



SLOVENSKI STANDARD

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Kmetijski in gozdarski stroji - Okoljevarstvene zahteve za trosilnike granulatov fitofarmacevtskih proizvodov

Agricultural and forestry machinery - Environmental requirements for granule applicator of Plant Protection Products

Land- und forstwirtschaftliche Maschinen - Umweltanforderungen für Granulatstreugeräte für Pflanzenschutzmittel

Matériel agricole et forestier - Exigences environnementales relatives aux épandeurs de granulés pour l'application de produits de protection des plantes

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**Agricultural and forestry machinery - Environmental
requirements for granule applicator of Plant Protection
Products**

Matériel agricole et forestier - Exigences
environnementales relatives aux épandeurs de
granulés pour l'application de produits de protection
des plantes

Land- und forstwirtschaftliche Maschinen -
Umweltanforderungen für Granulatstreugeräte für
Pflanzenschutzmittel

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 144.

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

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European foreword

This document (prEN 17745:2022) has been prepared by Technical Committee CEN/TC 144 “Tractors and machinery for agriculture and forestry”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

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) / Regulation(s).

For relationship with EU Directive(s) / Regulation(s), see informative Annex ZA, which is an integral part of this document.

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Introduction

The Amendment of the Machinery Directive considers also the environmental requirements of the equipment for the pesticide application (PAE).

To allow the fulfilment of these requirements, the harmonized standard series EN ISO 16119 has been produced. However, these standards do not include the granule applicators of Plant Protection Products (PPP) that are widely distributed in Europe and abroad.

This document defines the environmental requirements of the granule applicators of PPP and the methods to measure them.

Therefore, this document will have the following major benefits to the manufacturers and authorities.

It will help granule applicator manufacturers in fulfilling the environmental requirements mentioned in the amendment of the Machinery Directive.

This document is a type-C standard as stated in EN ISO 12100. 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 specifies general constructive and functional requirements and their test methods for granule applicator with regard to minimizing the potential risk of environmental contamination during use.

This document deals with all the significant environmental hazards related to the granule applicators.

NOTE Main operator safety requirements are covered by EN ISO 4254-1.

This document is not applicable to granule applicators 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 13739-2:2011, *Agricultural machinery — Solid fertilizer broadcasters and full width distributors — Environmental protection — Part 2: Test methods*

ISO 5681:2020, *Equipment for crop protection — Vocabulary*

ISO 8524:1986, *Equipment for distributing granulated pesticides or herbicides — Test method*

ISO 9357:1990, *Equipment for crop protection — Agricultural sprayers — Tank nominal volume and filling hole diameter*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5681:2020 and ISO 8524:1986 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

granule applicator

appliance for applying granules

[SOURCE: ISO 5681:2020, 3.4.1.2]

3.2

granule band applicator (Type A)

granule applicator that applies in bands or rows

[SOURCE: ISO 5681:2020, 3.4.1.4]

3.3

granule distributor (Type B)

granule applicator for broadcast treatment

[SOURCE: ISO 5681:2020, 3.4.1.3]

prEN 17745:2022 (E)**3.4****granule pesticide**

plant protection product in solid form (granules, pellets or microgranules) for example made up of an active and a carrying material

Note 1 to entry: Usually particle size of the material is between 0,15 mm and 2,00 mm.

3.5**dosing system**

mechanism which takes the granules from a hopper to transfer them at a constant predetermined flow rate to the target by a metering system and a distribution system

3.6**flow rate**

amount of granules distributed, expressed in mass or volume, per unit of time

3.7**application rate**

amount of granules distributed, expressed in mass or volume, per unit of length or surface area, or per spot

3.8**hopper nominal capacity**

total volume which the hopper is designed to contain, expressed as litres

3.9**activation system**

system able to activate the metering system independent from the position of the granule applicator

4 Requirements**4.1 General**

Equipment and their components shall be reliable and so designed that they can be used in accordance with their intended use as described in the operator's manual in order to minimize the potential risk of environmental contamination.

It shall be possible to connect the necessary measuring instruments to the equipment to check the functioning of the equipment.

The equipment shall be designed to minimize losses of plant protection products during application and after the application function has been switched off.

It shall be designed and constructed to facilitate the changing of worn parts without contaminating the environment.

Compliance shall be checked by visual inspection, measurements, functional test or testing as appropriate according to Clause 5.

4.2 Hoppers**4.2.1 Filling opening**

It shall be present a system able to minimize the risk that undesirable materials of more than 20 mm will cause blockages (e.g. presence of a grid, deflector) and influence the flow rate or transversal distribution in a negative way.

The filling hole diameter of the hopper shall at least comply with ISO 9357:1990.

4.2.2 Capacity

The total hopper capacity shall be at least 5 % more than its nominal capacity as indicated in 5.3.

4.2.3 Level indicator

The level of nominal capacity in litres shall be indicated.

It shall be possible to determine the level of granules that is in the hopper.

The scale, as determined in 5.3, shall cover at least 10 % to 80 % of the nominal capacity and have a graduation for at least each 10 % of the nominal capacity. Hoppers with <100 l capacity shall have a graduation for each 25 % of the nominal capacity.

The accuracy of the graduation marks shall be within ± 15 % of the actual value.

Define how to handle the dumping cone.

4.2.4 Lid

The hopper shall be equipped with a suitable lid that can close tightly to prevent spillage of granules and protect the content against water or dust. The lid shall be designed to avoid unintended opening.

4.2.5 Accessibility

Hopper(s) shall be designed and mounted on the equipment to be accessible in a safe way as indicated below.

The filling hole of the hopper shall be so positioned that the height from the ground or platform is not more than 1 250 mm. The horizontal reach between the rim of the hole and the outer edge of any part of the equipment which could hinder the operator shall not be more than 300 mm at the operator filling position. These requirements apply only in the working configuration of the machine.

4.2.6 Emptying system

Hopper(s) shall be provided with a system that allows its emptying without the use of special tools or removing parts from the machine.

The amount of residual, verified as indicated in 5.4 shall be indicated in the operator's manual.

4.2.7 Material output continuity

Hopper(s) shall be able to ensure a continuous flow of granules towards the dosing system.

During application, the deviation in the obtained flowrate of each point of output shall not exceed the value in Table 1.

The requirement shall be fulfilled with the hopper filled to all levels above 5 % of the capacity for the basic hopper volume and for all slopes up to 11° (20 %).

Table 1 — Deviation

Average obtained flow rate (kg/min)	Maximum allowed deviation of the average obtained flow rate (%)
<25	10
>25	7,5

This shall be verified in accordance with 5.6.

4.3 Metering system

4.3.1 General

In order to adjust the delivered amounts of granules, the applicator shall be provided with a dosing system able to guarantee at least three different granule outlet (min, max and intermediate) l.

The metering system shall be easily accessible for adjustment, control and inspection.

4.3.2 Activation system

The activation system shall be visible and operable from the driving position of the operator.

4.3.3 Flow rate setting

The deviation from the selected nominal flow rate of the complete machine shall be within $\pm 10\%$ of the nominal value verified in accordance with 5.5.

4.4 Distribution systems, controls and regulation systems

4.4.1 General

It shall be possible to stop the application of pesticide immediately from the operator's position. It shall be possible to switch all distributors simultaneously on and off.

All controls and instruments needed to operate the applicator during operation, shall be placed to be reachable and visible from the operator's position.

4.4.2 Flow rate uniformity (*only for Type A*)

The measured flowrate of each output shall be within $\pm 10\%$ of the average flowrate when measured according to 5.5.

4.4.3 Broadcast distribution (*only for Type B*)

The evenness of the transversal distribution shall be such that the calculated value of the coefficient of variation (CV), when driving to and fro, does not exceed 15 % calculated in accordance with EN 13739-2:2011 and determined according to 5.7.

5 Test methods

5.1 Test materials and equipment

5.1.1 Materials

5.1.1.1 Materials for type A machines

Granule material with the following features (see example in Annex A):

- Density: (0,4 to 1,4) gcm⁻³;
- Granules size: (0,15 to 2) mm;
- Hydrophobic material;
- Non-abrasive.