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Agricultural and forestry machinery – Environmental requirements for sprayers – Part 4: Fixed and semi-mobile sprayers (ISO 16119-4:2014)

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The European Standard EN ISO 16119-4:2014 has the status of a Swedish Standard. This document contains the official version of EN ISO 16119-4:2014.

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Denna standard är framtagen av kommittén för Lantbrukssprutor, SIS/TK 224.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 16119-4

December 2014

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Agricultural and forestry machinery - Environmental requirements for sprayers - Part 4: Fixed and semi-mobile sprayers (ISO 16119-4:2014)

Matériel agricole et forestier - Exigences environnementales pour les pulvérisateurs - Partie 4: Pulvérisateurs fixes et semi-mobiles (ISO 16119-4:2014)

Land- und Forstmaschinen - Umweltanforderungen an Pflanzenschutzgeräte - Teil 4: Fest installierte und teilbewegliche Geräte (ISO 16119-4:2014)

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Foreword

This document (EN ISO 16119-4:2014) has been prepared by Technical Committee ISO/TC 23 "Tractors and machinery for agriculture and forestry" in collaboration Technical Committee CEN/TC 144 “Tractors and machinery for agriculture and forestry” the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by June 2015, and conflicting national standards shall be withdrawn at the latest by June 2015.

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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.

For relationship with EU Directive, 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.

Endorsement notice

The text of ISO 16119-4:2014 has been approved by CEN as EN ISO 16119-4:2014 without any modification.

Introduction

The requirements of this part of ISO 16119 are based on the test methods given in ISO 5682-2:1997, which were primarily developed for hydraulic sprayers. For other types of sprayers, other test methods and/or test criteria may be needed and may be the subject of future investigation/revision of this part of ISO 16119.

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

The machinery concerned and the extent to which hazards, hazardous situations and hazardous 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.

Agricultural and forestry machinery — Environmental requirements for sprayers —

Part 4:
Fixed and semi-mobile sprayers

1 Scope

This part of ISO 16119 specifies requirements and the means for their verification for the design and performance of fixed and semi-mobile sprayers, as defined in 3.1 and 3.2, with regard to minimizing the potential risk of environmental contamination during use, including misuse foreseeable by the manufacturer.

This type of spraying system is generally a combination of separate elements (main tank, pump and application unit) that can be assembled in fixed installations (fixed sprayers) or with moving parts (semi-mobile sprayers).

It does not apply to application equipment for space/spatial treatments.

It is intended to be used with ISO 16119-1, which gives general requirements common to all the sprayer types covered by ISO 16119. When requirements of this part of ISO 16119 are different from those stated in ISO 16119-1, the requirements of this part of ISO 16119 take precedence over the requirements of ISO 16119-1 for machines within the scope of this part of ISO 16119. This part of ISO 16119 does not cover safety aspects (see ISO 4254-6).

This part of ISO 16119 is not applicable to sprayers manufactured before the date of its publication.

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 837-1, *Pressure gauges – Part 1: Bourdon tube pressure gauges – Dimensions, metrology, requirements and testing*

ISO 4102:1984, *Equipment for crop protection — Sprayers — Connection threading*

ISO 4254-6:2009, *Agricultural machinery — Safety — Part 6: Sprayers and liquid fertilizer distributors*

ISO 4288:1996, *Geometrical Product Specifications (GPS) — Surface texture: Profile method — Rules and procedures for the assessment of surface texture*

ISO 5681, *Equipment for crop protection — Vocabulary*

ISO 5682-1:1996, *Equipment for crop protection — Spraying equipment — Part 1: Test methods for sprayer nozzles*

ISO 5682-2:1997, *Equipment for crop protection — Spraying equipment — Part 2: Test methods for hydraulic sprayers*

ISO 5682-3:1996, *Equipment for crop protection — Spraying equipment — Part 3: Test method for volume/hectare adjustment systems of agricultural hydraulic pressure sprayers*

ISO 8169:1984, *Equipment for crop protection — Sprayers — Connecting dimensions for nozzles and manometers*

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

ISO 9898:2000, *Equipment for crop protection — Test methods for air-assisted sprayers for bush and tree crops*

ISO 13440:1996, *Equipment for crop protection — Agricultural sprayers — Determination of the volume of total residual*

ISO 13457:2008, *Agricultural irrigation equipment — Water-driven chemical injector pumps*

ISO 16119-1:2013, *Agricultural and forestry machinery — Environmental requirements for sprayers — Part 1: General*

ISO 16236, *Crop protection equipment — Test method for the determination of drainable volume and its concentration*

ISO 19932-1:2013, *Equipment for crop protection — Knapsack sprayers — Part 1: Safety and environmental requirements*

ISO 21278-1:2008, *Equipment for crop protection — Induction hoppers — Part 1: Test methods*

ISO 21278-2:2008, *Equipment for crop protection — Induction hoppers — Part 2: General requirements and performance limits*

ISO 22368-1:2004, *Crop protection equipment — Test methods for the evaluation of cleaning systems — Part 1: Internal cleaning of complete sprayers*

ISO 22368-3:2004, *Crop protection equipment — Test methods for the evaluation of cleaning systems — Part 3: Internal cleaning of tank*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5681 and the following apply.

3.1
fixed sprayer
machine primarily for spraying plant protection products in covered structures, and where the *pump/tank unit* (3.3) and/or *application unit* (3.4) do not move

3.2
semi-mobile sprayer
machine primarily for spraying plant protection products on crops grown in covered structures, and where the *pump/tank unit* (3.3) and *application unit* (3.4) are separately moveable

3.3
pump/tank unit
device comprising at least the pump and the spray liquid tank

Note 1 to entry: They can be built together as one unit or separate units.

3.4
application unit
device consisting of one or more nozzles/spray generators with or without air-assistance, and used with a separate pump/tank unit to which it is connected by a pipeline

Note 1 to entry: There are sprayers where the application unit moves in the crop rows or over the target independently from the pump/tank unit and others where the application unit is stationary and the target is moved.

Note 2 to entry: The application unit can be a spray gun/lance or a horizontal and/or vertical spray boom. The application unit can be equipped with a fan to provide air to transport the spray droplets to the target. The application unit can be moved in the row or over the target (manually or motorized). The spray application controls can be manual or automatic.

4 List of significant hazards

Table 1 specifies the significant hazards, the significant hazardous situations and significant hazardous event(s) covered by this part of ISO 16119 that have been identified by risk assessment as being relevant for this type of machine with regard to environmental contamination, and which require specific action by the designer or manufacturer to eliminate or to reduce environmental contamination.

Attention is drawn to the necessity to verify that the environmental requirements specified in both ISO 16119-1 and this part of ISO 16119 apply to each significant hazard presented by a given machine and to validate that the risk assessment is complete.

Table 1 — List of significant hazards

	Hazard	**Hazardous situation/event**	**Subclause of this part of** ISO 16119
4.1	Spillages	Filling	5.1.3.2; 8
		Induction of plant protection product	5.1.3.2; 5.5 ;8
4.2	Contamination of the water supply	Filling	5.1.3.2; 5.5
4.3	Leakages	Transport and application	5.1.1; 5.1.3.2; 5.1.5
4.4	Overfilling	Filling	5.1.3.2; 5.1.3.4; 8
4.5	Dispersal of spray mix residues or plant protection products	Drainage	5.1.2; 5.1.3.3; 5.1.3.4; 8
		Cleaning and rinsing	5.1.3.1;5.1.6; 5.4; 5.5; 8
4.6	Accidental leakages	Accidental opening of tank outlet	5.1.3.3
4.7	Over-dosing	Heterogeneous mixing	5.1.3.5; 5.1.4;5.2.3; 8
		Overlapping	5.3.4.1; 5.3.5.1
		Sprayer adjustment / control	5.1.3.4; 5.1.8; 5.2; 5.3.4.2; 5.3.3; 5.3.6; 5.3.7; 8
		Sprayer maintenance / service	5.1.8; 7; 8
		Unintended deposition	5.3.4.1; 5.3.4.3; 5.3.3; 5.3.6; 5.3.7.1
		Direct Injection system	5.2.3
4.8	Unintended spraying outside the target area	Deposition outside the target area	5.3.4.1; 5.3.5.1; 5.3.8
		Spraying stop control	5.1.8; 5.3.6; 5.3.7.1
4.9	Drift	Spraying	5.3.4.1; 5.3.5.1; 5.3.8
4.10	Dispersal of spray mix	Intervention on the sprayer during application or service	5.1.6; 5.1.7; 7; 8
4.11	Dripping	Spraying stop control	5.3.3