



SLOVENSKI STANDARD

oSIST prEN 15571:2007

01-januar-2007

Stroji in obrati za miniranje in obdelavo naravnega kamna - Varnost - Zahteve za stroje za dodelavo površine

Machines and plants for minig and tooling of natural stones - Safety - Requirements for surface finishing machines

Maschinen und Anlagen zur Gewinnung und Bearbeitung von Naturstein - Sicherheit - Anforderungen für Flächenschleifmaschinen

Machines et équipements pour l'exploitation et l'usinage de pierres naturelles - Sécurité - Prescriptions relatives aux machines de finition de surface

Ta slovenski standard je istoveten z: prEN 15571

ICS:

| | | |
|-----------|----------------------------|--------------------------------------|
| 25.080.50 | Brusilni in polirni stroji | Grinding and polishing machines |
| 73.120 | Oprema za predelavo rudnin | Equipment for processing of minerals |

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 15571

September 2006

ICS

English Version

Machines and plants for minig and tooling of natural stones - Safety - Requirements for surface finishing machines

Maschinen und Anlagen zur Gewinnung und Bearbeitung
von Naturstein - Sicherheit - Anforderungen für
Flächenschleifmaschinen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 151.

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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COMITÉ EUROPÉEN DE NORMALISATION
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Contents

Page

| | |
|--|----|
| Foreword..... | 3 |
| Introduction | 4 |
| 1 Scope | 4 |
| 2 Normative references | 4 |
| 3 Terms and definitions – Symbols and abbreviated terms..... | 6 |
| 4 List of significant hazards | 10 |
| 5 Safety requirements and/or protective measures | 10 |
| 5.1 Mechanical hazards | 10 |
| 5.1.1 General..... | 10 |
| 5.2 Electrical hazards | 13 |
| 5.3 Electromagnetic Radiation | 14 |
| 5.4 Hydraulic and pneumatic components..... | 14 |
| 6 Verification of safety measures and/or protective measures | 14 |
| 7 Information for use | 14 |
| 7.1 Marking | 14 |
| 7.2 Other information..... | 14 |
| 7.3 Accompanying documents (in particular: Instruction handbook) | 15 |
| Annex A (normative) Pictograms | 18 |
| Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC | 19 |

Figures

| | |
|---|----|
| Figure 1 — Surface finishing machine with transversal bridge..... | 6 |
| Figure 2 — Surface finishing machine with longitudinal bridge | 7 |
| Figure 3 — Swing grinding (polishing) head | 7 |
| Figure 4 — Planetary grinding (polishing) head..... | 8 |
| Figure 5 — Disk grinding(polishing) head | 8 |
| Figure 6 — Grinding (polishing) block | 8 |
| Figure A.1 — "Read the manual" (see ISO 7000:1989) | 18 |
| Figure A.2 — "Hearing protection must be worn" | 18 |

Foreword

This document (prEN 15571:2006) 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 document is currently submitted to the CEN Enquiry.

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 is normative and contains pictograms.

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Introduction

This document is a type C standard as defined in EN ISO 12100.

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 type C standard.

1 Scope

This standard applies for stationary surface finishing machines in a continuous operation and surface finishing machines to be moved on rails, in the following called machines, which are used to grind (polish) horizontal surfaces of raw hard stone slabs being normally roughly sawn, e.g. granite and other work pieces similar to stone.

These machines are provided to be operated with grinding heads on which the proper tool – the grinding (polishing) block – is seated in a holder.

This standard deals with all significant hazards, hazardous situations and events relevant to surface finishing machines, when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer

(see clause 4). This standard specifies the appropriate technical measures to eliminate or reduce risks arising from the significant hazards.

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This European Standard does not deal with:

- metal grinding machines;
- wood grinding machines;
- mobile machines on a running gear, which is running on the ground;
- hand-held grinding machines;
- machines intended for operation in a potentially explosive atmosphere;
- upstream and downstream conveying elements for transporting the workpieces.

This European Standard does not deal with significant hazards associated with noise.

This document is not applicable to machinery which are 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 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 418:1992, *Safety of machinery — Emergency stop equipment, functional aspects; principles for design*
- EN 953:1997, *Safety of machinery — General requirements for the design and construction of guards (fixed, movable)*
- 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 1037:1995, *Safety of machinery — Prevention of unexpected start-up*
- EN 1050:1996, *Safety of machinery — Principles for risk assessment*
- EN ISO 12100-1:2003, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology*
- EN ISO 12100-2:2003, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles*
- EN ISO 14122-1:2001, *Safety of machinery — Stationary accesses to mechanical installations — Part 1: Selection of a fixed access between two levels*
- EN ISO 14122-2:2001, *Safety of machinery — Stationary accesses to mechanical installations — Part 2: Platforms and footbridges*
- EN ISO 14122-3:2001, *Safety of machinery — Stationary accesses to mechanical installations — Part 3: stairs, stepladders and railings*
- EN ISO 14122-4:2004, *Safety of machinery — Stationary Accesses to mechanical installations — Part 4: stationary vertical ladders*
- prEN 60204-1:2006, *Electrical Equipment of Machines — Part 1: General Requirements*
- EN 60529:1991, *Systems of protection by cases (IP Code) (IEC 529:1989)*
- prEN 61000-6-1:2006, *Electromagnetic compatibility (EMC) — Part 6-1: Generic standards — Immunity for residential, commercial and light- industrial environments*
- EN 61000-6-2:2005, *Electromagnetic compatibility (EMC) — Part 6-2: Generic standards — Immunity for industrial environments*
- prEN 61000-6-3:2006, *Electromagnetic compatibility (EMC) — Part 6-3: Generic standards — Emission standard for residential, commercial and light-industrial environments*
- prEN 61000-6-4:2006, *Electromagnetic compatibility (EMC) — Part 6-4: Generic standards — Emission standard for industrial environments*

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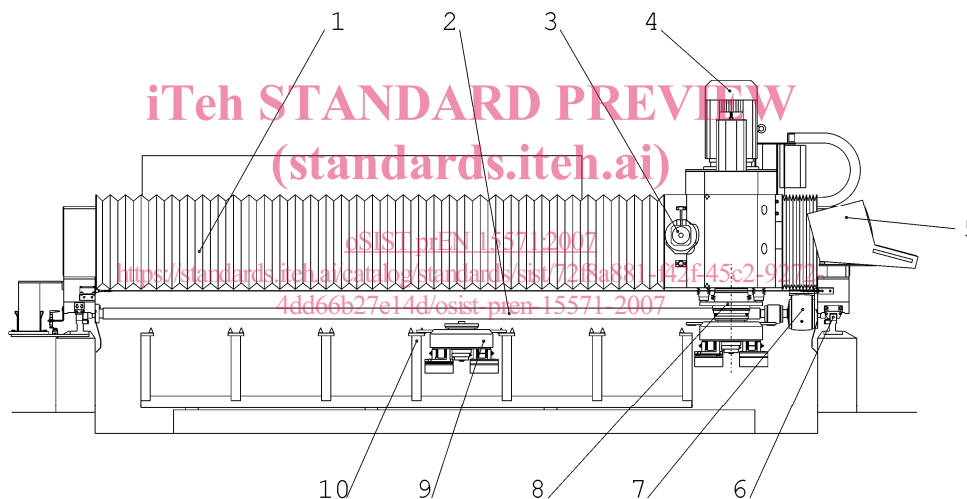
3 Terms and definitions – Symbols and abbreviated terms

For the purposes of this document, the definitions given in EN ISO 12100 apply. Additional definitions specifically needed for this document are added below :

3.1 surface finishing machine with mobile transversal bridge (track machines)
 machine with stationary work piece table and a movable bridge on a machine track equipped with mobile grinding tool slides for grinding (polishing) horizontal surfaces of stone slabs by an appropriate grinding (polishing) head as tool. During the grinding (polishing) process the tool is cooled by water. Additionally the water serves also for suppressing the development of dust during operation.

The machine can be equipped with :

- automatic grinding (polishing) head change system with tool – magazine;
- grinding (polishing) head change system with bayonet locking;
- accessory units for milling;
- accessory units for polishing



Key

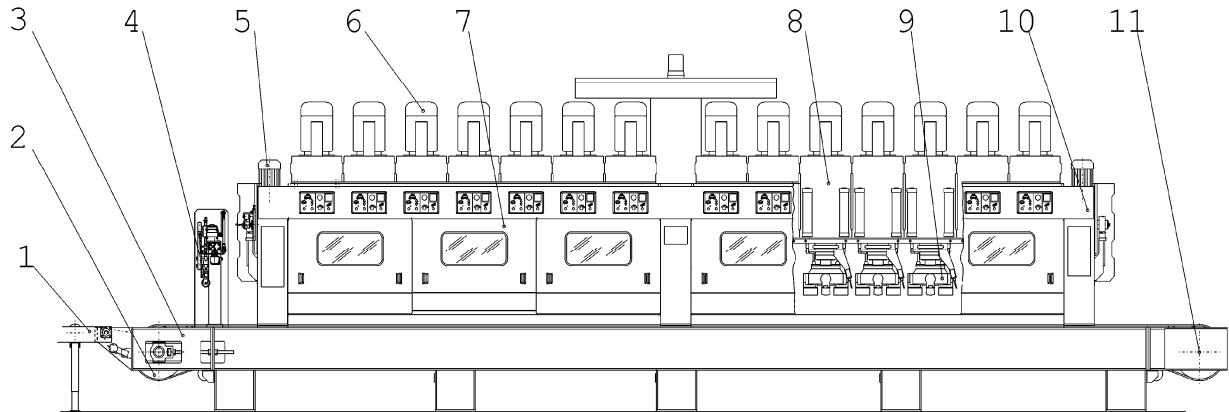
- | | |
|-------------------------------|------------------------------------|
| 1 bridge | 6 track |
| 2 running gear | 7 drive of longitudinal adjustment |
| 3 drive of lateral adjustment | 8 tool slide |
| 4 drive of grinding spindle | 9 tool |
| 5 control desk | 10 tool magazine |

Figure 1 — Surface finishing machine with transversal bridge

3.2 surface finishing machine with longitudinal bridge and belt conveyor (continuous operating machine)
 machine with belt conveyor table and a longitudinal bridge for grinding (polishing) the horizontal surface of stone slabs with an appropriate grinding (polishing) head as tool. During the grinding (polishing) process the tool is cooled by water. Additionally the water serves also for suppressing the development of dust during operation.

The machine can be equipped with:

- grinding (polishing) head change system with bayonet locking;
- accessory units for milling;
- accessory units for polishing



Key

- | | | | |
|---|--|----|------------------------|
| 1 | loading roller track | 7 | cover (sliding doors) |
| 2 | tension drum | 8 | tool slide |
| 3 | belt conveyor | 9 | tool |
| 4 | measuring device for vertical and lateral adjustment | 10 | bridge |
| 5 | drive of lateral adjustment | 11 | drive of belt conveyor |
| 6 | drive of grinding spindle | | |

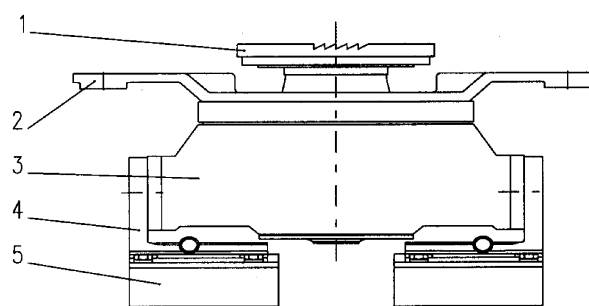
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Figure 2 — Surface finishing machine with longitudinal bridge

3.3

grinding (polishing) head

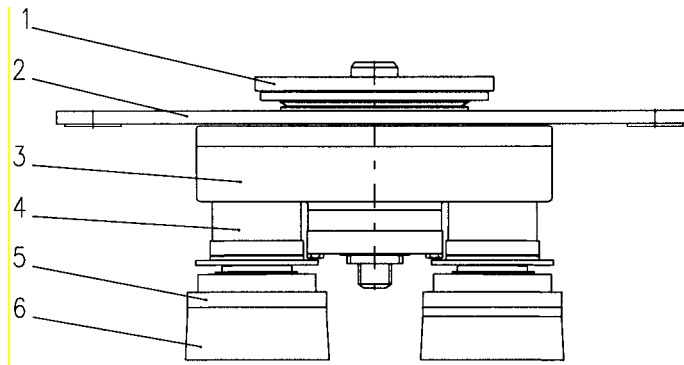
different types of grinding (polishing) heads are used as tool to pick-up the proper grinding (polishing) blocks. These serve for the generation of an additional relative movement between grinding (polishing) block and work piece.



Key

- | | | | |
|---|---|---|-------------------------------------|
| 1 | toothed wheel | 4 | grinding (polishing) segment holder |
| 2 | grinding (polishing) segment carrier | 5 | grinding (polishing) segment |
| 3 | enclosure of grinding (polishing) segment | | |

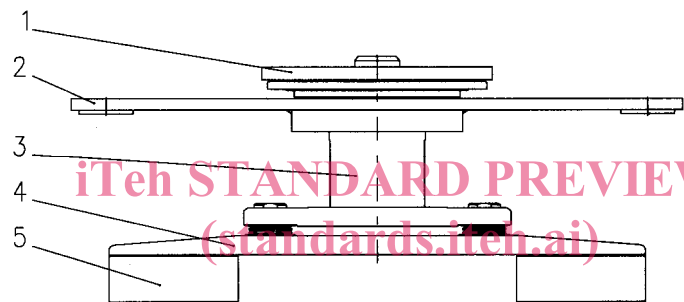
Figure 3 — Swing grinding (polishing) head



Key

- | | | | |
|---|---|---|-------------------------------------|
| 1 | toothed wheel | 4 | flange bearing |
| 2 | grinding (polishing) head carrier | 5 | grinding (polishing) segment holder |
| 3 | enclosure of grinding (polishing) segment | 6 | grinding (polishing) segment |

Figure 4 — Planetary grinding (polishing) head



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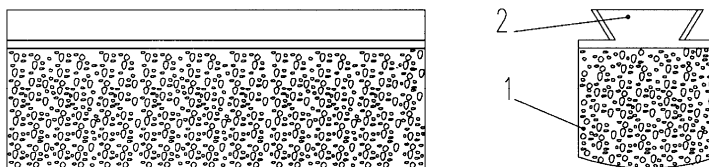
Key

- | | | | |
|---|-----------------------------------|---|-------------------------------------|
| 1 | toothed wheel | 4 | grinding (polishing) segment holder |
| 2 | grinding (polishing) disk carrier | 5 | grinding (polishing) segment |
| 3 | grinding (polishing) disk flange | | |

Figure 5 — Disk grinding (polishing) head

3.4 grinding (polishing) block

the grinding (polishing) blocks (grinding (polishing) segments) make the contact between the tool holder and the tool and remove the material of the work piece to be processed. During this process they also undergo a wear



Key

- | | |
|---|------------------------------|
| 1 | grinding (polishing) segment |
| 2 | holder saddle with dovetail |

Figure 6 — Grinding (polishing) block

3.5 other terms

3.5.1 block

a block is square-shaped natural stone which is manufactured as half-finished product by processing with the ashlar quarrying

3.5.2 slab

a slab is a work piece in form of a plate cut by saw from a block and provided for further processing

3.5.3 track

guide element for the bridge, which is usually stationary and embedded in the foundation or foundation walls

3.5.4 running gear

the running gear is the guide element on the track and carries the bridge

3.5.5 semiportal

if the track is situated near the bottom and not on foundation walls we talk about a lowered running gear and a semiportal machine

3.5.6 bridge

the bridge is the connection between the right and the left running gear saddle

3.5.7 main drive

the main drive generates the tool moving

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3.5.8 feed drive

the feed drive is the drive of the adjusting axles (vertical adjustment, infeed etc.)

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