



**SLOVENSKI STANDARD**  
**oSIST prEN 690:2010**  
**01-julij-2010**

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**Kmetijski stroji - Trosilniki hlevskega gnoja - Varnost**

Agricultural machinery - Manure spreaders - Safety

Landmaschinen - Stalldungstreuer - Sicherheit

Matériel agricole - Epandeurs de fumier - Sécurité

**Ta slovenski standard je istoveten z: prEN 690**

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**ICS:**

65.060.25	Oprema za skladiščenje, pripravo in razdeljevanje gnojiv	Equipment for storage, preparation and distribution of fertilizers
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EUROPEAN STANDARD  
NORME EUROPÉENNE  
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ICS 65.060.25

Will supersede EN 690:1994+A1:2009

English Version

## Agricultural machinery - Manure spreaders - Safety

Matériel agricole - Epandeurs de fumier - Sécurité

Landmaschinen - Stallungstreuer - Sicherheit

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.

This draft European Standard was established by CEN 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 Management Centre has the same status as the official versions.

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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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## Foreword

This document (prEN 690:2010) 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 will supersede EN 690:1994+A1:2009.

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

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## Introduction

This document is a type-C standard as specified in EN ISO 12100-1.

The machinery concerned and the extent to which hazards are covered are indicated in the scope of this document. These hazards are specified to manure spreaders.

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

When provisions of this type C standard are different from those which are stated by 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.

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## 1 Scope

This European Standard, to be used together with ISO 4254-1, specifies safety requirements and their verification for design and construction of self-propelled, mounted and trailed manure spreaders, provided with vertical or horizontal axes rotors rear spreader device or with horizontal or vertical axes disc lateral spreader device. In addition, it specifies the type of information on safe working practices to be provided by the manufacturer (the residual risks are enclosed).

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

This document, taken together with ISO 4254-1, deals with all the significant hazards, hazardous situations and events (as listed in Table 1), relevant to manure spreaders, when they are used as intended and under the conditions of reasonable foreseeable misuse except the hazards arising from:

- travelling function of self-propelled machinery;
- overturning in regard to the protection of the operator at the driving station of a self-propelled machine.

NOTE 1 This standard does not cover requirements for road traffic regulations. This document does not apply to manure spreading with lateral spreading device made of chain-awner.

NOTE 2 Environmental aspects are covered by EN 13080. This document is not applicable to manure spreaders which are manufactured before the date of publication of this document by CEN.

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## 2 Normative references

The following referenced documents are indispensable for the application 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 ISO 12100-1:2003, *Safety of machinery – Basic concepts, general principles for design – Part 1: Basic terminology, methodology* (ISO 12100-1:2003)

EN ISO 12100-2:2003, *Safety of machinery – Basic concepts, general principles for design – Part 2: Technical principles* (ISO 12100-2:2003)

EN ISO 13857:2008, *Safety of machinery - Safety distances to prevent danger zones being reached by upper and lower limbs* (ISO 13857:2008) EN ISO 4254-1:2009, *Agricultural machinery – Safety – Part 1: General requirements* (ISO 4254-1:2008)

EN ISO 11688-1:2009, *Acoustics – Recommended practice for the design of low-noise machinery and equipment – Part 1: Planning* (ISO/TR 11688-1:1995)

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100-1:2003 and the following apply.

### 3.1

#### **manure spreader**

machine for transporting and spreading manure on the field surface

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- 3.2  
load body**  
platform formed by a base with three lateral edges able to contain the product for transport and spreading on field
- 3.3  
conveyor device**  
device made by two or more dragging chains and by a number of metal slats able to convey the material in the load body to the spreading device
- 3.4  
spreading device**  
device made by rotary working tools able to spread manure on the ground
- 3.5  
rear spreading device with rotors**  
device formed by two or more rotors with verticals or horizontal rotation axes
- 3.6  
spreading device working tools**  
metal components (as teeth, saw-blades, etc.) fixed on spreading device able to catch manure from mound inside the load body, and spread it on the ground
- 3.7  
manure spreading with lateral spreading device made of chain-awner**  
manure spreading provided with spreading device made by free rotary chains around a longitudinal axis

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**4 List of significant hazards**

This table specifies the significant hazard(s), significant hazardous situation(s) and significant hazardous event(s) covered by this document that have been identified by risk assessment as being significant for this type of machine and which require specific action by the designer or manufacturer to eliminate or reduce the risk.

Attention is drawn to the necessity to verify that the safety requirements specified in this document 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 associated with manure spreaders

No.	Hazard, hazardous situation or hazardous event	Hazardous situation/event	Clause/subclause of EN ISO 4254-1:2009	Clause/subclause of this document
<b>1</b>	<b>Mechanical hazards</b>			
1.1	Crushing hazard	Controls	4.4.3; 5.1.3.2; 5.1.8; 6.1	5.2.1
		Boarding means	4.5.1.1.2; 4.5.1.2.5; 4.5.2.3; 4.6	—
		Working elements /conveyor/spreading devices	4.7	5.4.1 , 5.8; 7.1
		Service points, service and maintenance operations	4.8; 4.14.1; 4.14.3; 4.14.5; 4.14.6	5.4.2; 7.1
		Roll-over	5.1.2.3	—
		Shearing and pinching points at the operator's work station	5.1.4	—
		Moving the machine,	5.2	—
		Lack of stability	6.2	7.1
		Mounting of machines/coupling area	6.2.2; 6.2.3; 6.3	—
1.2	Shearing hazard	Controls	4.4.3; 5.1.3.1; 5.1.3.3; 5.1.8; 6.1	5.2.1
		Boarding means	4.5.1.1.2; 4.5.1.2.5; 4.5.2.3; 4.6	—
		Working elements /conveyor/spreading devices	4.7	5.4.1; 5.8; 7.1
		Service points, service and maintenance operations,	4.8; 4.14.1; 4.14.3; 4.14.5; 4.14.6	5.4.2; 7.1
		Shearing and pinching points at the operator's work station	5.1.4	—
		Moving the machine,	5.2	—
		Lack of stability	6.2	7.1
		Mounting of machines	6.2.2; 6.2.3; 6.3	—
1.3	Cutting or severing hazard	Working elements /conveyor/spreading devices	4.7	5.2.1; 5.4.1; 5.4.2; 5.8; 7.1
1.4	Entanglement hazard	Power transmission parts	6.4	5.5; 5.7
		Driving gear of spreading device		5.6
		Working elements /conveyor/spreading devices	4.7	5.2.1; 5.4.1; 5.4.2; 5.8; 7.1
		Starting/stopping the engine with engaged drive(s)	5.1.8	7.1; 7.2
1.5	Drawing-in or trapping hazard	Power transmission parts	6.4	5.5; 5.7
		Driving gear	4.7	5.6

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No.	Hazard, hazardous situation or hazardous event	Hazardous situation/event	Clause/subclause of EN ISO 4254-1:2009	Clause/subclause of this document
		Working Elements/conveyor/spreading devices	5.1.8	5.2.1; 5.4.1; 5.4.2; 5.8; 7.1
		Starting/stopping the engine with engaged drive(s)		7.1; 7.2
1.6	Impact hazard	Boarding means	4.5.1.2.5	—
		Steering system	5.1.3.1	—
1.7	Stabbing or puncture hazard	Spreading devices	4.7	5.8
		Projectiles		5.3
1.8	Friction or abrasion hazard	Controls	4.4.3; 5.1.3.2	
		Electrical equipment,	4.9.1	—
		Boarding means	4.5.1.1.2	—
1.9	High-pressure fluid injection or ejection hazard	Hydraulic components and fittings (e.g. rupture)	4.10; 6.5	—
<b>2</b>	<b>Electrical hazards</b>			
2.1	Contact of persons with live parts (direct contact)	Electrical equipment	4.9; 5.3, 6.5	—
2.2	Contact of persons with parts which have become live under faulty conditions (indirect contact)	Electrical equipment	4.9.1	—
2.4	Thermal radiation or other phenomena such as the projection of molten particles and chemical effects from short circuits, overloads, etc.	Electrical equipment	4.9.2; 5.3.1	—
<b>3</b>	<b>Thermal hazards</b>			
3.1	Burns, scalds and other injuries by possible contact between persons and objects or materials with an extreme high or low temperature, by flames or explosions and also by the radiation of heat sources	Hydraulic system, operating fluids (e.g. fuel, hydraulic oil, engine coolant)	4.12	—
		Cab material	5.1.6	—
		Hot surfaces	5.5	—

No.	Hazard, hazardous situation or hazardous event	Hazardous situation/event	Clause/subclause of EN ISO 4254-1:2009	Clause/subclause of this document
<b>4</b>	<b>Hazards generated by noise</b>			
4.1	Hearing loss (deafness), other physiological disorders (e.g. loss of balance, loss of awareness), accidents due to speech communication and acoustic warning signals	Noise	4.2	5.9
<b>5</b>	<b>Hazards generated by materials and substances</b>			
5.1	Hazards from contact with or inhalation of harmful fluids, gases, mists, fumes and dusts	Operating fluids (fuel tank, hydraulic systems, engine cooling system)	4.10; 5.4	—
		Cab material	5.1.6	—
		Battery	5.3.1	—
		Exhaust system	5.6	—
5.2	Fire or explosion hazard	Cab material	5.1.6	—
<b>6</b>	<b>Hazards generated by neglecting ergonomic principles in machinery design</b>			
6.1	Unhealthy postures or excessive effort	Controls	4.4	—
		Boarding means	4.5; 4.6	5.5
		Service and maintenance operations	4.14.2; 4.14.4	5.4.2; 5.8
		operator's station	5.1.1; 5.1.2.1; 5.1.3;	—
6.2	Non- or inadequate consideration of hand–arm or foot–leg anatomy	Controls	4.4	5.2.1
		Boarding means	4.5; 4.6	5.5
		Operator's station	5.1	—
6.3	Neglected use of personal protective equipment	Operator's manual	8.1.3	7.1
6.4	Inadequate local lighting	Visibility	5.1.7.3	—
6.5	Mental overload and under load, stress	Controls	4.4	—
6.6	Human error, human behaviour	Controls	4.4	—
		Operator's manual	8.1	7.1
		Location and design of signs	8.2	7.2
6.7	Design, location or identification of manual controls	Design, location and identification of controls	4.4; 5.1.3; 6.1, 8.1.3.c)	—
<b>7</b>	<b>Combination of hazards</b>	Individual assemblies	4.13	5.6
		Operator's manual	8.1	7.1