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Equipment for crop protection - Knapsack sprayers - Part 2: Test methods (ISO 19932-2:2025)

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. 01/26

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EN ISO 19932-2

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English Version

**Equipment for crop protection - Knapsack sprayers - Part
2: Test methods (ISO 19932-2:2025)**

Matériel de protection des cultures - Pulvérisateurs à
dos - Partie 2: Méthodes d'essai (ISO 19932-2:2025)

Pflanzenschutzgeräte - Tragbare Geräte - Teil 2:
Prüfverfahren (ISO 19932-2:2025)

This European Standard was approved by CEN on 29 June 2025.

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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN ISO 19932-2:2025 (E)

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European foreword

This document (EN ISO 19932-2:2025) has been prepared by Technical Committee ISO/TC 23 "Tractors and machinery for agriculture and forestry" in collaboration with 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of an identical text or by endorsement, at the latest by February 2026, and conflicting national standards shall be withdrawn at the latest by February 2026.

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 ISO 19932-2:2013.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

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

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, 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, Türkiye and the United Kingdom.

Endorsement notice

The text of ISO 19932-2:2025 has been approved by CEN as EN ISO 19932-2:2025 without any modification.

EN ISO 19932-2:2025 (E)**Annex ZA**
(informative)**Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC amended by Directive 2009/127/EC aimed to be covered**

This European Standard has been prepared under a Commission's standardization request "M/396 Mandate to CEN and CENELEC for Standardisation in the field of machinery" and "M/471 Mandate to CEN for standardisation in the field of machinery for pesticide application" to provide one voluntary means of conforming to essential requirements of Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 2009/127/EC.

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in [Table ZA.1](#) confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that Directive, and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and Annex I of Directive 2006/42/EC amended by Directive 2009/127/EC

The relevant Essential Requirements of Directive 2006/42/EC amended by Directive 2009/127/EC	Clause(s)/sub-clause(s) of this EN	Remarks/Notes
1. ESSENTIAL HEALTH AND SAFETY REQUIREMENTS		
1.1.2. (a)	5	
1.1.2. (c)	5	
1.1.2. (e)	8	
1.1.3. Materials and products	5.3.8	
1.1.5. Design of machinery to facilitate its handling	5.6	
1.1.6. Ergonomics	5.6.	
1.2. CONTROL SYSTEMS		
1.2.1. Safety and reliability of control systems	5.3.1 , 5.3.2	
1.2.2. Control devices	5.3.1 , 5.4.	
1.2.3. Starting	5.3.1.	
1.2.4. Stopping	5.3.1.	
1.2.4.1. Normal stop	5.3.1.	
1.2.4.2. Operational stop	5.3.1.	

The relevant Essential Requirements of Directive 2006/42/EC amended by Directive 2009/127/EC	Clause(s)/sub-clause(s) of this EN	Remarks/Notes
1.2.4.3. Emergency stop		Not covered
1.2.5. Selection of control or operating modes		Not covered
1.2.6. Failure of the power supply		Not covered
1.3. PROTECTION AGAINST MECHANICAL HAZARDS		
1.3.1. Risk of loss of stability	5.3.4	
1.3.2. Risk of break-up during operation		Not covered
1.3.3. Risks due to falling or ejected objects	5.3.3 , 8.2 .	
1.3.4. Risks due to surfaces, edges or angles		Not covered
1.3.7. Risks related to moving parts		Not covered
1.5. RISKS DUE TO OTHER HAZARDS		
1.5.13. Emissions of hazardous materials and substances	5.3.4 , 5.4 , 5.5 , 6.2 , 7.1 , 8.1.1 .	
2. SUPPLEMENTARY ESSENTIAL HEALTH AND SAFETY REQUIREMENTS FOR CERTAIN CATEGORIES OF MACHINERY		
2.4.2. General	5.3.2 , 5.3.4 , 5.5 , 5.6 , 6.2 , 6.3 , 7.1 , 7.2 , 8.1.1 , 8.1.2 , 8.2 .	
2.4.3. Controls and monitoring	5.3.1 , 5.3.5	
2.4.4. Filling and emptying	5.3.5 , 5.3.6 , 5.3.7 , 5.4 , 6.2 , 7.1 , 8.1.1 .	
2.4.5. Applications of pesticides		Not covered
2.4.5.1. Application rate	5.3.1 , 5.3.2 , 6.1 .	
2.4.5.2. Distribution, deposition and drift of pesticide		Not covered
2.4.5.3. Tests	5 , 6 , 7 , 8 .	
2.4.5.4. Losses during stoppage	5.3.1	
2.4.6. Maintenance		Not covered

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The relevant Essential Requirements of Directive 2006/42/EC amended by Directive 2009/127/EC	Clause(s)/sub-clause(s) of this EN	Remarks/Notes
2.4.6.1. Cleaning	5.3.7.	
2.4.6.2. Servicing		Not covered
2.4.7. Inspections		Not covered
2.4.8. Marking of nozzles, strainers and filters		Not covered
2.4.9. Indication of pesticide in use		Not covered
2.4.10. Instructions		Not covered

WARNING 1 Presumption of conformity stays valid only as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2 Other Union legislation may be applicable to the product(s) falling within the scope of this standard.



International Standard

ISO 19932-2

Equipment for crop protection — Knapsack sprayers —

Part 2: Test methods

*Matériel de protection des cultures — Pulvérisateurs à dos —
Partie 2: Méthodes d'essai*

Third edition 2025-06

ISO 19932-2:2025(en)



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ISO 19932-2:2025(en)**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 document 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).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

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

This third edition cancels and replaces the second edition (ISO 19932-2:2013), which has been technically revised.

The main changes are as follows:

- the scope has been changed to include sprayers with a nominal volume of more than 6 l in order to address sprayers in professional use only;
- the test methods have been aligned with the modified requirements of ISO 19932-1.

A list of all parts in the ISO 19932 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

ISO 19932-2:2025(en)**Introduction**

The application of plant protection products with knapsack sprayers should take into consideration biological, economic, environmental and operator issues.

The aim of this document is to specify test methods for the verification of requirements for equipment to ensure safe use and protect the environment.

Implementation of ISO 19932-1:2025 and ISO 19932-2:2025 will achieve an appropriate level of operator safety and avoid unnecessary dispersal of plant protection products into the environment.

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.

Equipment for crop protection — Knapsack sprayers —

Part 2: Test methods

1 Scope

This document specifies particular test methods for the verification of requirements of ISO 19932-1:2025 for knapsack sprayers carried on the back or shoulder of the operator for use with plant protection products.

It is applicable to lever-operated knapsack sprayers, knapsack compression sprayers and knapsack sprayers driven by an engine or electric motor using hydraulic pressure atomization of the spray liquid intended to be used primarily in agriculture, forestry and horticulture with a nominal volume of more than 6,0 l.

It does not apply to knapsack combustion engine-driven air-blast sprayers covered by ISO 28139:2019+2019A1:2024.

This document is intended to be applied in conjunction with ISO 19932-1:2025.

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.

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

ISO 19932-1:2025, *Equipment for crop protection — Knapsack sprayers — Part 1: Safety and environmental requirements*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN