



SLOVENSKI STANDARD

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Stroji za izdelavo obutve ter izdelkov iz usnja in njegovih imitacij – Stroji za cepljenje, brušenje, rezanje ter nanos in sušenje lepila – Varnostne zahteve

Footwear, leather and imitation leather goods manufacturing machines - Splitting, skiving, cutting, cementing and cement drying machines - Safety requirements

Maschinen zur Herstellung von Schuhen, Leder- und Kunstlederwaren - Spalt-, Schärf-, Schneid-, Klebstoffauftrag- und Klebstofftrockenmaschinen - Sicherheitsanforderungen

Machines de fabrication de chaussures et d'articles en cuir et en matériaux similaires - Machines à refendre, à parer, à couper, à encoller et à sécher l'adhésif - Prescriptions de sécurité

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61.060	Obuvala	Footwear

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EUROPEAN STANDARD
NORME EUROPÉENNE
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English version

**Footwear, leather and imitation leather goods manufacturing
machines - Splitting, skiving, cutting, cementing and cement
drying machines - Safety requirements**

Machines de fabrication de chaussures et d'articles en cuir
et en matériaux similaires - Machines à refendre, à parer, à
couper, à encoller et à sécher l'adhésif - Prescriptions de
sécurité

Maschinen zur Herstellung von Leder- und
Kunstlederwaren und Schuhwerk - Spalt-, Schärf-,
Schneid-, Klebstoffauftrags- und
Klebstofftrocknungsmaschinen - Sicherheitsanforderungen

This European Standard was approved by CEN on 8 August 2004.

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Foreword

This document (EN 13457:2004) has been prepared by Technical Committee CEN/TC 201 “Leather and imitation leather goods and footwear manufacturing machinery - Safety”, the secretariat of which is held by UNI.

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of an identical text or by endorsement, at the latest by April 2005, and conflicting national standards shall be withdrawn at the latest by April 2005.

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.

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

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Introduction

The extent to which hazards are covered is indicated in the scope of this document.

This document is a type C standard as stated in EN 1070.

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 and B standards, the provisions of this type C standard take precedence over the provisions of the other standards, for information for use and maintenance according to the provisions of this type C standard.

This document contains safety requirements for splitting, skiving, trimming, cementing and cement drying machines. It is prepared for the use of designers, manufacturers, suppliers and importers.

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1 Scope

1.1 This document applies to splitting, skiving, edge trimming, strip cutting, cementing and cement drying machines used in the manufacture of footwear, leather and imitation leather goods and other related components.

1.2 This document does not apply to:

- trimming machines with rotary milling tool for the purpose of trimming edges of material, see EN 930;
- splitting and band knife machines used in tanneries, see EN 13112;
- portable machines.

1.3 This document specifies safety requirements for construction, transport, installation, adjustment, setting, teaching or process change-over, operation, cleaning, maintenance, decommissioning, dismantling and, as far as safety is concerned, disposal for machines mentioned in 1.1.

It takes account of intended use, component and system failure.

1.4 This document deals with significant hazards relevant to the footwear, leather and imitation leather goods manufacturing industries. (For a list of hazards see Clause 4.)

The document does not deal with precise technical measures for reducing the risks of fumes and dusts detrimental to health.

The use of machines falling within the scope of this document for purposes other than those specified in 1.1, may give rise to hazards not considered during its preparation.

1.5 This document also applies to equipment for material handling and operations which are an integral part of the machine.

1.6 This document assumes the machines

- are operated by adequately trained persons
- are used with adequate workplace lighting conforming the local regulations or to EN 12464-1 and prEN 12464-2

1.7 This document applies to machines manufactured after its date of publication.

2 Normative references

The following referenced documents are indispensable for the application 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 294:1992, *Safety of machinery – Safety distances to prevent danger zones being reached by the upper limbs.*

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

EN 418:1992, *Safety of machinery – Emergency stop equipment, functional aspects – Principles for design.*

EN 547-1, *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, *Safety of machinery – Human body measurements – Part 2: Principles for determining the dimensions required for access openings.*

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EN 563:1994, *Safety of machinery – Temperatures of touchable surfaces – Ergonomics data to establish temperature limit values for hot surfaces.*

EN 614-1, *Safety of machinery – Ergonomic design principles – Part 1: Terminology and general principles.*

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 811, *Safety of machinery – Safety distances to prevent danger zones being reached by the lower limbs.*

EN 894-2, *Safety of machinery – Ergonomics requirements for the design of displays and control actuators – Part 2: Displays.*

EN 894-3, *Safety of machinery – Ergonomics requirements for the design of displays and control actuators – Part 3: Control actuators.*

EN 953:1997, *Safety of machinery – Guards – General requirements for the design and construction of fixed and movable guards.*

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

EN 982:1996, *Safety of machinery – Safety requirements for fluid power systems and their components – Hydraulics.*

EN 983:1996, *Safety of machinery – Safety requirements for fluid power systems and their components – Pneumatics.*

EN 999, *Safety of machinery – The positioning of protective equipment in respect of approach speeds of parts of the human body.*

EN 1005-2:2003, *Safety of machinery – Human physical performance – Part 2: Manual handling of machinery and component parts of machinery.*

EN 1005-3:2002, *Safety of machinery – Human physical performance – Part 3: Recommended force limits for machinery operation.*

EN 1037, *Safety of machinery – Prevention of unexpected start-up.*

EN 1050, *Safety of machinery – Principles for risk assessment.*

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

EN 1088:1995, *Safety of machinery – Interlocking devices associated with guards – Principles for design and selection.*

EN 1127-1:1997, *Explosive atmospheres – Explosion prevention and protection – Part 1: Basic concepts and methodology.*

EN 1760-1, *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, *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 12464-1, *Light and lighting – Lighting of work places – Part 1: Indoor work places.*

prEN 12464-2, *Light and lighting – Lighting of work places – Part 2: Outdoor work places.*

EN 12545:2000, *Footwear, leather and imitation leather goods manufacturing machines – Noise test code – Common requirements*.

EN 13478, *Safety of machinery – Fire prevention and protection*.

EN 60204-1:1997, *Safety of machinery – Electrical equipment of machines – Part 1: General requirements (IEC 60204-1:1997)*.

EN 60335-2-69:2003, *Household and similar electrical appliances – Safety – Part 2-69: Particular requirements for wet and dry vacuum cleaners, including power brush, for industrial and commercial use (IEC 60335-2-69:2002, modified)*.

EN 60947-5-1:2004, *Low-voltage switchgear and controlgear – Part 5-1: Control circuit devices and switching elements – Electromechanical control circuit devices (IEC 60947-5-1:2003)*.

EN 61496-1:2004, *Safety of machinery – Electro-sensitive protective equipment – Part 1: General requirements and tests (IEC 61496-1:2004, modified)*.

IEC 61496-2:1997, *Safety of machinery – Electro-sensitive protective equipment – Part 2: Particular requirements for equipment using active opto-electronic protective devices (AOPDs)*.

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

EN ISO 11688-1:1998, *Acoustics – Recommended practice for the design of low-noise machinery and equipment – Part 1: Planning (ISO/TR 11688-1:1995)*.

EN ISO 11688-2:2000, *Acoustics – Recommended practice for the design of low-noise machinery and equipment – Part 2: Introduction to the physics of low-noise design (ISO/TR 11688-2:1998)*.

EN ISO 11689, *Acoustics – Procedure for the comparison of noise-emission data for machinery and equipment (ISO 11689:1996)*.

EN ISO 12100-1:2003, *Safety of machinery – Basic concepts, general principles for design – Part 1: Basic terminology, methodology (ISO 12100-1:2003)*.

EN ISO 12100-2:2003, *Safety of machinery – Basic concepts, general principles for design - Part 2: Technical principles (ISO 12100-2:2003)*.

EN ISO 14122-1:2000, *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)*.

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100-1:2003, EN ISO 12100-2:2003, EN 1070:1998 and the following apply.

3.1

splitting machine (see Figure 1)

machine which separates leather or other splittable materials to a required thickness by cutting. The separated part is called split-leather. The material is fed to the cutting edge of the knife either between feeding rollers or, between a roller in a fixed or movable mounting, and a fixed guide

EN 13457:2004 (E)**3.2****skiving machine (see Figure 2)**

machine which profiles the edges of workpieces of leather or other materials. The material is fed to the cutting edge of a moving knife either between the feeding rollers and a following roller, or a fixed guide foot

3.3**cutting machines**

edge trimming and last margin and strip cutting machines

3.4**edge trimming and last margin machine (see Figures 3 and 4)**

machine for final preparation of the edges of lining and edges of the upper after lasting by means of reciprocating or oscillating knives

3.5**strip cutting machine (see Figure 5)**

stationary machine with circular rotating knives, roller plates or reciprocating knives for cutting straps, belts and strips of all kinds of leather as well as artificial leather, rubber, felt, plastic material. Any required cutting width can be obtained by inserting spacers between the knives

3.6**cementing machine (see Figures 6, 7, 8, 9, 10 and 11)**

machine applying cement to a workpiece by means of a roller, dipping device, nozzle, spraying nozzle or brush

3.7**cement drying machine (see Figure 12)**

machine for removing the carrier medium (solvent or water) from adhesive coated material prior to activation. A reactivation device can be incorporated

3.8**hazardous movement**

motion of a part of the machine or workpiece which may give rise to injury

3.9**danger points**

points on splitting, skiving, edge trimming, strip cutting, cementing and cement drying machines which may give rise to personal injury due to controlled-path movements of drives, machinery parts, tools or workpieces

3.10**fixed cover**

fixed guard installed to prevent by itself, or together with other parts, access to the danger zones from the covered side

3.11**fixed enclosing guard**

fixed guard which prevents access to a danger zone from all sides

3.12**fencing**

guard around danger zones of a machine or plant, which prevents uncontrolled access

3.13**operating area**

zones in or around a machine which include:

- the area of manual loading and unloading;
- the operator standing or sitting area

3.14**processing area**

area of the machine where the workpiece is being split, skived, trimmed, cut, cemented or cement dried

3.15**inlet safety device**

device installed to prevent access from the feeding area into the processing area. This device can be:

- a fixed or movable guard;
- a trip device

3.16**feeding gap**

area through which material is fed to the processing area

4 List of hazards

4.1 The significant hazards of splitting, skiving, edge trimming, strip cutting and cementing machines are outlined in 4.3 to 4.12 and set out in Table 1.

NOTE Typical outlines of these machines together with explanatory sketches of processing areas are given in Figures 1 to 12. The Figures are given for information only.

4.2 Before using this document it is important to carry out a risk assessment of the machine in question.

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Table 1 — List of hazards

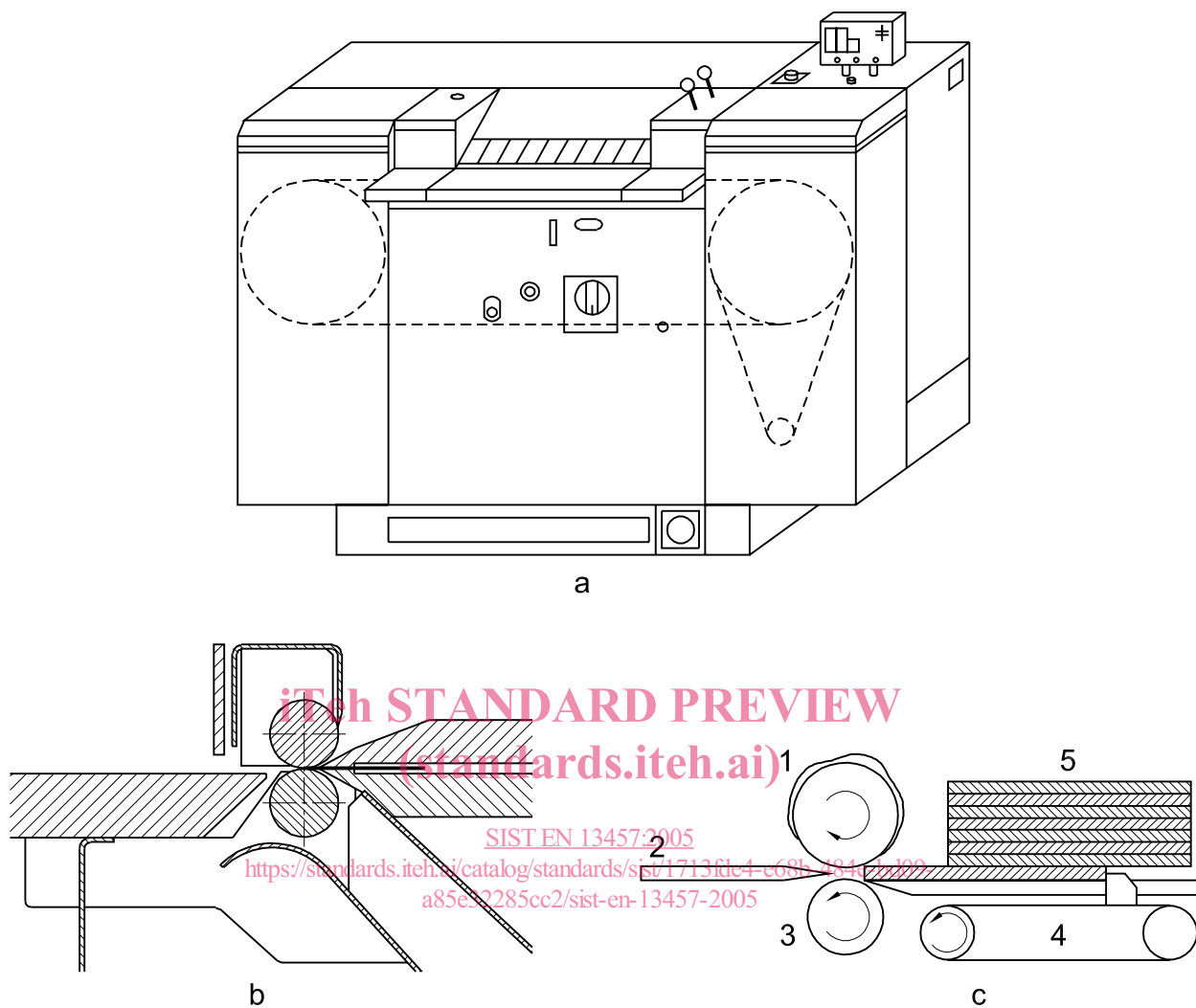
Danger zone or source of hazard		Type of hazard	Figure
4.3	Mechanical hazards		
4.3.1	Transmission and drive mechanisms	entanglement, drawing-in and trapping, friction, crushing, shearing	
4.3.2	Moving machinery parts of <ul style="list-style-type: none"> - electrical - hydraulic - pneumatic - mechanical units and workpieces 	crushing, shearing, impact, drawing-in	
4.3.3	Loading and unloading area <ul style="list-style-type: none"> - clamping device - guiding rollers - handling device - conveyor 	crushing drawing-in, crushing crushing, shearing shearing, drawing in	J.1 12
4.3.4	Processing area <ul style="list-style-type: none"> a) Splitting, skiving, edge trimming, last margin and strip cutting machines - cutting areas <ul style="list-style-type: none"> edge of running or stationary <ul style="list-style-type: none"> • splitting knife • skiving knife • edge trimming knife • last margin trimming knife • strip cutting knife - rotating grinding wheel 	cutting, severing abrasion, ejection of parts, injury to eyes	1 2 3 4 5

Table 1 — List of hazards (continued)

Danger zone or source of hazard	Type of hazard	Figure
<p>4.3.5</p> <ul style="list-style-type: none"> - setting, adjustment of <ul style="list-style-type: none"> • skiving, splitting, strip cutting and • edge trimming knife • grinding wheel • sparks from dressing of grinding wheel • falling down/out of the uptilted skiving machine by gravity b) Cementing machines <ul style="list-style-type: none"> area between transport roller and application roller area between fixed machine parts e. g. dip tank and moveable suspension device centrifugal device for counters and heels area between moving sole or last shoe and moving brush c) Cement drying machines <ul style="list-style-type: none"> area between fixed machine parts and conveyor Operator's standing area <ul style="list-style-type: none"> - uneven, sloping, slippery platforms - steps - protruding parts <p>4.3.6</p> <p>Movement of machine due to gravity while being transported</p>	<p>cutting, severing</p> <p>abrasion, bursting</p> <p>injuries to skin and eyes, ignition source</p> <p>crushing, shearing</p> <p>crushing, drawing-in, abrasion</p> <p>shearing, crushing</p> <p>trapping</p> <p>crushing</p> <p>trapping, drawing-in, shearing</p> <p>slipping</p> <p>tripping</p> <p>falling</p> <p>crushing, shearing</p>	<p>6, 7</p> <p>8</p> <p>8</p> <p>11</p> <p>12</p>
<p>4.4</p> <p>Electrical hazards</p> <p>Electrical contact, directly or indirectly, caused by</p> <ul style="list-style-type: none"> - component failure - insulation failure - incorrect design, installation or component specifications of the electrical equipment 	<p>electric shock, burns</p>	
<p>4.5</p> <p>Thermal hazards</p> <p>Accidental contact with</p> <ul style="list-style-type: none"> - roller dressed by hot melt cement - hot melt chamber - nozzle - reactivation unit - during suspension or by squirting 	<p>risk of burns</p>	
<p>4.6</p> <p>Fire hazards</p> <p>splitting, skiving machines</p> <ul style="list-style-type: none"> - the ignition of dust created by the action of the tool on the material being worked <p>cementing and cement drying machines</p> <ul style="list-style-type: none"> - the ignition of fumes of flammable liquid (solvent, solvent containing glue) 	<p>burns</p> <p>burns</p>	

Table 1 — List of hazards (concluded)

Danger zone or source of hazard		Type of hazard
4.7	Explosion hazards cementing and cement drying machines - the ignition of explosive atmosphere of inflammable liquid (solvent, solvent containing glue)	
4.8	Noise - hydraulic unit - pneumatic equipment - extraction equipment - machine parts and tools	loss of hearing, interference with speech communication and perception of acoustic signals
4.9	Emission of fumes or skin contact cementing and cement drying machines using solvent containing glue during - operation - setting - cleaning - overheating of hot melt - skin contact with solvents splitting and skiving machines - dust generated by cutting	risk of occupational disease (breathing system, skin, nervous system)
4.10	Neglect of ergonomic principles - inadequate local lighting - poor operator posture - excessive effort during loading and unloading - poor control layout and display identification - unsuitable height and size in relation to human body dimensions	risk of occupational disease accidents resulting from poor visibility fatigue physical and mental stress psychological stress musculo-skeletal injury/repetitive strain injury (work related upper limb disorder)
4.11	Functional disorders: - failure of control system (malfunction safety devices and machine control) - fault of energy supply (irregularity failure, unexpected reconnection) - electromagnetic disturbances	all possible hazards generated by unexpected dangerous movements (e. g. unexpected start or closing movement, prevention of stop function)
4.12	High pressure fluid ejection or ejection of part of a burst component by failure of hydraulic or pneumatic unit (broken hoses, fittings and pipework)	injury from hot oil or impact from flexible hoses

**Key**

- a Band knife splitting machine
- b Processing area
- c Splitting machine with fixed knife profiling splitting machine
- 1 Profile roller
- 2 Profiling roller
- 3 Counter roll
- 4 Drawing in mechanism
- 5 Feeding table

Figure 1 — Splitting machine