SLOVENSKI STANDARD
SIST EN 1010-4:2004

01-september-2004

Varnost strojev - Varnostne zahteve za naļrtovanje in konstrukcijo tiskarskih strojev in strojev za obdelavo papirja - 4. del: Stroji za vezavo knjig, obdelavo in izdelavo papirja

Safety of machinery - Safety requirements for the design and construction of printing and paper converting machines - Part 4: Bookbinding, paper converting and finishing machines

Sicherheit von Maschinen - Sicherheitsanforderungen an Konstruktion und Bau von Druck- und Papierverarbeitungsmaschinen - Teil 4: Buchbinderei, Papierverarbeitungs- und Papierveredelungsmaschinen

Sécurité des machines - Exigences de sécurité pour la conception et la construction de machines d'impressions et de tranformation du papier - Partie 4: Machines a relier les livresmachines de transformation et de finition du papier

Ta slovenski standard je istoveten z: **EN 1010-4:2004**

ICS:

37.100.10	Reprodukcijska oprema	Reproduction equipment
85.100	Oprema za papirno industrijo	Equipment for the paper industry

SIST EN 1010-4:2004 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

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EN 1010-4

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English version

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This European Standard was approved by CEN on 21 November 2003.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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

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Foreword

This document EN 1010-4:2004 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 July 2004, and conflicting national standards shall be withdrawn at the latest by July 2004.

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.

Annex A of this standard is normative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

This document is a type C standard as stated in EN 1070. It defines additional safety requirements and/or deviations from the stipulations in prEN 1010-1:2003.

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

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

The EN 1010 series of standards consists of the following parts:

Part 1 Common requirements

Part 2 Printing and varnishing machines including pre-press machinery

Part 3 Cutting machines

Part 4 Bookbinding, paper converting and finishing machines

Part 5 Machines for the production of corrugated board and machines for the conversion of flat and corrugated board

1 Scope

This document applies to

— bookbinding machines:

  — stitching, riveting, eyeletting and attaching machines;

  — gang stitchers;

  — gathering machines;

  — perfect binders;

  — paper drills;

  — book signature presses;

  — book presses;

  — sheet folding machines;

  — book production lines for the production of books with hard covers;

  — back rounding and pressing machines;

- backlining and head banding machines;
- casing-in machines;
- book cover crease forming machines.

— paper converting machines:

- machines for the production of envelopes;
- machines for the production of sanitary items;
- inserting machines;
- counter-stackers;
- paper embossing machines.

— paper finishing machines:

- coaters;
- laminators.

This document shall be used together with prEN 1010-1:2003. Both parts together identify all significant hazards relevant to bookbinding, paper converting and paper finishing machines when they are used as intended and under the conditions foreseen by the manufacturer (see clause 4). The specific requirements in EN 1010-4 take precedence over respective requirements in prEN 1010-1:2003.

This document does not deal with risks generated by noise emitted from the machines. These issues are covered basically in prEN 1010-1:2002. However, for machines like sheet folding machines and machines for the production of envelopes and sanitary items, some specific proposals for noise reduction measures are given.

This document is not applicable to bookbinding, paper converting and finishing machines manufactured before the date of publication of this document by CEN.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 292-1:1991, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology.*

EN 292-2:1991+A1:1995, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles and specifications.*

EN 294:1992, *Safety of machinery — Safety distances to prevent danger zones being reached by the upper limbs.*

EN 349:1993, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body.*

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

EN 626-2:1996, *Safety of machinery — Reduction of risks to health from hazardous substances emitted by machinery — Part 2: Methodology leading to verification procedures.*

EN 954-1:1996, *Safety of machinery — Safety related parts of control systems. Part 1: General principles for design*.

prEN 1010-1:2003, *Safety of machinery — Safety requirements for the design and construction of printing and paper converting machines — Part 1: Common requirements.*

prEN 1010-2:2003, *Safety of machinery — Safety requirements for the design and construction of printing and paper converting machines — Part 2: Printing and varnishing machines including pre-press machinery.*

EN 1010-3:2002, *Safety of machinery — Safety requirements for the design and construction of printing and paper converting machines — Part 3: Cutting machines.*

EN 1050:1996, *Safety of machinery — Principles for risk assessment.*

EN 1070:1998, *Safety of machinery — Terminology.*

EN 1539:2000, *Dryers and ovens in which flammable substances are released — Safety requirements.*

prEN 13023, *Noise measurement methods for printing, paper converting, paper making machines and auxiliary equipment — Accuracy categories 2 and 3.*

EN 61000-6-4:2002, *Electromagnetic compatibility (EMC) — Generic standards — Part 6-4: Emission standard for industrial environment (IEC 61000-6-4:1997).*

EN ISO 4871, *Acoustics — Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996).*.

3 Terms and definitions

For the purposes of this European Standard, the definitions given in EN 1070:1998 and prEN 1010-1:2003 and the following apply.

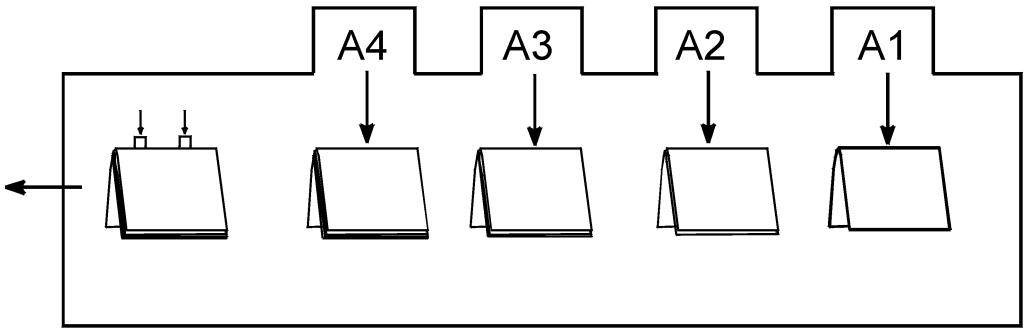
3.1
stitching, riveting, eyeletting and attaching machines
powered machines using tools for

— connecting material by means of metallic items

or

— positively fixing metallic items to material

3.2
gang stitchers
machines for stitching folded sheets of paper where individual folded sheets are removed by feeding grippers and the open sheets are stacked on top of each other on a transport chain for subsequent back stitching (see Figure 1)

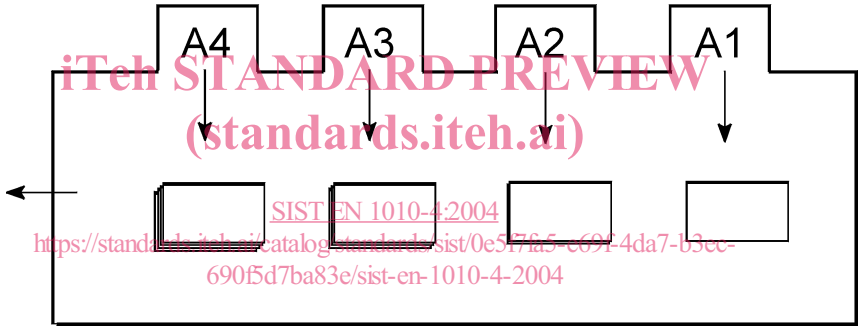


Key

A1 to A4 Feeding grippers

Figure 1 — Principle of a gang stitcher

3.3
gathering machines
machines for gathering folded sheets of paper where individual sheets are removed by feeding grippers and are stacked in the correct order on a transport chain (see Figure 2)



Key

A1 to A4 Feeding grippers

Figure 2 — Principle of a gathering machine

3.4
perfect binders
machines for the automatic production of brochures (soft cover) or book signatures (hard cover) where gathered folded sheets or single sheets are bound to form book or brochure signatures by applying glue on the preprocessed book back and where book or brochure signatures are inserted into covers by gluing the cover on the back and/or sides

3.5
paper drills
machines to drill holes into piles of paper

3.6
book signature presses
presses used for pressing book signatures: blocks are fed and aligned manually, pressing is power-operated

3.7
book presses
presses used for pressing books after manual binding in order to ensure dimensional stability

3.8
sheet folding machines
machines to apply single or multiple folds to single sheets of paper including cutting, perforating and creasing

3.9
book production lines
machines for the automatic production of books where book signatures consisting of gathered folded sheets or single sheets are put together and trimmed and provided with hard or flexible book covers

3.10
back rounding and pressing machines
machines for rounding book signature backs and completing the forming process by pressing the back

3.11
backlining and head banding machines
machines for the automatic production of books with rounded or flat book back where book signatures are glued, gauzed, backlined and head banded

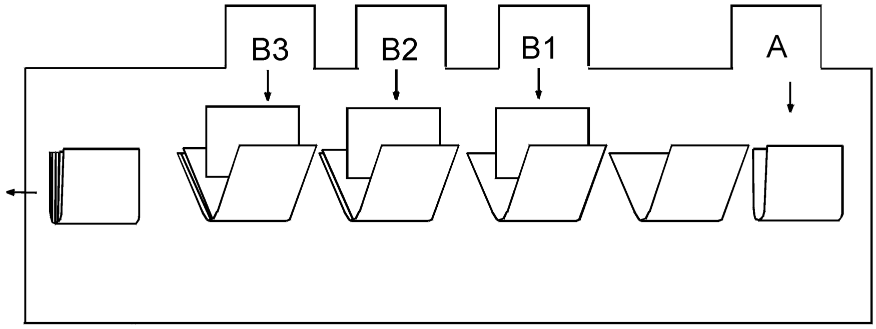
3.12
casing-in machines
machines for the production of books (hard cover) where rounded or flat book signatures are cased into hard or flexible book covers by gluing the end papers on the front and on the back of the book signatures to the inner sides of the book covers

3.13
book cover crease forming machines (presses)
machines for the production of books (hard cover) where, following the process of gluing book signatures to book covers, book cover creases are formed under heat and pressure and the books are pressed over the entire surface

3.14
machines for the production of envelopes
machines for the production of envelopes and other kinds of paper bags

3.15
machines for the production of sanitary items
machines for the production of sanitary items from paper, tissue and non-woven fabric such as, for example, paper handkerchiefs, paper napkins, tampons etc.

3.16
inserting machines
machines (for example attached to web-fed rotary printing presses) where printed matter such as leaflets and magazines are inserted at a predetermined position into other printed products, for example newspapers or magazines



Key

A feeder of main product,
B1 to B3 feeder of material to be inserted

Figure 3 — Principle of an inserting machine

3.17
counter-stackers
machines for cross-wise stacking of piles of leaflets, books, magazines or newspapers

3.18
paper embossing machines
machines for forming paper surfaces by using embossing cylinders

3.19
paper finishing machines
machines used for applying liquid or solid coating material on substrates made of paper or similar materials such as board and corrugated boards, plastic film, tinfoil, metal sheets and photo paper. Examples of paper finishing machines are coaters and laminators

3.19.1
coaters
type of paper finishing machine applying a liquid substance (for example glue, varnish, ink) of a predetermined thickness onto a substrate. For dosing the substance applied, a doctor blade (scraper) or the gap between two rollers (dosing gap) is used

3.19.2
laminators
type of paper finishing machine applying a solid material (for example foil, paper) onto a substrate

4 List of significant hazards

4.1 Insofar as they are dealt with in this standard, this clause contains all the significant hazards (noise is dealt with basically in prEN 1010-1:2003), that have been identified by the risk assessment process as being significant for this type of machinery and require action to eliminate or reduce the risk. When carrying out the risk assessment, the machine designer shall check whether the list of hazards in Table 1 is complete and applicable with respect to the particular machine.

4.2 It is of great importance that the user of this standard, i.e. the designer or manufacturer, takes into account the following basic aspects in accordance with EN 1050:

— the intended use of the machine including setting up (making ready), cleaning and maintenance, including foreseeable misuse;

— identification of all hazards existing on the machine.

Table 1 — Significant hazards, danger zones, safety measures

Significant hazards	Danger zone	Safety measures: reference to clauses in		
		this standard	EN 292-1: 1991	prEN 1010-1: 2003
Mechanical hazards crushing shearing cutting or severing entanglement drawing-in impacts	Machines with guards in open position	5.1.2	4.2.1	5.2.2.3
	Interfaces between individual machines	5.1.5, Annex A.1		
	Stitching, riveting, eyeletting and attaching machines			
	- between tools	5.2.1.1 to 5.2.1.3		5.2.8
	Gang stitchers			
	- feeder	5.2.2.1 to 5.2.2.3		5.3.4.8, 5.2.6.1.5
	- stitching section	5.2.2.4		
	- drawing-in zone on thickness control	5.2.2.5		
	- transport chain	5.2.2.7		
	- starting with guards open	5.2.2.8, 7.1.7		
	- trimmer	5.2.2.10		
	Gathering machines			
	- feeder	5.2.3.1 to 5.2.3.3		5.3.4.8
	- hand-feeder, transport chain	5.2.3.4		5.2.10.2
	- gathering device (transport device)	5.2.3.5		
	- starting with guards open	5.2.3.7		
	Perfect binders			
	- book clamps	5.2.4.1		
	- gluing rollers	5.2.4.2		5.3.4.8
	- cover feeder	5.2.4.8		
	- delivery unit	5.2.4.9		
	- starting with guards open	5.2.4.11, 7.1.2.2		
	- milling head cutters	5.2.4.12, 7.1.2.1		
	Paper drills			
	- drill	5.2.5.1		
	- drill/clamp jaws	5.2.5.2		
	Book signature presses			
	- clamping plate/material	5.2.6		
	Book presses			
	- pressing plates	5.2.7.1, 5.2.7.2		5.2.10.2
	- pressing plates/machine enclosure	5.2.7.3		
	Sheet folding machines			
	- drawing-in zones of folding rollers	5.2.8.1		
	- cutting, creasing, perforating unit	5.2.8.2		
	- folding knife	5.2.8.3		
	- starting with guards open	5.2.8.4		
	Book production lines			
	- feed opening	5.2.9.1		
	- preheater, transport device	5.2.9.2		
	- pressing section	5.2.9.3		
	- glue section	5.2.9.4		
	- gauze section	5.2.9.6		
	- head banding section	5.2.9.7		5.2.1.1 b)
	- book cover magazine	5.2.9.8		5.3.4.8
	- cover bending section	5.2.9.9		
	- casing-in section	5.2.9.10		
	- starting with guards open	5.2.9.11, 7.1.7		

Table 1 *(continued)*

Significant hazards	Danger zone	Safety measures: reference to clauses in this standard	EN 292-1: 1991	prEN 1010-1: 2003
	Back rounding and pressing machines			
	- drawing-in zones of belts, transport chains, feed opening	5.2.10.1		
	- tipping section	5.2.10.2		
	- preheater	5.2.10.3		
	- pre-forming, back rounding, pressing sections	5.2.10.5		
	Backlining and head banding machines			
	- feed opening, belt feeding	5.2.11.1		
	- glue section, glue rollers	5.2.11.2		
	- gauze section	5.2.11.4		
	- head banding section	5.2.11.5		
	- pressing section	5.2.11.6		
	Casing-in machines			
	- transport finger	5.2.12.1		
	- book cover feeder	5.2.12.2		5.3.4.8
	- cover bending section	5.2.12.3		
	- forming section	5.2.12.4		
	- casing-in, gluing section	5.2.12.6		
	- pressing section	5.2.12.7		
	- delivery unit, delivery opening	5.2.12.8		
	Book cover crease forming machine			
	- feed and delivery openings	5.2.13.1		
	- tipping section, transport devices	5.2.13.2		
	- pressing section	5.2.13.3		
	- starting with guards open	5.2.13.5, 7.1.7		
	Machines for the production of envelopes			
	- reel unwinding unit	5.3.1.1		
	- feeder	5.3.1.2		5.3.5
	- printing unit	5.3.1.3.1, 5.3.1.3.2		5.3.4.8
	- longitudinal and cross scoring	5.3.1.4.1, 5.3.1.4.2		5.2.1.1
	- form cutting section	5.3.1.5		5.3.2.1
	- guide rollers	5.3.1.6.1, 5.3.1.6.2		
	- window cutting section	5.3.1.7		
	- window material conveying section	5.3.1.8.1to 5.3.1.8.4		
	- scraper gluing unit	5.3.1.9.1, 5.3.1.9.2		5.2.1.1
	- separating cutting unit	5.3.1.10.1 to 5.3.1.10.3		5.2.1.1
	- bottom flap folding section	5.3.1.11.1, 5.3.1.11.2		
	- transport rolls	5.3.1.12.1, 5.3.1.12.2		5.2.1.1
	- staggering wheel	5.3.1.13.1, 5.3.1.13.2, 7.1.3.1		5.2.1.1 b)
	- roller gluing unit	5.3.1.14.1to 5.3.1.14.4, 7.1.3.3		5.2.1.1
	- hot air dryers	5.3.1.15.1, 5.3.1.15.2		5.2.1.1
	- separation roller before aligner section	5.3.1.16		5.2.1.1
	- aligner section	5.3.1.17		
	- seal flap folding section	5.3.1.18		
	- separating disc delivery	5.3.1.19.1, 5.3.1.19.2		
	- starting with guards locked open	5.3.1.20.1, 7.1.7, 5.3.1.20.2, 7.1.4.1		5.2.3.4
	Machines for the production of sanitary items			
	- reel unwinding unit	5.3.2.1.1 to 5.3.2.1.4		5.3.5.1
	- smoothing and embossing section	5.3.2.2.1, 5.3.2.2.2		5.2.1.1
	- longitudinal cutting section	5.3.2.3		5.3.2

Table 1 *(continued)*

Significant hazards	Danger zone	Safety measures: reference to clauses in this standard	EN 292-1: 1991	prEN 1010-1: 2003
	- longitudinal folding section	5.3.2.4		
	- waste suction devices on cutting devices	5.3.2.5		
	- counting and transfer section	5.3.2.6		
	- product checking section	5.3.2.7		5.2.1.1
	- delivery unit	5.3.2.8.1, 7.1.4.2		
	- starting with guards open	5.3.2.9.1, 7.1.7, 5.3.2.9.2, 7.1.4.1		
	Inserting machines			
	- feeder	5.3.3.1, 5.3.3.2		5.3.4.8
	- transport device/drive elements	5.3.3.3		
	- starting with guards open	5.3.3.5, 7.1.5		
	Counter-stackers			
	- drawing-in zones of belts	5.3.4.1		
	- waste separator	5.3.4.2		
	- turntable	5.3.4.3		
	- delivery units	5.3.4.4		
	- stored energy (pneumatic system)	5.3.4.5		
	Paper embossing machines			
	- danger zones of web threading device	5.3.5.2		5.2.3.5
	- reel unwinding, rewinding units	5.3.5.3		5.3.5
	- guide rollers	5.3.5.4		5.2.1.1
	- stretch roller	5.3.5.5		
	- drawing-in zone of embossing roller/counter roller	5.3.5.6		
	- movement of counter roller	5.3.5.7, 7.1.5		5.2.3.2 a) 2)
	- rotary knives	5.3.5.9		
	Coaters			
	- danger zones of web threading device	5.4.1.2		
	- reel unwinding, rewinding units	5.4.1.3		5.3.5
	- guide rollers	5.4.1.4		
	- dosing gap	5.4.1.5		
	- coating unit	5.4.1.8		
	- engagement and disengagement of rollers	5.4.1.9		
	- drawing-in zones of belts	5.4.1.10		
	- continuous flow dryers	5.4.1.13.2,		
	- entire machine	5.4.1.13.5, 5.4.1.13.6, 7.1.6.3		
	Foil laminators			
	- reel unwinding, rewinding units	5.4.2.1.1		5.3.5
	- manual feeding	5.4.2.1.2		
	- guide rollers	5.4.2.1.3, 5.4.2.1.4		5.2.1.1
	- engagement and disengagement of laminating rollers	5.4.2.1.5		
	- drawing-in zones of laminating rollers	5.4.2.1.6		5.2.1.1
	- cutting unit	5.4.2.1.8		
	Laminators with glue application			
	- danger zones of web threading device	5.4.2.2.2		
	- reel unwinding, rewinding units	5.4.2.2.3		5.3.5
	- feeder, delivery unit	5.4.2.2.4		5.3.4
	- drawing-in zones of belts	5.4.2.2.5		
	- guide rollers	5.4.2.2.6		5.2.1.1
	- tear-resistant material web	5.4.2.2.7		
	- rotary knife	5.4.2.2.8		5.3.2
	- transport rolls	5.4.2.2.9		
	- glue unit	5.4.2.2.10		
	- laminating rollers	5.4.2.2.11, 5.4.2.2.12		5.2.3.2 a) 2)