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Agricultural machinery - Safety - Part 6: Sprayers and liquid fertilizer distributors (ISO 4254-6:2020)

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

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English Version

Agricultural machinery - Safety - Part 6: Sprayers and liquid fertilizer distributors (ISO 4254-6:2020)

Matériel agricole - Sécurité - Partie 6: Pulvérisateurs et distributeurs d'engrais liquides (ISO 4254-6:2020)

Landmaschinen - Sicherheit - Teil 6: Pflanzenschutzgeräte (ISO 4254-6:2020)

This European Standard was approved by CEN on 16 February 2020.

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European foreword

This document (EN ISO 4254-6:2020) 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of an identical text or by endorsement, at the latest by November 2020, and conflicting national standards shall be withdrawn at the latest by May 2021.

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 4254-6:2009.

The main changes compared to the previous edition are as follows:

- some excluded hazards have been deleted from the scope as they are covered by ISO 4254-1 or this revised edition;
- the general (stability) requirements have been deleted as they are covered by ISO 4254-1;
- the protection of the operator against hazardous substances in case of front mounted booms has been removed as this risk is relevant to all types of sprayers but appropriate requirements (in form of an international reference standard) are not yet available; however, the protection of the driver against spray when spraying is dealt with by the harmonized European standard EN 15695 (Agricultural tractors and self-propelled sprayers - Protection of the operator (driver) against hazardous substances - Part 1: Cab classification, requirements and test procedures and Part 2: Filters, requirements and test procedures) which is listed in the EU Official Journal under the Machinery Directive 2006/42EU;
- in 4.6.2, the requirements for chemical inductions bowls have been amended to cover foldable devices;
- in 4.7, requirements for protecting the operator in case of leakages have been added;
- a new subclause (4.12) to deal with the storage of personal protective equipment has been added;
- Clause 6 has been aligned with ISO 4254-1.

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(s).

For the relationship with EU Directive(s) 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, 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 ISO 4254-6:2020 (E)**Endorsement notice**

The text of ISO 4254-6:2020 has been approved by CEN as EN ISO 4254-6:2020 without any modification.

Annex ZA (informative)

Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/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" to provide one voluntary means of conforming to essential requirements of the Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery.

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 1 of Directive 2006/42/EC

Essential Requirements of EU Directive 2006/42/EC	Clause(s)/sub-clause(s) of this EN	Remarks/Notes
1. ESSENTIAL HEALTH AND SAFETY REQUIREMENTS		
1.1.2. Principles of safety integration	4.1	
1.1.3. Materials and products	4.1; 4.5.2; 4.5.3; 4.5.4; 4.9; 4.11; 4.14	
1.1.4. Lighting	4.1	
1.1.5. Design of machinery to facilitate its handling	4.1; 4.3; 4.4; 4.5; 4.10; 4.13; 4.14	
1.1.6. Ergonomics	4.1; 4.4; 4.13	
1.1.7. Operating positions	4.1	Except for the prevention of exposure of the operator to spray liquid while spraying.
1.1.8. Seating	4.1	
1.2. CONTROL SYSTEMS		
1.2.1. Safety and reliability of control systems	4.1; 4.4	
1.2.2. Control devices	4.3; 4.5.2.2; 4.5.4; 4.10	
1.2.3. Starting	4.1	
1.2.4. Stopping	4.1; 4.10	
1.2.4.1. Normal stop	4.1; 4.10	
1.2.4.2. Operational stop	4.1	

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1.2.4.3. Emergency stop	4.1	
1.2.4.4. Assembly of machinery	4.1; 4.13	
1.2.5. Selection of control or operating modes	4.1	
1.2.6. Failure of the power supply	4.1; 4.4.2	
1.3. PROTECTION AGAINST MECHANICAL HAZARDS		
1.3.1. Risk of loss of stability	4.1; 4.2	
1.3.2. Risk of break-up during operation	4.1; 4.2; 4.8	
1.3.3. Risks due to falling or ejected objects	4.4; 4.8	
1.3.4. Risks due to surfaces, edges or angles	4.1	
1.3.5. Risks related to combined machinery		Not relevant
1.3.6. Risks related to variations in operating conditions	4.1	
1.3.7. Risks related to moving parts	4.1; 4.8	
1.3.8. Choice of protection against risks arising from moving parts		Not relevant
1.3.8.1. Moving transmission parts		Not relevant
1.3.8.2. Moving parts involved in the process		Not relevant
1.3.9. Risks of uncontrolled movements		Not relevant
1.4. REQUIRED CHARACTERISTICS OF GUARDS AND PROTECTIVE DEVICES		
1.4.1. General requirements		Not relevant
1.4.2.1. Fixed guards		Not relevant
1.4.2.2. Interlocking movable guards		Not relevant
1.4.2.3. Adjustable guards restricting access		Not relevant
1.4.3. Special requirements for protective devices		Not relevant

1.5. RISKS DUE TO OTHER HAZARDS		
1.5.1. Electricity supply	4.1	
1.5.2. Static electricity	4.1	
1.5.3. Energy supply other than electricity	4.1	
1.5.4. Errors of fitting	Clause 6	
1.5.5. Extreme temperatures	4.1	
1.5.6. Fire	4.1	
1.5.7. Explosion	4.1	
1.5.8. Noise	4.1; 4.15	
1.5.9. Vibrations	4.1	
1.5.10. Radiation	4.1	
1.5.11. External radiation	4.1	
1.5.12. Laser radiation		Not relevant
1.5.13. Emissions of hazardous materials and substances	4.5; 4.7; 4.9; 4.11	Except for the prevention of exposure of the operator to spray liquid while spraying.
1.5.14. Risk of being trapped in a machine	4.5.1	
1.5.15. Risk of slipping, tripping or falling	4.1	
1.5.16. Lightning	4.1	
1.6. MAINTENANCE		
1.6.1. Machinery maintenance	4.1; 4.14	
1.6.2. Access to operating positions and servicing points	4.1	
1.6.3. Isolation of energy sources	4.1	
1.6.4. Operator intervention	4.1	
1.6.5. Cleaning of internal parts	4.1	
1.7. INFORMATION		
1.7.1. Information and warnings on the machinery	Clause 6	
1.7.1.1. Information and information devices	4.1; Clause 6	
1.7.1.2. Warning devices	4.1	
1.7.2. Warning of residual risks	4.1; Clause 6	

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1.7.3. Marking of machinery	4.1; 6.2	
1.7.4. Instructions	Clause 6	
1.7.4.1. General principles for the drafting of instructions	4.1; Clause 6	
1.7.4.2. Contents of the instructions	4.1; Clause 6	
1.7.4.3. Sales literature	4.1	
2. SUPPLEMENTARY ESSENTIAL HEALTH AND SAFETY REQUIREMENTS FOR CERTAIN CATEGORIES OF MACHINERY		
2.1. FOODSTUFFS MACHINERY AND MACHINERY FOR COSMETICS OR PHARMACEUTICAL PRODUCTS		Not relevant
2.2. PORTABLE HAND-HELD AND/OR HAND-GUIDED MACHINERY		Not relevant
2.2.1. General		Not relevant
2.2.1.1. Instructions		Not relevant
2.2.2. Portable fixing and other impact machinery		Not relevant
2.2.2.1. General		Not relevant
2.2.2.2. Instructions		Not relevant
2.3. MACHINERY FOR WORKING WOOD AND MATERIAL WITH SIMILAR PHYSICAL CHARACTERISTICS		Not relevant
2.4. MACHINERY FOR PESTICIDE APPLICATION		
2.4.2. General	4.1; 4.5.3; 4.5.4; 4.7; 4.9; 4.10	
2.4.3. Controls and monitoring	4.3; 4.4.2; 4.6; 4.10	
2.4.4. Filling and emptying	4.5.3; 4.5.4	
2.4.5. Applications of pesticides		Not relevant
2.4.5.1. Application rate		Not relevant
2.4.5.2. Distribution, deposition and drift of pesticide		Not relevant
2.4.5.3. Tests		Not relevant
2.4.5.4. Losses during stoppage	4.10	
2.4.6. Maintenance	4.14	

2.4.6.1. Cleaning		Not relevant
2.4.6.2. Servicing	4.14	
2.4.7. Inspections		Not relevant
2.4.8. Marking of nozzles, strainers and filters		Not relevant
2.4.9. Indication of pesticide in use		Not relevant
2.4.10. Instructions		Not relevant
3. SUPPLEMENTARY ESSENTIAL HEALTH AND SAFETY REQUIREMENTS TO OFFSET HAZARDS DUE TO THE MOBILITY OF MACHINERY		
3.1. GENERAL	4.1	
3.2. WORK POSITIONS		
3.2.1. Driving positions	4.1	
3.2.2. Seating	4.1	
3.2.3. Positions for other persons	4.1	
3.3. CONTROL SYSTEMS		
3.3.1. Control devices	4.1	
3.3.2. Starting/moving	4.1	
3.3.3. Travelling function	4.1	
3.3.4. Movement of pedestrian-controlled machinery		Not relevant
3.3.5. Control circuit failure	4.1	
3.4. PROTECTION AGAINST MECHANICAL HAZARDS		
3.4.1. Uncontrolled movements	4.1	
3.4.2. Moving transmission parts	4.1	
3.4.3. Roll-over and tip-over	4.2	
3.4.4. Falling objects		Not relevant
3.4.5. Means of access	4.1	
3.4.6. Towing devices	4.1	
3.4.7. Transmission of power between self-propelled machinery (or tractor) and recipient machinery	4.1	
3.5. PROTECTION AGAINST		

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OTHER HAZARDS		
3.5.1. Batteries	4.1	
3.5.2. Fire	4.1	
3.5.3. Emissions of hazardous substances		The exposure of the operator to spray liquid while spraying is limited to information for use to be provided in the operator's manual.
3.6. INFORMATION AND INDICATIONS		
3.6.1. Signs, signals and warnings	4.1; Clause 6	
3.6.2. Marking	4.1; Clause 6	
3.6.3. Instructions	4.1; Clause 6	
3.6.3.1. Vibrations	4.1	
3.6.3.2. Multiple uses	Clause 6	
4. SUPPLEMENTARY ESSENTIAL HEALTH AND SAFETY REQUIREMENTS TO OFFSET HAZARDS DUE TO LIFTING OPERATIONS		Not relevant
4.1. GENERAL		Not relevant
4.1.1. Definitions		Not relevant
4.1.2. Protection against mechanical hazards		Not relevant
4.1.2.1. Risks due to lack of stability		Not relevant
4.1.2.2. Machinery running on guide rails and rail tracks		Not relevant
4.1.2.3. Mechanical strength		Not relevant
4.1.2.4. Pulleys, drums, wheels, ropes and chains		Not relevant
4.1.2.5. Lifting accessories and their components		Not relevant
4.1.2.6. Control of movements		Not relevant
4.1.2.7. Movements of loads during handling		Not relevant
4.1.2.8. Machinery serving fixed landings		Not relevant
4.1.2.8.1. Movements of the carrier		Not relevant

4.1.2.8.2. Access to the carrier		Not relevant
4.1.2.8.3. Risks due to contact with the moving carrier		Not relevant
4.1.2.8.4. Risk due to the load falling off the carrier		Not relevant
4.1.2.8.5. Landings		Not relevant
4.2. REQUIREMENTS FOR MACHINERY WHOSE POWER SOURCE IS OTHER THAN MANUAL EFFORT		Not relevant
4.2.1. Control of movements		Not relevant
4.2.2. Loading control		Not relevant
4.2.3. Installations guided by ropes		Not relevant
4.3. INFORMATION AND MARKINGS		Not relevant
4.3.1. Chains, ropes and webbing		Not relevant
4.3.2. Lifting accessories		Not relevant
4.3.3. Lifting machinery		Not relevant
4.4. INSTRUCTIONS		Not relevant
4.4.1. Lifting accessories		Not relevant
4.4.2. Lifting machinery		Not relevant
5. SUPPLEMENTARY ESSENTIAL HEALTH AND SAFETY REQUIREMENTS FOR MACHINERY INTENDED FOR UNDERGROUND WORK		Not relevant
5.1. RISKS DUE TO LACK OF STABILITY		Not relevant
5.2. MOVEMENT		Not relevant
5.3. CONTROL DEVICES		Not relevant
5.4. STOPPING		Not relevant
5.5. FIRE		Not relevant
5.6. EXHAUST EMISSIONS		Not relevant
6. SUPPLEMENTARY ESSENTIAL HEALTH AND SAFETY REQUIREMENTS FOR MACHINERY PRESENTING PARTICULAR HAZARDS DUE TO THE LIFTING OF PERSONS		Not relevant

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

**INTERNATIONAL
STANDARD**

**ISO
4254-6**

Third edition
2020-04

**Agricultural machinery — Safety —
Part 6:
Sprayers and liquid fertilizer
distributors**

Matériel agricole — Sécurité —

Partie 6: Pulvérisateurs et distributeurs d'engrais liquides



Reference number
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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).

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).

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 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 the following URL: 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 4254-6:2009), which has been technically revised and contains the following changes:

- some excluded hazards have been deleted from the scope as they are covered by ISO 4254-1 or this revised edition;
- the general (stability) requirements have been deleted as they are covered by ISO 4254-1;
- the protection of the operator against hazardous substances in case of front mounted booms has been removed as this risk is relevant to all types of sprayers but appropriate requirements (in form of an international reference standard) are not yet available;
- in [4.5.2](#), the requirements for chemical inductions bowls have been amended to cover foldable devices;
- in [4.7](#), requirements for protecting the operator in case of leakages have been added;
- a new subclause ([4.12](#)) to deal with the storage of personal protective equipment has been added;
- [Clause 6](#) has been aligned with ISO 4254-1.

A list of all parts in the ISO 4254 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.

Introduction

The structure of safety standards in the field of machinery is as follows:

- a) type-A standards (basic standards) give basic concepts, principles for design, and general aspects that can be applied to machinery;
- b) type-B standards (generic safety standards) deal with one safety aspect or one type of safeguards that can be used across a wide range of machinery:
 - type-B1 standards on particular safety aspects (e.g. safety distances, surface temperature, noise),
 - type-B2 standards on safeguards (e.g. two-hand controls, interlocking devices, pressure sensitive devices, guards);
- c) type-C standards (machinery safety standards) deal with detailed safety requirements for a particular machine or group of machines.

This document is a type-C standard as stated in 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 (e.g. regulators, accident prevention organizations, market surveillance)

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 and events are covered are indicated in the scope of this document. These hazards are specific to sprayers and liquid fertilizer distributors.

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.

Significant hazards that are common to all the agricultural machines (self-propelled, mounted, semi-mounted and trailed) are dealt with in ISO 4254-1.

Agricultural machinery — Safety —

Part 6: Sprayers and liquid fertilizer distributors

1 Scope

This document, to be used together with ISO 4254-1, specifies the safety requirements and their verification for the design and construction of mounted, semi-mounted, trailed and self-propelled agricultural sprayers for use with plant protection products (PPP) and liquid fertilizer application, as placed on the market by the manufacturer and designed for a single operator only. In addition, it specifies the type of information on safe working practices (including residual risks) to be provided by the manufacturer.

When requirements of this document are different from those which are stated in ISO 4254-1, the requirements of this document take precedence over the requirements of ISO 4254-1 for machines that have been designed and built according to the provisions of this document.

This document, taken together with ISO 4254-1, deals with significant hazards, hazardous situations and events relevant to sprayers and liquid fertilizer distributors when they are used as intended and under the conditions foreseeable by the manufacturer (see [Annex A](#)), excepting the hazards arising from:

- protection of the driver against spray when spraying (see Foreword);
- automatically actuated height adjustment systems;
- the environment, other than noise;
- moving parts for power transmission except strength requirements for guards and barriers.

This document is not applicable to sprayers and liquid fertilizer distributors which are manufactured before the date of publication of this document.

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 4254-1:2013, *Agricultural machinery — Safety — Part 1: General requirements*

ISO 5681, *Equipment for crop protection — Vocabulary*

ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction*

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

koniec náhľadu – text ďalej pokračuje v platenej verzii STN