles for the design and testing of pressure sensitive bumpers, plates, wires and similar devices*

EN 1837:1999+A1:2009, *Safety of machinery — Integral lighting of machines*

EN 13023:2003+A1:2010, *Noise measurement methods for printing, paper converting, paper making machines and auxiliary equipment — Accuracy grades 2 and 3*

EN 13478:2001+A1:2008, *Safety of machinery — Fire prevention and protection*

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

EN 61000-6-2:2005, *Electromagnetic compatibility (EMC) — Part 6-2: Generic standards — Immunity for industrial environments (IEC 61000-6-2:2005)*

EN 61496-1:2004, *Safety of machinery — Electrosensitive protective equipment — Part 1: General requirements and tests (IEC 61496-1:2004, mod)*

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

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

EN ISO 13849-2:2008, *Safety of machinery — Safety-related parts of control systems — Part 2: Validation (ISO 13849-2:2003)*

EN ISO 13850:2008, *Safety of machinery — Emergency stop — Principles for design (ISO 13850:2006)*

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

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

EN 1034-27:2012 (E)**3 Terms and definitions**

For the purposes of this document, the terms and definitions given in EN 1034-1:2000+A1:2010, EN ISO 12100:2010 and the following apply:

3.1**roll**

paper roll, made in the wind up section of a winder, by winding up the paper webs onto cores or onto a winding shaft or by winding up the paper web in the wind up section of a rereeler onto a reel spool

3.2**roll handling system**

system for handling rolls which consists of one or more devices intended to transport and/or turn and tilt rolls for further processing, and which is controlled by a joint control system

Note 1 to entry: Devices can include the following: conveyor, roll kicker, roll stopper, lowering and lifting cradle, transfer carriage, horizontal transfer device, vertical transfer device, vertical conveyor, upender, handling device for narrow rolls, rotating device.

Note 2 to entry: The transporting might involve for example rolls being taken from winders to sheeters, roll packaging machines, intermediate storage or dispatching.

3.2.1**conveyor**

equipment provided with movable carrying elements for transporting the rolls on the carrying elements such as slat, belt, carousel cart or roller conveyors

3.2.2**carrying element**

movable parts of the conveyor carrying the roll [SIST EN 1034-27:2012](https://standards.iteh.ai/catalog/standards/sist/5a79829e-f20a-4715-859b-b9e5a4a22008/sist-en-1034-27-2012)

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3.2.3**roll kicker**

device for pushing the rolls to make them roll

3.2.4**roll stopper**

device for stopping rolling rolls

3.2.5**lowering and lifting cradle**

device for rolling-in the roll, stopping it and subsequently releasing it for further rolling

Note 1 to entry: The lowering and lifting cradle can be integrated as part of a plane surface or an inclined surface.

3.2.6**rolling roll**

roll rolling on a plane, kicked off by a roll kicker or moved by gravity

3.2.7**rolling distance**

distance a paper roll is rolling freely from a sending device (e.g. roll kicker) to a receiving device (e.g. a roll stopper)

3.2.8**area of rolling**

area where rolls roll, either by being pushed or by gravity

Note 1 to entry: The area of rolling rolls can comprise one or more rolling distances.

3.2.9**transfer carriage**

device with integrated conveying element(s) for transferring rolls from one intersection point to another

3.2.10**horizontal transfer device**

device with integrated conveying element for transferring rolls horizontally from one conveyor to another changing the conveying direction

EXAMPLE Turntable or turning conveyor.

3.2.11**vertical transfer device**

lifting table with integrated conveying element(s) for transferring rolls onto a different conveying level with a maximum lifting height of 1,50 m

EXAMPLE Scissor lifting table.

3.2.12**vertical conveyor**

device with integrated conveying elements and a lifting/lowering device for transferring rolls onto a different conveying level

3.2.13**upender**

device with integrated conveying element(s) and upending device for tipping rolls up to 90° changing the conveying level not more than 1,50 m

3.2.14**downender**

device with integrated conveying element(s) and downending device for tipping rolls up to 90° changing the conveying level more than 1,50 m

3.2.15**rotating device**

device with two carrying rolls for rotating paper rolls around their own axis into predetermined positions

Note 1 to entry: For example, a rotating device might be used for reading labels or attaching the paper web.

3.2.16**handling device for narrow rolls**

device handling short rolls

3.3**delivering machine**

machine which delivers rolls to the roll handling system

EXAMPLE Winders, coating machines, storage systems.

3.4**receiving machine**

the machine which receives the rolls

EXAMPLE Sheeters, roll packaging machines, palletizers, labelling robots, strapping machines, automatic cranes.

3.5**transfer point**

area in or at a roll handling system where rolls are

— transferred from a delivering machine to a conveying system,

— transferred from a conveying system to a receiving machine,

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- transferred from one conveying unit to another conveying unit,
- introduced into the system by means of an industrial truck or a lifting device,
- taken over from the system by means of an industrial truck or a lifting device,
- are kicked out of the system or roll out,
- rolled into the system manually or by means of portable devices

4 List of significant hazards

This clause contains all significant hazards, hazardous situations and hazard events, as far as they are dealt with in this standard, which are identified by risk assessment as significant for this type of machinery and which require action to eliminate or reduce the risk.

Table 1 — List of significant hazards

No	Hazard		subclause of this standard	EN 1034-1:2000+A1:2010
	Origin (source)	Potential consequences		
	Mechanical hazards			
1	Inadequate design of workplaces, means of access, walkways, passageways	Slipping, tripping, falling off and falling, fractures of arms and legs, injury of head by impact	5.1; 5.3.7; 5.7.1	5.5; 5.5.9
2	Drawing-in points on conveyors, rotating rolls and rollers Wrapping points on transmissions elements	Drawing-in or trapping, crushing, amputation	5.3.1; 5.3.2; 5.8.1; 5.8.2; 5.11	5.1; 5.4; 5.7
3	Linear movements of machinery or machinery parts	Crushing, shearing, impact injuries, contusion	5.2.1; 5.2.4; 5.4.2; 5.4.3; 5.6.1; 5.6.2; 5.7.4; 5.11	5.1; 5.3; 5.7
4	Swivelling machinery parts	Shearing, crushing injuries	5.2.4; 5.9.1; 5.11	5.1; 5.7
5	Sharp edges of machinery frame	Cutting injuries		5.1; 5.11; 5.12
6	Movement of rolls	Crushing, impact injuries	5.2.2; 5.2.3; 5.2.4; 5.3.3; 5.3.4; 5.3.5; 5.3.6; 5.4.1; 5.4.2; 5.6.1; 5.11	5.1
7	Hydraulic and pneumatic equipment	Injuries by ejection of high-pressure fluids		5.24; 5.25
8	Ejection and falling of rolls	Crushing, impact of injuries	5.3.8; 5.3.9; 5.3.10; 5.7.2; 5.7.3; 5.9.2; 5.9.3	5.2
	Electrical Hazards			
9	Electrical equipment	Electric shock, death, fire, burning and blinding by electric arc	5.1	5.23
10	Electrical equipment	Outside effects on electrical equipment	5.1	5.23