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Premični stroji za gradnjo cest - Varnost - 3. del: Posebne zahteve za stroje za stabiliziranje tal in stroje za obnavljanje

Mobile road construction machinery - Safety - Part 3: Specific requirements for soil-stabilising machines and recycling machines

Bewegliche Straßenbaumaschinen - Sicherheit - Teil 3: Besondere Anforderungen an Bodenstabilisierungsmaschinen und Recyclingmaschinen

Machines mobiles pour la construction de routes - Sécurité - Partie 3: Prescriptions spécifiques pour engins de stabilisation de sol et machines de recyclage

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Mobile road construction machinery - Safety - Part 3: Specific requirements for soil-stabilising machines and recycling machines

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This European Standard was approved by CEN on 17 August 2006 and includes Amendment 1 approved by CEN on 11 September 2008.

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Foreword

This document (EN 500-3:2006+A1:2008) 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of an identical text or by endorsement, at the latest by April 2009, and conflicting national standards shall be withdrawn at the latest by December 2009.

This document supersedes [A1] EN 500-3:2006 [A1].

This document includes Amendment 1, approved by CEN on 2008-09-11.

The start and finish of text introduced or altered by amendment is indicated in the text by tags [A1] [A1].

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).

[A1] For relationship with EU Directive(s), see informative Annexes ZA and ZB, which are integral parts of this document. [A1]

EN 500 ”Mobile road construction machinery — Safety” comprises the following parts:

— Part 1: Common requirements;

— Part 2: Specific requirements for road-milling machines;

— Part 3: Specific requirements for soil-stabilising machines and recycling machines;

— Part 4: Specific requirements for compaction machines;

— Part 6: Specific requirements for paver-finishers.

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

Introduction

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

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 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 part of EN 500 specifies the safety requirements for soil-stabilising machines and recycling machines as defined in Clause 3 and deals with all significant hazards, hazardous situations and events relevant to these machines, when they are used as intended and under conditions of misuse which are reasonably foreseeable.

This part of EN 500 contains additional requirements to EN 500-1 “Common requirements”.

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 500-1:2006, *Mobile road construction machinery — Safety — Part 1: Common requirements.*

EN 811:1996, *Safety of machinery — Safety distances to prevent danger zones being reached by the lower limbs.*

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

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 ISO 3450:1996, *Earth-moving machinery — Braking systems of rubber-tyred machines — Systems and performance requirements and test procedures (ISO 3450:1996).*

EN ISO 3744:1995, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Engineering method in an essentially free field over a reflecting plane (ISO 3744:1994).*

EN ISO 11201:1995, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a work station and at other specified positions — Engineering method in an essentially free field over a reflecting plane (ISO 11201:1995).*

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

ISO 8643:1997, *Earth-moving machinery — Hydraulic excavator and backhoe loader boom-lowering control device — Requirements and tests.*

3 Terms and definitions

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

3.1
soil-stabilising machines
mobile machines used for the purpose of mixing fillers and/or binders, e.g. cement, lime, with natural soil to improve the mechanical and physical properties of the soil material

3.2
recycling machines
mobile machines used for the reinstatement of road surfaces using self-removed material mixed with fillers and/or binders and reapplied in situ

3.3
mixing equipment
power-driven drums which rotate during the mixing operation. The surface of the drums is equipped with tools for the mixing process

4 List of significant hazards

Annex F of EN 500-1:2006 applies with the following exception:

Table 1

5	**Hazards generated by vibration**
5.1	Hand-arm vibrations

5 Safety requirements and/or protective measures

5.1 Lighting, signalling and marking lights and reflex-reflector devices

5.2 of EN 500-1:2006 applies.

5.2 Operation and handling

5.3 of EN 500-1:2006 applies.

5.3 Operator's station

5.4 of EN 500-1:2006 applies with the following addition and exception:

— the operator's station of soil-stabilising machines shall be provided with a cab to protect the operator against dust generated by the mixing process.

5.4 Operator's seat

5.5 of EN 500-1:2006 applies.

5.5 Controls and indicators

5.6 of EN 500-1:2006 applies.

5.6 Starting

5.7 of EN 500-1:2006 applies.

5.7 Stopping

5.8 of EN 500-1:2006 applies with the following addition:

— it shall be possible to stop the mixing equipment, even while the power unit (engine) is running;

— brake systems of wheeled soil-stabilising machines shall comply with Annex A.

5.8 Access system to operator's station and to maintenance points

5.9 of EN 500-1:2006 applies with the following exception:

— the height of the lowest step of access system to the operator's station may be 700 mm above ground level;

— the lowest three steps (or less) may be mounted flexibly in the lateral direction. In this case, those steps shall be mounted as a unit.

5.9 Protection

5.9.1 General

5.10.1 to 5.10.3 of EN 500-1:2006 apply with the following additions:

5.9.2 Mixing equipment

5.9.2.1 General

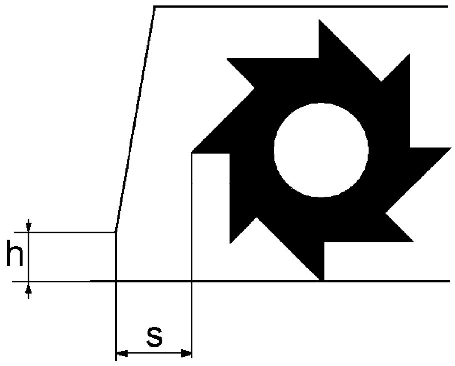
The mixing equipment shall be safeguarded to prevent accidental physical contact and to retain debris and parts possibly ejected.

Guards shall comply with Clauses 6 and 7 of EN 953:1997.

Guards and flaps shall remain permanently attached, even when they are opened.

5.9.2.2 Rear guards

With regard to hazards present in the foot area, EN 811 shall be observed. For h ≤ 120 mm, the table in Figure 1 shall be observed.



h mm	s mm
≤ 100	≥ 250
≤ 120	≥ 280

Figure 1 — Mixing equipment

5.9.2.3 Side guards

Power-operated side panels of the drum guards, intended to be controlled during operation of the machine, shall comply with the following design criteria:

— the control shall not lock in any position except in neutral (hold-to-run control),

— the control shall be fitted out of danger areas,

— a yellow flashing light shall be fitted within the danger areas and shall be activated whenever the controls are operated

and

— the power-operated side panels shall automatically return to their normal (pre-set) position when the controls are released.

5.9.3 Height-adjustable devices

Elevating devices on the machines shall be provided with a locking device to ensure safe elevation when maintenance is to be performed under the elevated devices.

If hydraulic load-holding devices to prevent any unintended lowering of a height-adjustable hydraulic system are used, they shall comply with ISO 8643.

Mechanical locking devices can be integrated with the elevating devices or can be a permanently attached separate unit. The operation manual shall include instruction on the use of the mechanical locking device.

5.10 Pressurised systems

5.11 of EN 500-1:2006 applies.

5.11 Fire protection

5.12 of EN 500-1:2006 applies.