SLOVENSKI STANDARD
oSIST prEN 1034-4:2020

01-februar-2020

Varnost strojev - Varnostne zahteve za načrtovanje in konstrukcijo strojev in opreme za izdelavo in končno obdelavo papirja - 4. del: Razpuščevalniki in pripadajoče naprave za polnjenje

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

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

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

Ta slovenski standard je istoveten z: **prEN 1034-4**

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

oSIST prEN 1034-4:2020 **en**

EUROPEAN STANDARD

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ICS 85.100

Will supersede EN 1034-4:2005+A1:2009

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 - Prescriptions de sécurité pour la conception et la construction de machines de fabrication et de finition du papier - Partie 4: Triturateurs et leurs dispositifs d'alimentation

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

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 198.

If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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European foreword

This document (prEN 1034-4:2020) has been prepared by Technical Committee CEN/TC 198 Printing and paper machinery - Safety", the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede 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 was 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 materials.

c) The requirements for safety-relevant parts of control systems were supplemented and updated throughout the document; in 5.11.3 Inclusion of a table with an overview of safety functions.

d) A new Clause 5.9 with requirements for the emptying of stand-alone pulpers and under machine pulpers was 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 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.

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 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 or from provisions made in prEN 1034-1:2019, 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.

It 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 prEN 1034-1:2019.

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 is not applicable to pulpers and their loading facilities that have been manufactured before the date of publication of this standard.

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 547 (all parts), *Safety of machinery - Human body measurements*

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*

prEN 1034-1:2019[1)], *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 - Part 1: General requirements (IEC 60204-1:2016)*

1) Under preparation.

EN 61511-1:2017[2)], *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[3)],*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)*

prEN ISO 13857:2017, *Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO/DIS 13857:2017)*

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)*

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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 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 risk to health from hazardous substances emitted by machinery - Part 2: Methodology leading to verification procedures*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010, prEN 1034-1:2019 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/

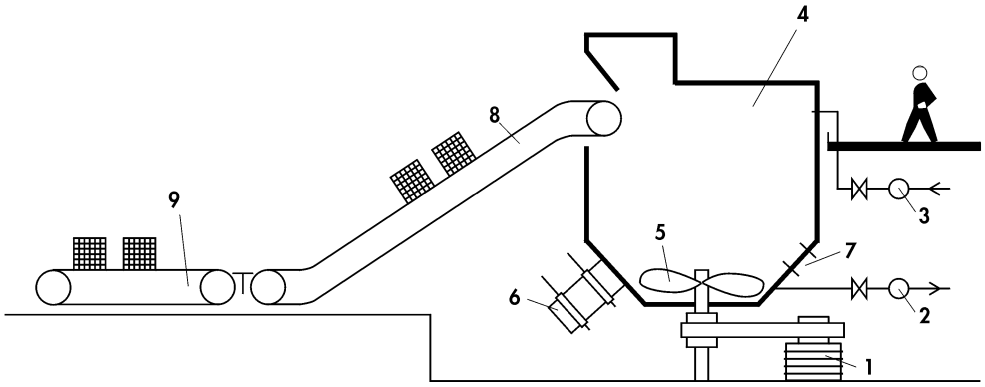
— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
pulper
machine that dissolves raw materials such as wood pulp, pulp, recovery stock and waste paper to form a pumpable defibrated stock suspension to be used for the production of paper, board and tissue

Note 1 to entry: Pulpers can be designed either as stand-alone pulpers, see 3.2, or as drum pulpers, see 3.4. Pulpers can also be designed as under machine pulpers, see 3.3.

3.2
stand-alone pulper
pulper consisting of a fixed tank and a power-driven rotor to break down the charged raw material - in bales or in the form of bulk material or loose bulk material - using water

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



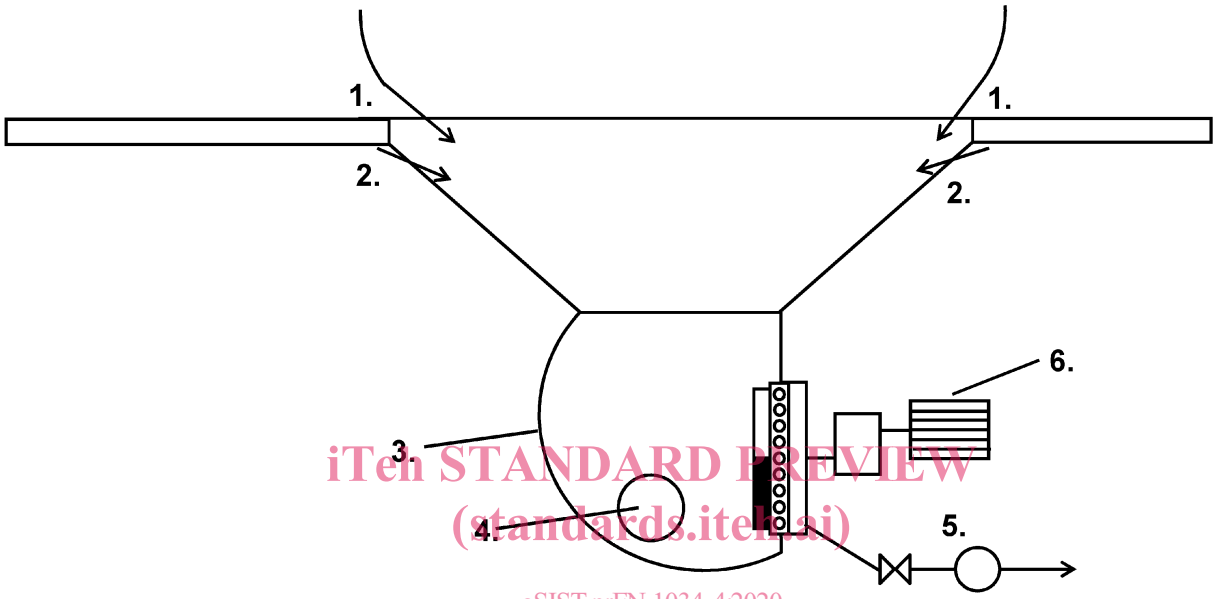
Key

1	drive	4	tank	7	manhole/ access opening
2	discharging pump	5	rotor	8	charging conveyor
3	charging pump/water pump	6	trash discharge gate	9	feeding conveyor

Figure 1 — Pulper with loading facility (example)

3.3
under machine pulper
machine-integrated pulper
pulper integrated into a paper making and finishing machine (e.g. located in particular below a paper, board or tissue machine, but also below a slitter rewinder) to pick up the recovery stock or broke coming from these machines

Note 1 to entry: Figure 2 shows a schematic representation of a under machine pulper.

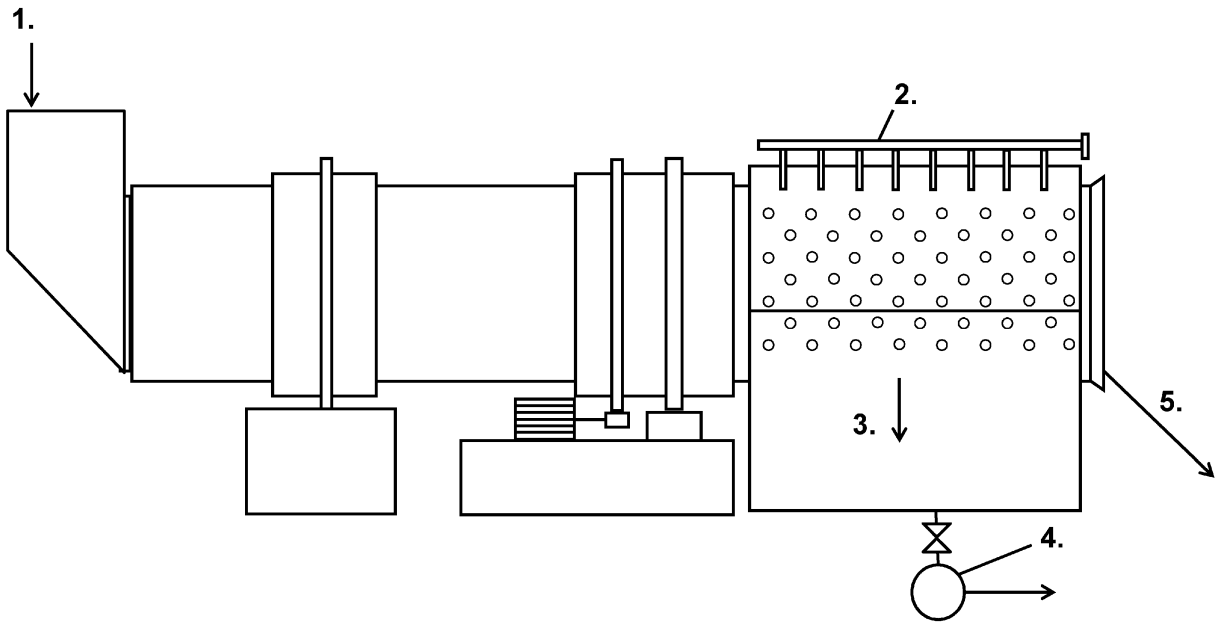


Key
1 entry possibility for paper web
2 spray pipes for water inflow
3 pulper tank
4 manhole / access opening (position variable, depending on accessibility)
5 discharge pump for accept stock
6 drive

Figure 2 — Example of an under machine pulper

3.4
drum pulper
pulper consisting of a horizontal drum rotating round its horizontal axis in which raw material is dissolved with the addition of water

Note 1 to entry: The principle of a drum pulper is illustrated in Figure 3.



Key

1 entry opening for raw material and water
2 spray pipes for water inflow
3 exit of dissolved pulp through perforation of the drum body
4 discharge pump for accept stock
5 reject discharge

Figure 3 — drum pulper (schematic representation)

3.5
loading facility
machinery such as continuous conveyor, lifting device or a combination of these machines intended to charge pulpers with the raw material to be dissolved such as pulp, waste paper or recovery stock

3.6
feeding conveyor
continuous conveyor as part of the loading facility defined in 3.4 onto which the raw material to be dissolved is loaded by means of fork lifts, mechanical shovels or lifting tools

Note 1 to entry: See Figure 1.

3.7
charging conveyor
continuous conveyor as part of the loading facility defined in 3.4, forwarding the raw material to be dissolved into the pulper

Note 1 to entry: See Figure 1.

4 List of significant hazards

For an overview of all significant hazards dealt with in this document, see Annex B, Table B.1.

5 Safety requirements and/or measures

5.1 General

Machinery shall comply with the safety requirements and/or measures of this clause. In addition, the machine shall be designed according to the principles of EN ISO 12100:2010 for relevant but not significant hazards that are not dealt with by this document, e.g. avoidance of sharp edges.

5.2 Requirements for safety devices

5.2.1 The requirements of prEN 1034-1:2019, 5.1 shall be satisfied.

5.2.2 The instruction handbook shall contain instructions for checking the safety devices.

5.3 Power transmission elements

Safety devices for power transmission elements between the drive and rotor or drum of the pulper shall be selected and designed as specified in prEN 1034-1:2019, 5.2.

5.4 Workplaces, access stairs, walkways, passageways

5.4.1 The requirements of 5.5 of prEN 1034-1:2019 and EN ISO 14122-1:2016, EN ISO 14122-2:2016, EN ISO 14122-3:2016, EN ISO 14122-4:2016 as well as of 5.4.2, 5.4.3 and 5.6.4 shall be satisfied.

5.4.2 Stairs and walkways on drum pulpers shall be fitted in such a way that in-running nips between these elements and the drum are avoided. The safety distances specified in prEN 1034-1:2019, 5.4 and in prEN ISO 13857:2017, Table 2 shall be applied.

5.4.3 Where access is required to parts of the machine, but is prevented or made difficult by the position of the loading facility, crossovers or passageways shall be provided so that access to the loading facility is avoided.

5.5 Falling hazard on pulpers

5.5.1 General requirements:

By appropriate design, installation and, if necessary, additional measures against tripping or falling, it shall be ensured that persons cannot fall into the pulper. Fall-off protections, e.g. at the pulp tank or at the entry openings of drum pulper shall be at least 1,20 m high (measured from possible standing level) and designed in such a way that climbing up and falling through are prevented.

The distance between the pulper wall and the stand area at the pulper shall not exceed 0,12 m in order to prevent tripping or falling.

Corrosion-resistant material should be used for the construction of working platforms, walkways, stairs and fall-off protections when exposed to moisture in order to prevent risks due to loss of strength of the supporting elements as a result of expected excessive corrosion.

5.5.2 Danger of falling into stand-alone pulpers and under machine pulpers:

Persons are prevented from falling into the stand-alone pulper and machine integrated pulper, if:

— on stand-alone pulpers with a tank open at the top, the upper edge of the tank is at least 1,20 m above standing level and the outer pulper walls are designed so that stepping up on them is not possible. If the upper edge of the tank is lower, an additional fall-off protection shall be provided to meet the requirements mentioned above, see;