

# SLOVENSKI STANDARD

## SIST EN 1034-1:2021

01-julij-2021

Nadomešča:

SIST EN 1034-1:2000+A1:2010

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**Varnost strojev - Varnostne zahteve za načrtovanje in izdelavo strojev in naprav za izdelavo in dodelavo papirja - 1. del: Splošne zahteve**

Safety of machinery - Safety requirements for the design and construction of paper making and finishing machines - Part 1: Common requirements

Sicherheit von Maschinen - Sicherheitstechnische Anforderungen an Konstruktion und Bau von Maschinen der Papierherstellung und Ausrüstung - Teil 1: Gemeinsame Anforderungen  
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SÉCURITÉ DES MACHINES - Prescriptions de sécurité pour la conception et la construction de machines de fabrication et de finition du papier - Partie 1: Prescriptions communes  
SIST EN 1034-1:2021  
<https://standards.iteh.ai/catalog/standards/sist/d0571888-3078-4615-a277-d30623420938/en-1034-1-2021>

**Ta slovenski standard je istoveten z: EN 1034-1:2021**

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**ICS:**

13.110	Varnost strojev	Safety of machinery
21.020	Značilnosti in načrtovanje strojev, aparatov, opreme	Characteristics and design of machines, apparatus, equipment
85.100	Oprema za papirno industrijo	Equipment for the paper industry

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EUROPEAN STANDARD

**EN 1034-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2021

ICS 85.100; C

Supersedes EN 1034-1:2000+A1:2010

English Version

## Safety of machinery - Safety requirements for the design and construction of paper making and finishing machines - Part 1: Common requirements

Sécurité des machines - Exigences de sécurité pour la  
conception et la construction de machines de  
fabrication et de finition du papier - Partie 1 :  
Exigences communes

Sicherheit von Maschinen - Sicherheitstechnische  
Anforderungen an Konstruktion und Bau von  
Maschinen der Papierherstellung und Ausrüstung - Teil  
1: Gemeinsame Anforderungen

This European Standard was approved by CEN on 12 April 2021.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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-CENELEC Management Centre has the same status as the official versions.

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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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**EN 1034-1:2021 (E)****European foreword**

This document (EN 1034-1:2021) 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 May 2021, and conflicting national standards shall be withdrawn at the latest by May 2021.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 1034-1:2000+A1:2010.

In comparison with the previous edition, the following technical modifications have been made:

- a) In Clause 3, the term “Paper converting machines” was defined;
- b) In 3.4, a tolerance for crawl speed was specified;
- c) In Clause 3, the term “running machine” has been deleted;
- d) In 3.6.3, addition of a definition for trapping points;
- e) In 5.1.2, clarification on the use of signal colours;
- f) In 5.4.4, addition of safety requirements for trapping points at reel fronts;
- g) In 5.5, requirements for means of access, walkways and guard-rails adapted to the revised EN ISO 14122 (all parts), sector-specific deviations will still to be taken into account;
- h) In 7.3, the requirements for the instruction handbook have been extended: all requirements previously contained in Clause 5 in relation to the instruction handbook have been transferred to 7.3;
- i) In 5.9.5, addition of requirements for crawl speed;
- j) In 5.14.1, addition of requirements for positioning of control devices;
- k) In 5.14.2, amendment of Table 5: Determination of approximate SIL or PL;
- l) In 5.14.6, reference to EN ISO 13849-2:2012 for validation of safety functions added;
- m) In 7.3, Addition of information regarding noise emission values and hearing protection equipment in the instruction handbook;
- n) In 5.23, Deletion of the notice on standards for high-voltage equipment;
- o) Review of Annex ZA.

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

This document is part 1 of a standard for the technical safety requirements for the design and construction of paper making and finishing machines which 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: Calenders*
- *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*

CEN/TC 198 intends to prepare further parts to cover the paper making and finishing machines listed in Annex A.

Requirements in this document with reference to ISO 14122-2, ISO 14122-3 and ISO 14122-4 are applicable in conjunction with ISO 14122-1.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

**EN 1034-1:2021 (E)****Introduction**

This document is a type-C standard as stated in EN ISO 12100.

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

- machine manufacturers (small, medium and large enterprises);
- health and safety bodies (regulators, accident prevention organizations, market surveillance etc.).

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

- machine users/employers (small, medium and large enterprises);
- machine users/employees (e.g. trade unions, organizations for people with special needs);
- service providers, e.g. for maintenance (small, medium and large enterprises);
- consumers (in case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate at the drafting process of this document.

The machinery concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the scope of this document.

When requirements of this type-C standard are different from those which are stated in type-A or type-B standards, the requirements of this type-C standard take precedence over the requirements of the other standards for machines that have been designed and built according to the requirements of this type-C standard.



## 1 Scope

This document specifies safety requirements.

This document is applicable to paper making and paper finishing machines. It contains definitions and requirements that apply to all paper making and paper finishing machines listed in Annex A and is intended to be used in connection with the specific part applicable for the respective machine listed in Annex A. Specific parts can contain additional requirements or deviations from EN 1034-1 in which case the specific stipulations take precedence over the specification made in EN 1034-1. This document deals with the hazards listed in Annex B.

This document deals with all significant hazards, hazardous situations or hazardous events relevant to paper making and paper finishing machines, when they are used as intended and under conditions of misuse that are reasonably foreseeable by the manufacturer.

This document does not apply to machines used in paper converting. See EN 1010-1 to EN 1010-5.

This document is not applicable to paper making and paper finishing machines manufactured before the date of its publication.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitute 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 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 7731:2008, *Ergonomics - Danger signals for public and work areas - Auditory danger signals (ISO 7731:2003)*

EN ISO 11688-1:2009, *Acoustics - Recommended practice for the design of low-noise machinery and equipment - Part 1: Planning (ISO/TR 11688-1:1995)*

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 13849-2:2012, *Safety of machinery - Safety-related parts of control systems - Part 2: Validation (ISO 13849-2:2012)*

EN ISO 13850:2015, *Safety of machinery - Emergency stop function - Principles for design (ISO 13850:2015)*

EN ISO 13854:2019, *Safety of machinery - Minimum gaps to avoid crushing of parts of the human body (ISO 13854:2017)*

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EN ISO 13856-1:2013, *Safety of machinery - Pressure-sensitive protective devices - Part 1: General principles for design and testing of pressure-sensitive mats and pressure-sensitive floors (ISO 13856-1:2013)*

EN ISO 13856-2:2013, *Safety of machinery - Pressure-sensitive protective devices - Part 2: General principles for design and testing of pressure-sensitive edges and pressure-sensitive bars (ISO 13856-2:2013)*

EN ISO 13856-3:2013, *Safety of machinery - Pressure-sensitive protective devices - Part 3: General principles for design and testing of pressure-sensitive bumpers, plates, wires and similar devices (ISO 13856-3:2013)*

EN ISO 13857:2019, *Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2019)*

EN ISO 14118:2018, *Safety of machinery - Prevention of unexpected start-up (ISO 14118:2017)*

EN ISO 14119:2013, *Safety of machinery - Interlocking devices associated with guards - Principles for design and selection (ISO 14119:2013)*

EN ISO 14120:2015, *Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards (ISO 14120:2015)*

EN ISO 14122-1:2016, *Safety of machinery - Permanent means of access to machinery - Part 1: Choice of fixed means and general requirements of access (ISO 14122-1:2016)*

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)*

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)*

EN ISO 14123-2:2015, *Safety of machinery - Reduction of risks to health resulting from hazardous substances emitted by machinery - Part 2: Methodology leading to verification procedures (ISO 14123-2:2015)*

EN ISO 19353:2019, *Safety of machinery - Fire prevention and fire protection (ISO 19353:2019)*

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: Interactions between the design of machinery and work tasks*

EN 809:1998+A1:2009, *Pumps and pump units for liquids - Common safety requirements*

EN 1127-1:2019, *Explosive atmospheres - Explosion prevention and protection - Part 1: Basic concepts and methodology*

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

EN 12198-1:2000+A1:2008, *Safety of machinery - Assessment and reduction of risks arising from radiation emitted by machinery - Part 1: General principles*

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

EN 60529:1991,<sup>1</sup> *Degrees of protection provided by enclosures (IP code) (IEC 60529:1989)*

EN 60204-1:2018, *Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1:2016)*

EN 60825-1:2014, *Safety of laser products - Part 1: Equipment classification and requirements (IEC 60825:2014)*

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 61511-1:2017,<sup>2</sup> *Functional safety — Safety instrumented systems for the process industry sector — Part 1: Framework, definitions, system, hardware and application programming (IEC 61511-1:2016)*

EN 62061:2005,<sup>3</sup> *Safety of machinery — Functional safety of safety-related electrical, electronic and programmable electronic control systems (IEC 62061:2005)*

EN IEC 61496-3:2019, *Safety of machinery — Electro-sensitive protective equipment - Part 3: Particular requirements for active opto-electronic protective devices responsive to diffuse Reflection (AOPDDR) (IEC 61496-3:2018)*

EN IEC 62046:2018, *Safety of machinery - Application of protective equipment to detect the presence of persons (IEC 62046:2018)*

IEC/TR 61496-4:2007, *Safety of machinery. — Electro-sensitive protective equipment — Part 4: Particular requirements for equipment using vision based protective devices (VBPD)*

IEC/TS 61496-4-2:2014, *Safety of machinery — Electro-sensitive protective equipment — Part 4-2: Particular requirements for equipment using vision based protective devices (VBPD) — Additional requirements when using reference pattern techniques (VBPDPP)*

IEC/TS 61496-4-3:2015, *Safety of machinery — Electro-sensitive protective equipment — Part 4-3: Particular requirements for equipment using vision based protective devices (VBPD) — Additional requirements when using stereo vision techniques (VBPDST)*

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1 This document is impacted by the amendments EN 60529:1991/A1:2000, EN 60529:1991/A2:2013 and the corrigenda EN 60529:1991/AC:2016-12 and EN 60529:1991/A2:2013/AC:2019-02.

2 This document is impacted by the amendment EN 61511-1:2017/A1:2017.

3 This document is impacted by the amendments EN 62061:2005/A1:2013, EN 62061:2005/A2:2015 and the corrigendum EN 62061:2005/Cor.:2010.

**EN 1034-1:2021 (E)****3 Terms and definitions**

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010 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 <https://iso.org/obp>

**3.1****paper making and finishing machine**

machine with which pulp or paper fibres are obtained, processed, joined together to form and also to finish paper, board, tissue and fibreboard

**3.2****paper converting machine**

machine which are downstream of paper making and finishing machines

EXAMPLE cutting machines (guillotine cutters), corrugated board making and processing machines

Note 1 to entry: Safety requirements for paper converting machines are dealt with in the EN 1010 series (EN ISO 12643 series).

**3.3****machine section**

functional unit of a paper making machine

EXAMPLE wire section, press section, dryer section, smoothing unit, coater, winding unit

**3.4****crawl speed**

speed as low as possible, but a set value of not more than 0,25 m/s (15 m/min)

Note 1 to entry: For drives of machine groups (multi-motor drive/ sectional drives) applies: Variations caused by the process can lead to increases of up to 5 m/min for a maximum of 10 s (dynamic tolerance). Diameter changes - e.g. from roll grinding - may require monitoring tolerances of up to 10 % or 1,5 m/min (static tolerance). These tolerances apply to the motor speed being monitored for safety purposes.

Note 2 to entry: The crawl speed may differ depending on the type of machine. Machine-specific deviations from the defined values are described in the subsequent parts of this standard.

**3.5****hold-to-run control**

operation of the machine by means of a hold-to-run control device as defined in EN ISO 12100:2010, 3.28.3

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### 3.6

#### **inrunning nips, wrapping and trapping points**

##### 3.6.1

#### **inrunning nip**

danger point caused by rotating roll, cylinder or roller nips where persons, parts of the body or clothing can be drawn in

Note 1 to entry: Such nips arise between:

- counter-rotating part (see Figure 1a and 1c);
- a rotating part and an adjacent fixed part (see Figure 1b and 1d);
- parts rotating in the same direction, but with different peripheral speeds and/or surface properties, if adequate safety distances are not maintained (see Figure 1e).

Examples of inrunning nips are illustrated in Figure 1.

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