
Varnost strojev - Varnostne zahteve za načrtovanje in konstrukcijo strojev in opreme za izdelavo papirja - 17. del: Stroji za izdelavo vpojnega papirja

Safety of machinery - Safety requirements for the design and construction of paper making and finishing machines - Part 17: Tissue making machines

Sicherheit von Maschinen - Sicherheitstechnische Anforderungen an Konstruktion und Bau von Maschinen der Papierherstellung und Ausrüstung - Teil 17: Tissuemaschinen

Sécurité des machines - Prescriptions de sécurité pour la conception et la construction de machines de fabrication et de finition du papier - Partie 17: Machines de fabrication du papier non tissé

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**Safety of machinery - Safety requirements for the design and
construction of paper making and finishing machines - Part 17:
Tissue making machines**

Sécurité des machines - Prescriptions de sécurité pour la
conception et la construction de machines de fabrication et
de finition du papier - Partie 17: Machines de fabrication du
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Sicherheit von Maschinen - Sicherheitstechnische
Anforderungen an Konstruktion und Bau von Maschinen
der Papierherstellung und Ausrüstung - Teil 17:
Tissuemaschinen

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

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Contents

Page

Foreword.....	4
Introduction	6
1 Scope	7
2 Normative references	7
3 Terms and definitions	10
4 List of significant hazards	15
5 Safety requirements and/or measures	17
5.1 General.....	17
5.2 Workplaces, means of access, walkways, passageways.....	18
5.3 Start-up warning device	18
5.4 Emergency stop device and braking system.....	19
5.5 Isolation and energy dissipation, prevention of unexpected start-up	20
5.6 Electric drive system and power transmission elements.....	20
5.7 Control system and actuators	21
5.8 Electrical equipment.....	22
5.9 Hydraulic equipment	22
5.10 Pneumatic equipment	22
5.11 Equipment and measures for make-ready, maintenance and lubrication	22
5.12 Equipment and measures for cleaning and removal of broke	23
5.13 Noise	24
5.14 Hot surfaces	25
5.15 Integrated lighting	25
5.16 Ergonomic principles	25
5.17 Paper dust, health hazards and explosive atmospheres and zones	25
5.18 Chemical substances	26
5.19 Fire	26
5.20 Rolls, outer rolls.....	27
5.21 Water jet knives, tail cutters, severing knives, rotary knives	28
5.22 Machine-specific tools	28
5.23 Drying cylinders, Yankee cylinder, Steam and condensate system	29
5.24 Whole body access to confined spaces.....	29
5.25 Tail and web threading equipment.....	29
5.26 Felts and wires	30
5.27 Former section (wire section).....	30
5.28 Press section.....	31
5.29 Drying section	32
5.30 Calenders (in-line calenders).....	33
5.31 Measuring unit	33
5.32 Reel up section	34
5.33 Roll handling equipment in the reel section or in the near vicinity.....	38
5.34 Pulpers and their loading facilities	38
6 Verification of safety requirements and/or measures.....	39
7 Information for use	39
7.1 General information.....	39
7.2 Instruction handbook	39
7.3 Marking	41
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC	42
Bibliography	43

Figures

Figure 1 — Example of a large complex tissue making machine with a "closed" reel section (Safety devices are not shown)	11
Figure 2 — Example of a tissue making machine with an "open" reel section (Safety devices are not shown).....	12
Figure 3 — Example of the former and press section on a tissue making machine	13
Figure 4 — Example of a reel section (Safety devices are not shown).....	14
Figure 5 — Safety distance $\geq 2,70$ m on drum reeler.....	34
Figure 6 — Safety distance ≥ 500 mm to prevent crushing by reels behind the drum reeler	37

Tables

Table 1 — List of significant hazards.....	16
Table 2 — List of safety functions, Performance Level and Safety Integrity Level specified in this standard	21
Table 3 — Methods used to verify safety requirements and/or measures.....	39

SIST EN 1034-17:2012
<https://standards.iteh.ai/catalog/standards/sist/1ce5880e-1666-47e6-8662-9fa45366e4bf/sist-en-1034-17-2012>

Foreword

This document (EN 1034-17:2012) 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 2006/42/EC.

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* (the present document)
- *Part 21: Coating machines*
- *Part 22: Wood grinders*
- *Part 26: Roll packaging machines*
- *Part 27: Roll handling systems*

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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 tissue making machines for the production of soft and crepe paper and applies together with EN 1034-1:2000+A1:2010. It deals with all significant hazards, hazardous situations and hazard events relevant to tissue making machines when used as intended and under the conditions foreseen by the manufacturer (see Clause 4).

This document does not deal with pressure hazards in steam-heated drying cylinders and Yankee cylinders.

NOTE Directive 97/23/EC gives essential safety requirements for equipment under pressure.

This document does not apply to:

- paper and board making machines;
- tissue winder (plying machines);
- tissue converting machines.

At this stage this standard does not deal with tissue making machines which apply the dry process for sheet forming. These machines are intended to be included in the standard at a later date.

This document is not applicable to tissue making machines which are manufactured before the date of publication of this document by CEN.

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2 Normative references

SIST EN 1034-17:2012

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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 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 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 626-1:1994+A1:2008, *Safety of machinery — Reduction of risks to health from hazardous substances emitted by machinery — Part 1: Principles and specifications for machinery manufacturers*

EN 746-1:1997+A1:2009, *Industrial thermoprocessing equipment — Part 1: Common safety requirements for industrial thermoprocessing equipment*

EN 746-2:2010, *Industrial thermoprocessing equipment — Part 2: Safety requirements for combustion and fuel handling systems*

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 1034-17:2012 (E)

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 1034-4:2005+A1:2009, *Safety of machinery — Safety requirements for the design and construction of paper making and finishing machines — Part 4: Pulpers and their loading facilities*

EN 1034-6:2005+A1:2009, *Safety of machinery — Safety requirements for the design and construction of paper making and finishing machines — Part 6: Calender*

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 1127-1:2011, *Explosive atmospheres — Explosion prevention and protection — Part 1: Basic concepts and methodology*

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 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 13463-1:2009, *Non-electrical equipment for use in potentially explosive atmospheres — Part 1: Basic method and requirements*

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

EN 14491:2006, *Dust explosion venting protective systems*

EN 60079-0:2009, *Explosive atmospheres — Part 0: Equipment — General requirements (IEC 60079-0:2007)*

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

EN 60204-11:2000, *Safety of machinery — Electrical equipment of machines — Part 11: Requirements for HV equipment for voltages above 1 000 V a.c. or 1 500 V d.c. and not exceeding 36 kV (IEC 60204-11:2000)*

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

EN 61241-0, *Electrical apparatus for use in the presence of combustible dust — Part 0: General requirements (IEC 61241-0:2004, modified + corrigendum November 2005)*

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EN 61511-1:2004, *Functional safety — Safety instrumented systems for the process industry sector — Part 1: Framework, definitions, system, hardware and software requirements (IEC 61511-1:2003 + Corrigendum 2004)*

EN 61511-2:2004, *Functional safety — Safety instrumented systems for the process industry sector — Part 2: Guidelines for the application of IEC 61511-1 (IEC 61511-2:2003)*

EN 61800-3:2004, *Adjustable speed electrical power drive systems — Part 3 EMC requirements and specific test methods (IEC 61800-3:2004)*

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 11957:2009, *Acoustics — Determination of sound insulation performance of cabins — Laboratory and in situ measurements (ISO 11957:1996)*

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 14122-1:2001, *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 14122-2:2001, *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 ISO 14122-4:2004, *Safety of machinery — Permanent means of access to machinery — Part 4: Fixed ladders (ISO 14122-4:2004)*

EN 1034-17:2012 (E)

3 Terms and definitions

For the purpose 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

tissue

soft crepe paper with a grammage normally less than 25 g/m²

Note 1 to entry: Soft tissue is the base material for certain single-ply and multi-ply products such as serviettes, towels, handkerchiefs, toilet paper, tea-bag's etc.

3.2

tissue making machine

an assembly of machine sections systems extending from the head box to the reel-up unit and including former (wire) section, press section, dryer section, calender, measuring units, reel-up unit and reel stand including machine pulpers, shaft puller equipment, lifting table, core bin exit device, machine process ventilation

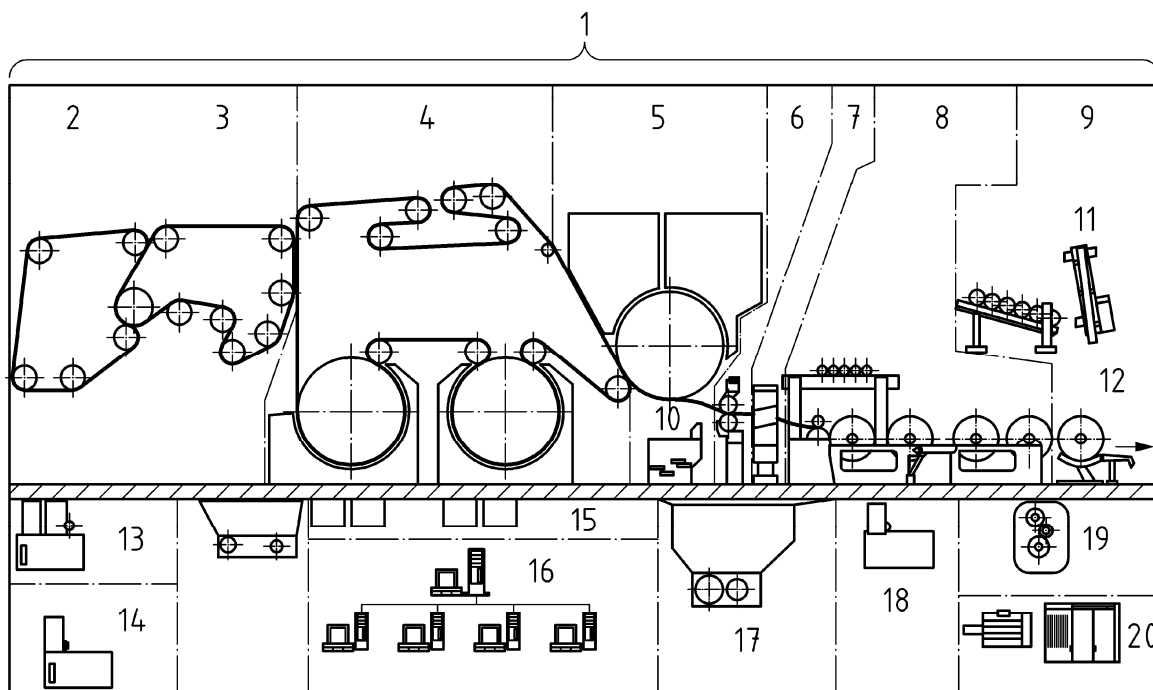
Note 1 to entry: Drive system, control system(s), hydraulic system, lubrications system etc. are also included in the scope.

EXAMPLE 1 A large complex tissue making machine with a "closed" reel section where the parent roll ends up at a lifting table for further handling such as:

- kick out on a conveyor, kick out on the floor (lifting table in lower position);
- lifting the paper roll away with an overhead crane;
- fetching the paper roll with a truck or with an auto carrier or a combination.

Note 2 to entry: Figure 1 illustrates a large complex tissue making machine with a "closed" reel section.

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**Key**

- | | | |
|---------------------------------------|---|-------------------------------|
| 1 tissue making machine | 8 reel and reel stand | 15 mist removal system |
| 2 former section (wire section) | 9 roll handling | 16 control system |
| 3 press section | 10 broke chuter equipment | 17 machine pulper |
| 4 TAD dryer with hood and air systems | 11 shaft puller | 18 heat water or oil system |
| 5 Yankee dryer, hood with air system | 12 lifting table | 19 mechanical drive equipment |
| 6 calender | 13 hydraulic system | 20 AC or DC drive system |
| 7 measuring device | 14 grease and/or oil lubrication system | |

**Figure 1 — Example of a large complex tissue making machine with a "closed" reel section
(Safety devices are not shown)**