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Road operation machinery - Safety - Part 3-2: Winter service machines - Specific requirements for spreading machines

Maschinen für den Straßenbetriebsdienst - Sicherheit - Teil 3-2: Maschinen für den Winterdienst - Spezifische Anforderungen für Streumaschinen

Machines d'exploitation des routes - Sécurité - Partie 3-2 : Machines de service hivernal - Prescriptions spécifiques pour les machines d'épandage

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EUROPEAN STANDARD

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English Version

Road operation machinery - Safety - Part 3-2: Winter service machines - Specific requirements for spreading machines

Machines d'exploitation des routes - Sécurité - Partie 3-
2 : Machines de service hivernal - Prescriptions
spécifiques pour les machines d'épandage

Maschinen für den Straßenbetriebsdienst - Sicherheit -
Teil 3-2: Maschinen für den Winterdienst - Spezifische
Anforderungen für Streumaschinen

This European Standard was approved by CEN on 16 August 2021.

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 CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 17106-3-2:2021) 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of an identical text or by endorsement, at the latest by April 2022, and conflicting national standards shall be withdrawn at the latest by April 2022.

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

This document supersedes EN 13019:2001+A1:2008, EN 13021:2003+A1:2008, EN 13524:2003+A2:2014.

This document has been prepared under a standardization request 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.

EN 17106:2021 consists of the following parts under the general title “Road operation machinery – Safety”:

- Part 1: General requirements
- Part 2: Specific requirements for road surface cleaning machines
- Part 3-1: Winter service machines - Specific requirements for snow clearing machines with rotating tools and snow ploughs
- Part 3-2: Winter service machines - Specific requirements for spreading machines
- Part 4: Road service area maintenance machines - Specific requirements for grass and brush cutting machines

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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

EN 17106-3-2:2021 (E)**Introduction**

This document is a type-C standard as stated in EN ISO 12100:2010.

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

- machine manufacturers (small, medium and large enterprises);
- health and safety bodies (regulators, accident prevention organizations, market surveillance etc.).

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

- machine users/employers (small, medium and large enterprises);
- machine users/employees (e.g. trade unions, organizations for people with special needs);
- service providers, e.g. for maintenance (small, medium and large enterprises);
- consumers (in case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate at the drafting process of this document.

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

When requirements of this type-C standard are different from those which are stated in type-A or type-B standards, the requirements of this type-C standard take precedence over the requirements of the other standards for machines that have been designed and built according to the requirements of this type-C standard.

1 Scope

This document together with EN 17106-1:2021 deals with all significant hazards, hazardous situations and events relevant to winter service machines – spreading machines when used as intended and under the conditions of misuse which are reasonably foreseeable by the manufacturer (see Annex A) associated with the whole lifetime of the machine as described in EN ISO 12100:2010, 5.4.

The requirements of this document are complementary to the common requirements formulated in EN 17106-1:2021. This document does not repeat the requirements from EN 17106-1:2021 but supplements or modifies the requirements for winter service machines – spreading machines.

This document is not applicable to spreading machines manufactured before the date of its publication.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 12195-1:2010, *Load restraining on road vehicles - Safety - Part 1: Calculation of securing forces*

EN 15144:2007, *Winter maintenance equipment - Terminology - Terms for winter maintenance*

EN 17106-1:2021, *Road operation machinery — Safety — Part 1: General requirements*

EN ISO 6682:2008, *Earth-moving machinery - Zones of comfort and reach for controls (ISO 6682:1986, including Amd 1:1989)*

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

EN ISO 13850:2015, *Safety of machinery - Emergency stop function - Principles for design (ISO 13850:2015)*

EN ISO 13857:2019, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2019)*

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

ISO 15818:2017, *Earth-moving machinery — Lifting and tying-down attachment points — Performance requirements*

EN 17106-3-2:2021 (E)**3 Terms and definitions**

For the purposes of this document, the terms and definitions given in EN 15144:2007, EN 17106-1:2021 and EN ISO 12100:2010 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at <https://www.iso.org/obp>

— IEC Electropedia: available at <https://www.electropedia.org/>

3.1**operating area**

section of surface covered with spreading material while machine is stationary, according to all possible spreading widths and other settings

4 Safety requirements and/or protective/risk reduction measures**4.1 General**

Winter service machines – spreading machines shall comply with the safety requirements and/or protective/risk reduction measures of this clause. In addition, the machines shall be designed according to the principles of EN ISO 12100:2010 for relevant but not significant hazards which are not dealt with by this document.

Winter service machines – spreading machines shall comply with the requirements of EN 17106-1:2021, as far as not modified or replaced by the requirements of this part.

4.2 Noise**4.2.1 Noise reduction by protective measures**

EN 17106-1:2021, 4.1.2.1.2 applies with the following modifications:

A cab is not considered as a suitable measure to reduce the noise level.

4.2.2 Noise measurement - Operating conditions

EN 17106-1:2021, Annex B applies with the following addition:

Spreaders shall be tested in a stationary position. The spreader shall, according to the manufacturer's recommendations, operate with the working equipment at its maximum speed and the engine at the corresponding speed.

The period of observation shall at least be 15 s.

4.3 Controls**4.3.1 General**

EN 17106-1:2021, 4.1.4.1 applies with the following addition:

Controls for adjusting the amount and width of spreading shall be positioned outside the operating area.

This requirement is considered to be satisfied when spreading machines are controlled by remote control from the cab of the carrier vehicle.

Operation modes shall be activated by a lockable mode selector.

The activation of the selected operation mode shall be optically indicated at the operator's station(s).

4.3.2 Safety and reliability of control systems

EN 17106-1:2021, 4.1.4.3 applies with the following addition(s), as per Table 1:

Table 1 — Required performance level PL_r

Sub-clause	Function	Performance level required PL _r
Emergency stop	Stop	d
Operational stop of the conveyor system	prevention of unintentional re-start	a
Operational stop of spreading material distributor	prevention of unintentional re-start	a
Unexpected start up during maintenance	prevention of unintentional re-start	c

4.3.3 Starting

EN 17106-1:2021, 4.1.4.4 applies with the following addition:

In the case of spreading machines, these requirements are deemed to be met for intended combinations of sequential and/or simultaneous starting of functions (e.g. the automatic starting of auger rotation caused by the starting movement of the spinner, since the starting of the movement of the spinner is treated as an intended starting).

In the case of the automatic starting of the spreading function of a spreading machine initiated by the starting movement of the carrier vehicle (e.g. after a traffic-related stop), this requirement is deemed to be met since the starting of the carrier vehicle is treated as an intended starting.

4.3.4 Emergency stop

EN 17106-1:2021, 4.1.4.5.3 applies with the following addition:

An additional emergency stop function at the driver's position is not needed if the normal engine stop device provides the emergency stop function and is placed within easy reach according to EN ISO 6682:2008.

The category of stop shall be Category '0' according to EN ISO 13850:2015, 4.1.4.

4.4 Guards

4.4.1 Conveyor system

EN 17106-1:2021, 4.1.5 applies with the following exception:

When the spreading material device is tilted up and it is possible to get in touch with the moving parts (e.g. auger, belt, chain conveyor; see Figures B.1 and B.2) through the discharge opening, the movement and feed functions together with any associated moving parts identified with residual risks shall stop. The spreading material device is considered as moveable guard with interlocking device and shall comply with EN ISO 14119:2013.

Restarting with a tilted spreading material device shall only be possible in maintenance mode (e.g. calibration, emptying of the hopper).

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Access to auger or chain conveyors, as well as to agitator and crushing equipment, except through discharge openings shall be prevented during movement by the following measures:

— fixed guard;

or

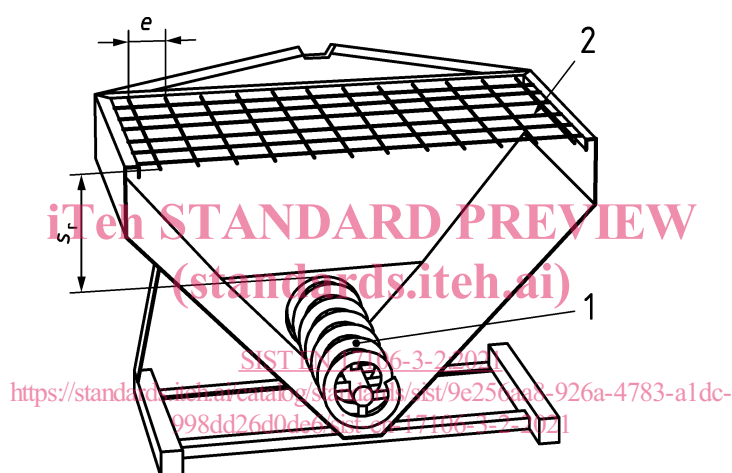
— moveable guard with interlocking device (which automatically stop movement of the guarded mechanism when lifted up).

Deviating from EN ISO 13857:2019, the following safety distances apply, see Table 2:

Table 2 — Safety distances

Square dimensions - e	≤ 30 mm	≤ 40 mm	≤ 95 mm	≤ 120 mm
Safety distances - s _r	≥ 120 mm	≥ 200 mm	≥ 650 mm	≥ 1 100 mm

See for explanation Figure 1.



Key

1 Auger

2 Grid

e maximum gap for grids

s_r safety distance between outer diameter of auger and grid

Figure 1 — Safety distance

4.4.2 Spreading material distributor

EN 17106-1:2021, 4.1.5 applies with the following exception:

The spinner discs on spreading material distributors shall be protected by a fully closed top cover which extends at least 25 mm beyond the outer diameter of the spinner disc (see Figures 2 and 3).

NOTE This requirement does not apply to the area of aperture for spreading material and for adjusting the input location for spreading pattern.

Lifting the spreading material distributor shall automatically disengage the spinner disc drive, and an automatic re-start shall not be possible.

When spreading material distributors are liftable, grabs shall be provided and the lifting force shall not exceed 250 N.

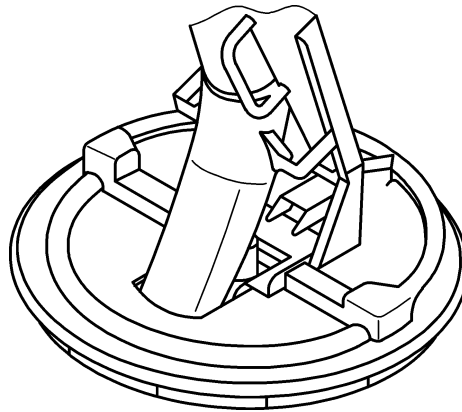


Figure 2 — Spreading material distributor - Closed system

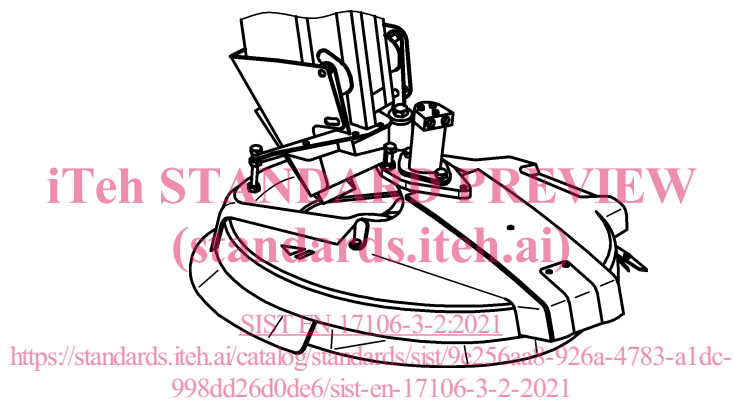


Figure 3 — Spreading material distributor - Open system

4.5 Operator stations

EN 17106-1:2021, 4.2.1.1 does not apply.

4.6 Electrical and electronic systems

EN 17106-1:2021, 4.1.11.3 does not apply to batteries which are solely used for starting auxiliary engines.

4.7 Provisions for lifting and lashing of machine parts or the whole machine

EN 17106-1:2021, 4.1.21.2 is replaced by the following:

Performance of lifting points shall be in accordance with ISO 15818:2017.

Performance of lashing points shall be in accordance with EN 12195-1:2010.