

**Metsandusmasinad. Puiduhakkurid. Ohutus**  
**KONSOLIDEERITUD TEKST**

Forestry machinery - Wood chippers - Safety  
CONSOLIDATED TEXT

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 13525:2005+A2:2009 sisaldab Euroopa standardi EN 13525:2005+A2:2009 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 31.12.2009 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 21.10.2009.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 13525:2005+A2:2009 consists of the English text of the European standard EN 13525:2005+A2:2009.

This standard is ratified with the order of Estonian Centre for Standardisation dated 31.12.2009 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

Date of Availability of the European standard text 21.10.2009.

The standard is available from Estonian standardisation organisation.

ICS 65.060.80

### Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:  
Aru 10 Tallinn 10317 Eesti; [www.evs.ee](http://www.evs.ee); Telefon: 605 5050; E-post: [info@evs.ee](mailto:info@evs.ee)

### Right to reproduce and distribute Estonian Standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without permission in writing from Estonian Centre for Standardisation.

If you have any questions about standards copyright, please contact Estonian Centre for Standardisation:  
Aru str 10 Tallinn 10317 Estonia; [www.evs.ee](http://www.evs.ee); Phone: +372 605 5050; E-mail: [info@evs.ee](mailto:info@evs.ee)

English Version

**Forestry machinery - Wood chippers - Safety**

Machines forestières - Déchiqueuses - Sécurité

Forstmaschinen - Buschholzhacker - Sicherheit

This European Standard was approved by CEN on 8 December 2004 and includes Amendment 1 approved by CEN on 13 April 2007 and Amendment 2 approved by CEN on 17 August 2009.

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 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 Management Centre has the same status as the official versions.



CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.





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

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

## Contents

	Page
Foreword.....	4
0 Introduction.....	5
1 Scope .....	6
2 Normative references .....	7
3 Terms and definitions .....	8
4 Safety requirements and/or measures .....	10
4.1 General.....	10
4.2 Operator controls.....	10
4.2.1 General.....	10
4.2.2 Starting the machine .....	10
4.2.3 Stopping the machine .....	11
4.2.4 Infeed stop control.....	11
4.2.5 Safety and reliability of control systems.....	15
4.3 Protection against mechanical hazards .....	16
4.3.1 Stability .....	16
4.3.2 Risk of break-up during operation .....	16
4.3.3 Hazards related to infeed components and chipping components .....	17
4.3.4 Risks due to ejected objects .....	19
4.3.5 Protection against access to moving power transmission parts .....	19
4.4 Protection against non-mechanical hazards .....	20
4.4.1 Noise .....	20
4.4.2 Hydraulic components .....	21
4.4.3 Hot surfaces .....	21
4.4.4 Electrical hazards .....	21
4.5 Preparation for transport and maintenance.....	22
5 Verification of the safety requirements and/or measures .....	23
5.1 General.....	23
5.2 Stability .....	23
5.3 Chipping components risk of break-up.....	24
5.4 Hot surfaces .....	24
5.4.1 Temperature measuring equipment.....	24
5.4.2 Test method.....	24
5.4.3 Test acceptance .....	25
5.5 Verification of requirements on noise – Measurement of noise emission .....	25
6 Information for use .....	25
6.1 Instruction handbook .....	25
6.2 Marking .....	27
6.3 Warnings.....	27
Annex A (normative) List of significant hazards .....	29
Annex B (normative) Noise test code - Engineering method (grade 2) .....	33
Annex C (normative)  Machines with integrated feed chain conveyor  .....	37
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC, amended by Directive 98/79/EC .....	40

<b>Annex ZB (informative)  Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC </b>	<b>41</b>
<b>Bibliography</b>	<b>42</b>

This document is a preview generated by EVS

## Foreword

This document (EN 13525:2005+A2:2009) 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 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 April 2010 and conflicting national standards shall be withdrawn at the latest by April 2010.

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 includes Amendment 1, approved by CEN on 2007-04-13 and Amendment 2, approved by CEN on 2009-08-17.

This document supersedes  $\text{A}_2$  EN 13525:2005+A1:2009  $\text{A}_2$ .

The start and finish of text introduced or altered by amendment is indicated in the text by tags  $\text{A}_1$   $\text{A}_1$  and  $\text{A}_2$   $\text{A}_2$ .

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).

$\text{A}_2$  For relationship with EU Directives, see informative Annexes ZA and ZB, which are integral parts of this document.  $\text{A}_2$

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

## 0 Introduction

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

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

# 1 Scope

This document specifies safety requirements and their verification for design and construction of transportable, i.e. self-propelled, mounted, semi-mounted and trailed, wood chippers used in forestry, agriculture, horticulture and landscaping.

**A1** This document applies to chippers, used when stationary, which are manually loaded with wood through a horizontal or near horizontal infeed chute and where the infeed action is performed by the chipping components acting as infeed components or by separate integrated infeed components such as rollers or chain conveyors integral to the infeed chute. The included wood chippers may be powered either by an external power take-off, hydraulics etc. or by an integral power source such as an internal combustion engine. **A1**

This document does not cover:

- requirements relating to national road regulations arising from transport between work sites;
- hazards arising from any self-propelled function;
- hazards arising from the transmission of power from an external power source – e.g. power take-off drive shafts;
- **A1** any machines where the infeed chute is fitted with an extension table or the integrated chain conveyor is protruding beyond the outermost lower edge of the infeed chute; **A1**
- hazards arising from the engine pull starting of an integral power source;
- hazards arising from mechanical loading;
- vertical infeed chute chippers;
- electromagnetic aspects of the chippers;
- shredders/chippers to be covered by EN 13683;
- **A1** any machines where the infeed chute is fitted with a belt type conveyor;
- mechanical discharge systems. **A1**

This document deals with all significant hazards, hazardous situations and events relevant to wood chippers, when they are used as intended and under the conditions foreseen by the manufacturer (see Annex A).

In addition, it specifies the type of information to be provided by the manufacturer on the safe use of these machines.

It is not applicable to environmental hazards (except noise).

This document is not applicable to wood chippers which are manufactured before the date of publication of this document by CEN.



## 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 294:1992, *Safety of machinery – Safety distance to prevent danger zones being reached by the upper limbs*
- EN 563:1994, *Safety of machinery – Temperatures of touchable surfaces – Ergonomics data to establish temperature limit values for hot surfaces*
- EN 811:1996, *Safety of machinery – Safety distances to prevent danger zones being reached by the lower limbs*
- EN 953:1997, *Safety of machinery – Guards – General requirements for the design and construction of fixed and movable guards*
- EN 954-1:1996, *Safety of machinery – Safety-related parts of control systems – Part 1: General principles for design*
- EN 982:1996, *Safety of machinery – Safety requirements for fluid power systems and their components – Hydraulics*
- EN 1175-2:1998, *Safety of industrial trucks – Electrical requirements – Part 2: General requirements of internal combustion engine powered trucks*
- EN 10025-2:2004, *Hot rolled products of structural steels - Part 2: Technical delivery conditions for non-alloy structural steels*
- EN 60204-1:1997, *Safety of machinery – Electrical equipment of machines – Part 1: General requirements (IEC 60204-1:1997)*
- EN 60529:1991, *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*
- EN 60947-5-1:2004, *Low-voltage switchgear and controlgear – Part 5-1: Control circuit devices and switching elements – Electromechanical control circuit devices (IEC 60947-5-1:2003)*
- EN ISO 3744:1995, *Acoustics – Determination of sound power levels of noise sources using sound pressure - Engineering method in an essentially free field over a reflecting plane (ISO 3744:1994)*
- EN ISO 4871:1996, *Acoustics – Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996)*
- EN ISO 9614-1:1995, *Acoustics – Determination of sound power levels of noise sources using sound intensity – Part 1: Measurements at discrete points (ISO 9614-1:1993)*
- EN ISO 9614-2:1996, *Acoustics - Determination of sound power levels of noise sources using sound intensity - Part 2: Measurement by scanning (ISO 9614-2:1996)*
- EN ISO 11201:1995, *Acoustics – Noise emitted by machinery and equipment – Measurement of emission sound pressure levels at a work station and at other specified positions – Engineering method in an essentially free field over a reflecting plane (ISO 11201:1995)*
- EN ISO 11204:1995, *Acoustics – Noise emitted by machinery and equipment – Measurement of emission sound pressure levels at a work station and at other specified positions – Method requiring environmental corrections (ISO 11204:1995)*

EN ISO 11688-1:1998, *Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 1: Planning (ISO/TR 11688-1:1995)*

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)*

ISO 4413:1998, *Hydraulic fluid power — General rules relating to systems*

ISO 11684:1995, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Safety signs and hazard pictorials — General principles*

IEC 60245-1:2003, *Rubber insulated cables — Rated voltages up to and including 450/750 V — Part 1: General requirements*

### 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

##### **wood chipper**

machine designed to reduce wood into chips

#### 3.2

##### **chipping components**

rotating disc or drum or similar device with cutting tools or screw arrangement that performs the chipping operation and may perform also the infeed operation

#### 3.3

##### **infeed components**

rollers and/or conveyors which feed wood into the chipping components

#### 3.4

##### **loading**

method of presenting wood to the machine

##### 3.4.1

##### **horizontal loading**

method where the wood is presented to the machine from its side in a horizontal direction

##### 3.4.2

##### **manual loading**

method where the wood is presented to the machine is done manually by the operator

#### 3.5

##### **infeed chute**

device through which wood is fed and guided to the chipping components and which may also provide the required safety distances

#### 3.6

##### **integrated chain conveyor**

transporting system integral to the infeed chute using chain(s), which presents wood to the infeed components or to the chipping components 