

<b>STN</b>	<b>Poľnohospodárske a lesnícke stroje. Environmentálne požiadavky na postrekovače. Časť 4: Pevné a polomobilné postrekovače (ISO 16119-4: 2014).</b>	<b>STN EN ISO 16119-4</b>  47 4110
------------	--	--

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

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 05/15

Obsahuje: EN ISO 16119-4:2014, ISO 16119-4:2014

**120820**

---

Úrad pre normalizáciu, metrológiu a skúšobníctvo SR, odbor SÚTN, 2015  
Podľa zákona č. 264/1999 Z. z. v znení neskorších predpisov sa môžu slovenské technické normy  
rozmnožovať a rozširovať iba so súhlasom Úradu pre normalizáciu, metrológiu a skúšobníctvo SR.

ICS 65.060.40

English Version

**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 - Umwelthanforderungen an  
Pflanzenschutzgeräte - Teil 4: Fest installierte und  
teildbewegliche Geräte (ISO 16119-4:2014)

This European Standard was approved by CEN on 4 October 2014.

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.

CEN members are the national standards bodies of 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 United Kingdom.



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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

## Contents

Page

<b>Foreword</b> .....	<b>3</b>
<b>Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EC Directive 2009/127/EC amending 2006/42/EC</b> .....	<b>4</b>

## **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.

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 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.

## **Annex ZA** (informative)

### **Relationship between this European Standard and the Essential Requirements of EC Directive 2009/127/EC amending 2006/42/EC**

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive 2009/127/EC amending 2006/42/EC.

Once this standard is cited in the Official Journal of the European Union under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative clauses of this standard confers, within the limits of the scope of this standard, a presumption of conformity with the relevant Essential Requirements of that Directive and associated EFTA regulations.

**WARNING —** Other requirements and other EC Directives may be applicable to the product(s) falling within the scope of this standard.

---

---

**Agricultural and forestry  
machinery — Environmental  
requirements for sprayers —**

**Part 4:  
Fixed and semi-mobile sprayers**

*Matériel agricole et forestier — Exigences environnementales pour les  
pulvérisateurs —*

*Partie 4: Pulvérisateurs fixes et semi-mobiles*





**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2014

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

Page

<b>Foreword</b>	<b>iv</b>
<b>Introduction</b>	<b>v</b>
<b>1 Scope</b>	<b>1</b>
<b>2 Normative references</b>	<b>1</b>
<b>3 Terms and definitions</b>	<b>2</b>
<b>4 List of significant hazards</b>	<b>3</b>
<b>5 Requirements</b>	<b>4</b>
5.1 Pump/tank unit	4
5.1.1 Static leaks	4
5.1.2 Residual volume	4
5.1.3 Spray tank(s)	4
5.1.4 Pump	6
5.1.5 Lines (hoses and pipes)	7
5.1.6 Filters	7
5.1.7 Measuring systems	7
5.1.8 Provisions for connecting testing equipment	8
5.2 Adjustment of the dose/volume application rate	8
5.2.1 General	8
5.2.2 Pressure adjustment devices	8
5.2.3 Direct injection system (if provided)	8
5.2.4 Calibration aids	9
5.3 Application unit	9
5.3.1 Controls	9
5.3.2 Pressure drop	9
5.3.3 Nozzles	9
5.3.4 Horizontal spray boom	10
5.3.5 Vertical spray boom and other non-horizontal spray booms	11
5.3.6 Spray gun and lance	11
5.3.7 Autonomous application units	12
5.3.8 Control of spray drift	12
5.4 Cleaning	12
5.4.1 Rinsing water tank	12
5.4.2 Cleaning systems	13
5.5 Cleaning device for plant protection product containers	13
<b>6 Verification</b>	<b>13</b>
<b>7 Marking</b>	<b>15</b>
<b>8 Instruction handbook</b>	<b>15</b>
<b>Annex A (normative) Backflow measurement method for agitation</b>	<b>16</b>
<b>Annex B (normative) Verification of pulsations of the pump</b>	<b>18</b>
<b>Bibliography</b>	<b>19</b>

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword — Supplementary information](#).

ISO 16119-4 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 144, *Tractors and machinery for agriculture and forestry*, in collaboration with ISO Technical Committee TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 6, *Equipment for crop protection*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

ISO 16119 consists of the following parts, under the general title *Agricultural and forestry machinery — Environmental requirements for sprayers*:

- *Part 1: General*
- *Part 2: Horizontal boom sprayers*
- *Part 3: Sprayers for bush and tree crops*
- *Part 4: Fixed and semi-mobile sprayers*

## 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*

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**