SLOVENSKI STANDARD

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Stroji za keramiko ï Varnost ï Natovarjanje in raztovarjanje finih keramiļ nih ploģļ ic

Ceramic machines - Safety - Loading and unloading of fine clay tiles

Keramikmaschinen - Sicherheit; Setzen und Abstapeln von feinkeramischen Platten

Machines de la céramique - Sécurité - Chargement et déchargement de carreaux céramiques

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English Version

Ceramic machines - Safety - Loading and unloading of fine clay tiles

Machines de la céramique - Sécurité - Chargement et déchargement de carreaux céramiques

Keramikmaschinen - Sicherheit - Beladen und Entladen von feinkeramischen Platten

This European Standard was approved by CEN on 12 October 2005.

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.

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Foreword

This European Standard (EN 13102:2005) has been prepared by Technical Committee CEN/TC 151 “Construction equipment and building material machines — 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of an identical text or by endorsement, at the latest by June 2006, and conflicting national standards shall be withdrawn at the latest by June 2006.

This European Standard 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 European Standard.

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.

Introduction

This European Standard is a type C standard as stated in EN ISO 12100-1:2003.

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

When compiling this standard it was assumed that:

— only trained persons work at the machine;

— components without specific requirements are:

  a) designed in accordance with the usual engineering practice and calculation codes, including all failure modes;

  b) of solid mechanical and electrical construction;

  c) made of materials with adequate strength and of suitable quality;

— general electrical hazards according to electrical safety standard EN 60204-1:1997;

— general hazards due to hydraulic, pneumatic equipment are dealt with according to relevant standards for common use such as EN 982:1996 and EN 983:1996;

— components are kept in good repair and working order, so that the required characteristics remain despite wear;

— specifications have been met about interface with other machinery;

— noise is not a significant hazard.

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 type C standard.

1 Scope

1.1 This European Standard applies to:

- machines for stacking or dehacking fired or unfired fine clay wall tiles and floor tiles on/from fixed or movable supports (see Figure A.1);
- machines for loading or unloading fired or unfired fine clay wall tiles and floor tiles into/from containers (see Figures A.2 and A.4);
- machines for loading or unloading fired or unfired fine clay wall tiles and floor tiles on/from stackable frames (see Figure A.3).

1.2 This European Standard deals with the significant hazards, hazardous situations and events relevant to ceramic machines for loading and unloading of fine clay tiles, when they are used as intended and under the conditions foreseen by the manufacturer (see Clause 4). This standard deals with the preventive measures to minimise these hazards which can arise during commissioning, the operation and maintenance.

1.3 The interface with the transport system for stacks, containers is covered by this European Standard for some examples not for all possibilities (see e.g. 5.6.4, 5.6.7).

1.4 This European Standard is not applicable to:

- machines for setting and dehacking of split tiles and roof tiles;
- auxiliary machinery such as vacuum generators.

1.5 This European Standard is not applicable to machines, which are manufactured before the date of publication of this European Standard by CEN.

2 Normative references

The following referenced documents are indispensable for the application of this European Standard. 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 distance 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 418:1992, *Safety of machinery — Emergency stop equipment, functional aspects — Principles for design*

EN 619:2002, *Continuous handling equipment and systems — Safety and EMC requirements for equipment for mechanical handling of unit loads*

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 999:1998, *Safety of machinery — The positioning of protective equipment in respect of approach speeds of parts of the human body*

EN 1037:1995, *Safety of machinery — Prevention of unexpected start-up*

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

EN 1525:1997, *Safety of industrial trucks — Driverless trucks and their systems*

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 14122-2:2001, *Safety of machinery — Permanent means of access to machinery — Part 2: Working platforms and walkways (ISO 14122-2:2001)*

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

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

EN 61310-1:1995, *Safety of machinery — Indication, marking and actuation — Part 1: Requirements for visual, auditory and tactile signals (IEC 61310-1:1995)*

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

3 Terms and definitions – Symbols and abbreviated terms

For the purposes of this European Standard, the terms and definitions given in EN ISO 12100-1:2003 apply.

Additional definitions specifically needed for this European Standard are added below:

3.1
tiles
fired or unfired fine clay articles for the use as ceramic cover of walls and floors

3.2
grab
device used to pick up items, e.g. stackable frames

3.3
container
movable rack used for transport and/or as a buffer store for tiles awaiting further processing

3.4
movable stacker
automatic device, being able to change position in two or more directions, designed for building columns of frames or tiles

3.5
compensator
equipment being able to collect surplus tiles and to deliver them if required

3.6
pushing or pulling mechanism
device for moving containers from the waiting position to the working position (setting, dehacking, loading, unloading) and vice-versa

3.7
vacuum lift
device used to take tiles by suction (see Figure A.1)

4 List of significant hazards

This clause contains all the significant hazards, hazardous situations and events, as far as they are dealt with in this standard, identified by risk assessment as significant for ceramic machines for loading and unloading of fine clay tiles and which require action to eliminate and reduce the risk.

Table 1 — List of significant hazards

	Hazards	Danger zone/Dangerous item	Preventive measures see clause
4.1	**Setting in stacks on fixed or movable supports (see Figure A.1)**		
4.1.1	Crushing, entanglement and impact	movement of the movable stacker (setting/dehacking device, vacuum device)	5.2.1, 5.4
4.1.2	Falling objects	carried tiles from the vacuum device	5.3
4.2	**Loading into containers**		
4.2.1	Crushing, entanglement	between rollers and devices which form rows or between roller and horizontal rods of containers	5.5.1
4.2.2	Crushing	downward movement of containers or of compensator or of roller and telescopic arm	5.2.1, 5.5.2
4.2.3	Crushing, shearing, entanglement and being trapped	horizontal movement of containers	5.6
4.3	**Setting on stackable frames**		
4.3.1	Crushing, entanglement and impact	movement of the stacker with or without frames	5.2.1
4.4	**Platforms accessible to persons**		
4.4.1	Crushing	by running machinery, between fixed and vertically moving parts	5.7.2, 5.7.4
4.5	**General**		
4.5.1	Impossibility of stopping in the best possible conditions, unexpected start-up	vacuum, external devices for container movement, machinery	5.3.3, 5.6.7, 5.7.2
4.5.2	Crushing, drawing-in	conveyors	5.2.3
4.5.3	Break-up	suspended parts	5.2.2, 5.7.3
4.5.4	Trip and fall	persons	5.7.1, 5.8.1, 5.8.2