



SLOVENSKI STANDARD

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Stroji za obdelovanje cestišč - Varnostne zahteve

Road surface treatment machines - Safety requirements

Maschinen für die Straßenoberflächenbehandlung - Sicherheitsanforderungen

Machines pour le traitement des surfaces routières - Prescriptions de sécurité

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Road surface treatment machines - Safety requirementsMachines pour le traitement des surfaces routières -
Prescriptions de sécuritéMaschinen für die Straßenoberflächenbehandlung -
Sicherheitsanforderungen

This European Standard was approved by CEN on 19 September 2015.

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COMITÉ EUROPÉEN DE NORMALISATION
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CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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EN 13020:2015 (E)**European foreword**

This document (EN 13020:2015) 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of an identical text or by endorsement, at the latest by May 2016, and conflicting national standards shall be withdrawn at the latest by May 2016.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13020:2004+A1:2010.

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.

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, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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Introduction

This document is a type C standard as stated 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.

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EN 13020:2015 (E)

1 Scope

This European Standard applies to road surface treatment machines, which are in particular:

- binder sprayers [or sprayers];
- chipping spreaders [or spreaders];
- machines for surface repairs (binder sprayer chipping spreader [or sprayer spreader]);
- mastics asphalt mixers;
- joint sealer;
- micro-surfacing machines/slurry machines;
- cold asphalt laying / micro-asphalt-paving machines

(see also Clause 3).

Road surface treatment machines can be mounted on a carrier vehicle, trailer or articulated truck, combining to form an integral unit. It is also possible to mount a road surface treatment machine on its own chassis construction and propulsion system (self-propelled or pedestrian-controlled). In all cases the machine and chassis form an integral unit.

Directives and standards for the vehicular truck chassis aspects, termed 'carrier vehicle' in this document, would be those relative to that equipment, even where specific modifications have been made to realize the road surface treatment application. The use in public road traffic is governed by the national regulations.

This European Standard deals with all significant hazards identified through a risk assessment relevant to road surface treatment machines when they are used as intended and under the conditions foreseen by the manufacturer (see Clause 4). This European Standard does not deal with significant hazards associated with pressurized tanks, and EMC. This European Standard specifies the appropriate technical measures to eliminate or reduce risks arising from the significant hazards associated with machine operation, setting and adjustments, load discharge and routine maintenance.

This European Standard does not include requirements for the carrier vehicles or special constructions. These are covered in directives related to the construction of vehicles. Demountable bodywork systems (e.g. demountable containers) are specified in other standards. Vibrations are not dealt with in the standard, because for all machines of this family vibration is not a relevant hazard due to the low working speed and special working conditions (e.g. flat surface).

This European Standard does not deal with the risks associated with the operation of the machines in potentially explosive atmospheres.

This European Standard does not include requirements of the 94/55/EC Directive related to transport of dangerous goods by road but contains additional specifications in link with these existing requirements.

This European Standard applies to machines which are manufactured after the date of approval of this standard by CEN.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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+A1:2009, *Mobile road construction machinery — Safety — Part 1: Common requirements*

EN 12999:2011+A1:2012, *Cranes — Loader cranes*

EN ISO 2860:2008, *Earth-moving machinery — Minimum access dimensions (ISO 2860:1992)*

EN ISO 2867:2011, *Earth-moving machinery — Access systems (ISO 2867:2011)*

EN ISO 3457:2008, *Earth-moving machinery — Guards — Definitions and requirements (ISO 3457:2003)*

EN ISO 3744:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Engineering methods for an essentially free field over a reflecting plane (ISO 3744:2010)*

EN ISO 4413:2010, *Hydraulic fluid power — General rules and safety requirements for systems and their components (ISO 4413:2010)*

EN ISO 4871:2009, *Acoustics — Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996)*

EN ISO 11201:2010, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections (ISO 11201:2010)*

EN ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction (ISO 12100:2010)*

EN ISO 13732-1:2008, *Ergonomics of the thermal environment — Methods for the assessment of human responses to contact with surfaces — Part 1: Hot surfaces (ISO 13732-1:2006)*

EN ISO 13857:2008, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2008)*

EN ISO 14119:2013, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection (ISO 14119:2013)*

ISO 6750:2005, *Earth-moving machinery — Operator's manual — Content and format*

3 Terms and definitions

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

3.1

binder sprayer [or sprayer]

machine intended to spray automatically or manually a film of binder (bitumen/emulsion) on the road surface at a predetermined rate. Storage of the binder is provided by tanks (tank type sprayers) mounted usually on a carrier vehicle (see informative Annex B, Figure B.1) or by barrels (barrels type sprayers)

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Note 1 to entry: The machine can be mounted on a semi-trailer, a trailer (see informative Annex B, Figure B.2) or can be self-propelled.

Note 2 to entry: Bitumen is a dangerous good in regard to TDG (94/55/EC -Transport of dangerous goods) regulation.

Note 3 to entry: Bitumen emulsion is a product with a temperature below 100 °C and out of the scope of TDG (94/55/EC -Transport of dangerous goods) regulation.

3.2
chipping spreader [or spreader]
machine used to spread a layer of chippings on the pavement at a predetermined rate (see informative annex)

Note 1 to entry: Some of these machines can be equipped with a loading device (e.g. bucket, stick, boom).

Note 2 to entry: Several types of chippings spreaders may be identified e.g. mounted on a carrier vehicle (truck) or self-propelled.

3.3
binder sprayer chipping spreader [or sprayer spreader]
machine used for coating roads with binder (bitumen/emulsion) and with aggregates in a single operation

Note 1 to entry: Bitumen is a dangerous good in regard to TDG (94/55/EC -Transport of dangerous goods) regulation.

Note 2 to entry: Bitumen emulsion is a product with a temperature below 100 °C and out of the scope of TDG (94/55/EC -Transport of dangerous goods) regulation.

3.4
mastic asphalt mixer
machine consisting of a tank with horizontal or vertical mixer (agitating shaft and stirrer arms) for preparing transporting, heating (over 100 °C), mixing and discharging mastic asphalt

Note 1 to entry: This machine can be mounted on a carrier-vehicle, semi-trailer, trailer or can be self-propelled.

3.5
joint sealer
machine consisting of a tank with horizontal or vertical mixer and designed for melting and preparing mastics (over 100 °C) that are used in treating roadway joints and cracks

3.6
micro-surfacing machines/slurry machines
machine usually mounted on a truck (or a semi-trailer) designed for the production of slurries and micro-surfacing which contains all necessary components (e.g. emulsion, water, cement, additives) in separated tanks

3.7
demountable equipment
equipment intended to be demounted from and remounted to the carrier vehicle, e.g. chipping spreader or binder sprayer [or sprayer]

4 List of significant hazards

This clause contains all hazards and hazardous situations, as far as they are dealt with in this document, identified by risk assessments as significant for this type of machinery and which require action to eliminate or reduce the risk.

Table 1 — List of significant hazards

Hazards	Relevant clauses					
	Binder sprayer [or sprayer]	Chipping spreader [or spreader]	Binder sprayer chipping spreader [or sprayer spreader]	Mastic asphalt mixer and joint sealer	Cold asphalt laying machine/ micro-asphalt paving machine	
1.1	Crushing hazard	5.2.6 5.2.7	5.2.6 5.2.7 5.4.2	5.2.6 5.2.7	5.2.6 5.2.7	5.2.6 5.2.7
1.2	Entanglement hazard	5.2.14.2	5.2.14.2	5.2.14.2	5.2.14.2 5.6.4 5.6.5	5.2.14.2 5.7.1 5.7.2
1.3	High pressure fluid ejection hazard	5.2.1 5.3.1 5.3.5 5.3.6 7.4	5.2.1	5.2.1 5.3.1 5.3.5	5.2.1	5.2.1
1.4	Loss of stability (of machinery and machine parts)	5.2.5 5.2.6	5.2.5 5.2.6		5.2.5 5.2.6	5.2.5 5.2.6
1.5	Slip, trip and fall hazards in relationship with machinery (because of their mechanical nature)	5.2.10 5.2.11 5.2.12 5.3.2 5.3.3	5.2.10 5.2.11 5.2.12 5.4.1	5.2.10 5.2.11 5.2.12 5.3.2 5.3.3 5.4.1	5.2.10 5.2.11 5.2.12 5.6.1	5.2.10 5.2.11 5.2.12 5.7.3
2.1	Burns and scalds, by a possible contact of persons, by flames or explosions and also by the radiation of heat sources	5.2.2 5.2.3 5.2.13 5.3.1 5.3.4 5.3.5 5.3.9 7.3	5.2.2 5.2.3	5.2.2 5.2.3 5.2.13 5.3.4 5.3.9 7.3	5.2.2 5.2.3 5.2.13 5.6.1 5.6.6	5.2.2 5.2.3

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Hazards	Relevant clauses				
	Binder sprayer [or sprayer]	Chipping spreader [or spreader]	Binder sprayer chipping spreader [or sprayer spreader]	Mastic asphalt mixer and joint sealer	Cold asphalt laying machine/ micro-asphalt paving machine
3.1 Hazards resulting from contact with or inhalation of harmful fluids, gases, mists, fumes and dusts.	5.2.4 7.3	5.2.4	5.2.4 7.3	5.2.4	5.2.4
3.2 Fire or explosion hazard	5.2.13.1 5.3.4 5.3.7 5.3.8		5.2.13.1 5.3.4 5.3.7 5.3.8	5.2.13.1 5.6.1	
4.1 Hazards generated by noise, resulting in: - Loss of hearing (deafness), and other physiological disorders (e.g. loss of balance, lowered vigilance) - Interference with oral communication, acoustic signals, etc.	5.2.18 Annex D	5.2.18 Annex D	5.2.18 Annex D	5.2.18 Annex D	5.2.18 Annex D
4.2 Unhealthy postures or excessive efforts		5.3.1	5.3.1		
4.3 Inadequate consideration of human hand, arm or foot-leg anatomy	5.2.8 5.2.9 5.2.14	5.2.8 5.2.9 5.2.14	5.2.8 5.2.9 5.2.14	5.2.8 5.2.9 5.2.14	5.2.8 5.2.9 5.2.14 5.7.1
4.4 Neglected use of personal protection equipment	7.2	7.2	7.2	7.2	7.2
4.5 Inadequate area lighting				5.6.2	
4.6 Human errors	7.2	7.2	7.2	7.2	7.2
5 Hazards combinations	7.2	7.2	7.2	7.2	7.2
6.1 Unexpected ejection of machine parts or fluids	5.3.7 7.3		5.3.7 7.3		
6.2 Failure, malfunction of control systems (unexpected start-up, unexpected overrun)	5.2.14	5.2.14	5.2.14	5.2.14 5.6.3 5.6.4	5.2.14 5.7.1
6.3 Errors of fitting	5.2.7	5.2.7	5.2.7	5.2.7	5.2.7
7.1 All kinds of guard				5.6.6	
7.2 All kinds of safety related (protection) devices				5.6.5 5.6.6	5.7.1 5.7.2

Hazards		Relevant clauses				
		Binder sprayer [or sprayer]	Chipping spreader [or spreader]	Binder sprayer chipping spreader [or sprayer spreader]	Mastic asphalt mixer and joint sealer	Cold asphalt laying machine/ micro-asphalt paving machine
7.3	Safety signs and signals	5.2.6 5.2.8	5.2.6 5.2.8	5.2.6 5.2.8	5.2.6 5.2.8	5.2.6 5.2.8
7.4	Essential equipment and accessories for safe adjusting and/or maintaining	7.2	7.2	7.2	7.2	7.2
7.5	Equipment for evacuating gases etc.	5.2.4	5.2.4	5.2.4	5.2.4	5.2.4
8	Hazards resulting from the machine mobility	5.2.9	5.2.9	5.2.9	5.2.9	5.2.9

5 Safety requirements and/or measures

5.1 General

The machines shall comply with the safety requirement and/or measures of this clause. In addition the machines shall be designed according to the principles of EN ISO 12100 for hazards relevant but not significant which are not dealt with in this document (e.g. sharp edges).

For the application of the type B standards EN ISO 4413 and EN ISO 13732-1 which are referred to in this document, the manufacturer shall carry out an adequate risk assessment relating to those requirements for which a special safety measure or category is necessary.

This specific risk assessment should be part of the general risk assessment relating to the hazards not covered by this document.

5.2 General and common requirements

5.2.1 Hydraulic systems

Hydraulic systems shall comply with the requirements of EN ISO 4413.

5.2.2 Fire protection

All materials within the area of the operator's station shall be of fire-retardant material. The maximum allowed burning rate is 250 mm/min.

NOTE It is advised to test the material according to ISO 3795:1989.

5.2.3 Protective measures and devices

5.2.3.1 Hot parts

Temperatures of surfaces of machinery with which the operator may come into contact shall conform to EN ISO 13732-1. Where necessary this shall be achieved by the use of guards. Where guarding is impractical, e.g. spray bar, engine radiator caps, adequate warning signs shall be employed advising on the nature of the risk and avoidance measures described in information for use.

Temperatures of the contact surface, e.g. handle, grip of hot operating devices e.g. hand spray lances to be carried by operator shall conform to EN ISO 13732-1.