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Safety of machinery - Safety requirements for the
design and construction of paper making and finishing
machines - Part 4: Pulpers and their loading facilities

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 1034-4:2021 sisaldab Euroopa standardi EN 1034-4:2021 ingliskeelset teksti.	This Estonian standard EVS-EN 1034-4:2021 consists of the English text of the European standard EN 1034-4:2021.
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EUROPEAN STANDARD

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English Version

**Safety of machinery - Safety requirements for the design
and construction of paper making and finishing machines -
Part 4: Pulpers and their loading facilities**

Sécurité des machines - Exigences de sécurité pour la
conception et la construction de machines de
fabrication et de finition du papier - Partie 4 :
Triturateurs et leurs systèmes d'alimentation

Sicherheit von Maschinen - Sicherheitstechnische
Anforderungen an Konstruktion und Bau von
Maschinen der Papierherstellung und Ausrüstung - Teil
4: Stofflöser und deren Beschickungseinrichtungen

This European Standard was approved by CEN on 10 October 2021.

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

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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European foreword

This document (EN 1034-4:2021) 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of an identical text or by endorsement, at the latest by May 2022, and conflicting national standards shall be withdrawn at the latest by May 2022.

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 1034-4:2005+A1:2009.

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

- a) Throughout the document, clear differentiation between the different types of pulpers. The term under machine pulper/machine integrated pulper has been added (including schematic representation). The term stand-alone pulper has been introduced for differentiation.
- b) In 5.5.1: Addition of a requirement regarding maximum distance between pulper wall and walkway floor; addition of a requirement for means of access and walkways regarding use of corrosion resistant or galvanized materials.
- c) Throughout the document, the requirements for safety-related functions have been added and updated; in 5.11.3, the inclusion of a table with an overview of the safety functions.
- d) A new subclause 5.9 with requirements for the emptying of stand-alone pulpers and under machine pulpers has been added.
- e) In 5.19 review of requirements on maintenance, inspection and cleaning requirements: as an alternative to manholes (previously only required), provision for mounting systems for safe entry and rescue systems (addition of an example of an entry/rescue system in Annex A), provision of a separate system for transporting tools when entering the pulper, addition of measures to prevent the occurrence of hazardous gases, such as appropriate openings, forced ventilation or ventilation through trash discharge gates.
- f) In Clause 7, information on maintenance, inspection and cleaning has been added.
- g) Review of Annex ZA.

This document has been prepared under a Standardization Request 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.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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.

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Introduction

This document is a type-C standard as stated in EN ISO 12100:2010.

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 the case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate in 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 that 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 pulpers and their loading facilities intended for use in paper making as well as for pulpers used in pulp drying machines and is intended to be used together with EN 1034-1:2021.

This document deals with all significant hazards, hazardous situations or hazardous events relevant to pulpers and their loading facilities, when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer.

This document does not apply to pulpers and their loading facilities that have been manufactured before the date of publication of this document.

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 547-1:1996+A1:2008, *Safety of machinery - Human body measurements - Part 1: Principles for determining the dimensions required for openings for whole body access into machinery*

EN 547-2:1996+A1:2008, *Safety of machinery - Human body measurements - Part 2: Principles for determining the dimensions required for access openings*

EN 547-3:1996+A1:2008, *Safety of machinery - Human body measurements - Part 3: Anthropometric data*

EN 617:2001+A1:2010, *Continuous handling equipment and systems - Safety and EMC requirements for the equipment for the storage of bulk materials in silos, bunkers, bins and hoppers*

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

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

EN 741:2000+A1:2010, *Continuous handling equipment and systems - Safety requirements for systems and their components for pneumatic handling of bulk materials*

EN 1034-1:2021, *Safety of machinery - Safety requirements for the design and construction of paper making and finishing machines - Part 1: Common requirements*

EN 1496:2017, *Personal fall protection equipment - Rescue lifting devices*

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

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

EN 61511-1:2017,¹ *Functional safety - Safety instrumented systems for the process industry sector - Part 1: Framework, definitions, system, hardware and application programming Requirements (IEC 61511-1:2016)*

EN 62061:2005,² *Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems (IEC 62061:2005)*

EN IEC 61000-6-2:2019, *Electromagnetic compatibility (EMC) - Part 6-2: Generic standards -Immunity standard for industrial environments*

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

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)*

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

² This document is impacted by the amendments EN 62061:2005/A1:2013, EN 62061:2005/A2:2015 and the corrigendum EN 62061:2005/corrigendum Feb. 2010.

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)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010, EN 1034-1:2021 and the following apply.

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

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

3.1 pulper

machine that dissolves raw materials to form a pumpable defibrated stock suspension to be used for the production of paper, board, cardboard, tissue, fibreboard or semi-finished pulp products

Note 1 to entry: Pulper can be designed either as *stand-alone pulper* (3.2), or as *drum pulper* (3.4) or as *machine-integrated pulper* (3.3).

Note 2 to entry: Examples of raw materials processed in pulpers are wood pulp, pulp, recovery stock and waste paper.

3.2 stand-alone pulper

pulper consisting of a fixed tank and a power-driven rotor to break down the charged raw material

Note 1 to entry: The principle of a rotor pulper is illustrated in Figure 1.

Note 2 to entry: The raw material can be charged in the form of bales or in the form of bulk material or loose bulk material with the addition of water.