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Earth-moving machinery - Safety - Part 6: Requirements for dumpers

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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See Eesti standard EVS-EN 474-6:2022 sisaldab Euroopa standardi EN 474-6:2022 ingliskeelset teksti.	This Estonian standard EVS-EN 474-6:2022 consists of the English text of the European standard EN 474-6:2022.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 30.03.2022.	Date of Availability of the European standard is 30.03.2022.
Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

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ICS 53.100

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 474-6

March 2022

ICS 53.100

Supersedes EN 474-6:2006+A1:2009

English Version

Earth-moving machinery - Safety - Part 6: Requirements for dumpers

Engins de terrassement - Sécurité - Partie 6 : Prescriptions applicables aux tombereaux

Erdbaumaschinen - Sicherheit - Teil 6: Anforderungen für Muldenfahrzeuge

This European Standard was approved by CEN on 14 February 2022.

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European foreword

This document (EN 474-6:2022) has been prepared by Technical Committee CEN/TC 151 “Construction equipment and building material machines - Safety”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by September 2022, and conflicting national standards shall be withdrawn at the latest by March 2024.

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 474-6:2006+A1:2009.

This document has been prepared under a standardization request 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.

For bibliographic references, see EN 474-1:2022.

EN 474 “Earth-moving machinery — Safety” comprises the following parts:

— Part 1: General requirements

— Part 2: Requirements for tractor-dozers

— Part 3: Requirements for loaders

— Part 4: Requirements for backhoe-loaders

— Part 5: Requirements for hydraulic excavators

— Part 6: Requirements for dumpers

— Part 7: Requirements for scrapers

— Part 8: Requirements for graders

— Part 9: Requirements for pipelayers

— Part 10: Requirements for trenchers

— Part 11: Requirements for earth and landfill compactors

— Part 12: Requirements for cable excavators

— Part 13: Requirements for rollers

This document is intended for use in combination with part 1 of the series.

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The main differences between this document and EN 474-6:2006+A1:2009 are as follows:

a) self-loading equipment (excluded);

b) safety-related functions of control systems (excluded);

c) the normative references (updated);

d) FOPS requirement (4.2.3) (modified);

e) operator's seat input spectral class shall be EM7 for wheeled dumpers over 6 000 kg, rather than over 4 500 kg (4.3.2) (modified);

f) a restraint system, in addition to a seat belt, is required on dumpers with a front-mounted dump body over 3 500kg operating mass which do not have a cab (4.3.3) (added);

g) machines with hydrostatic drives are exempted from the requirement for a retarder (4.6.2) (modified);

h) all the wheels of a front mounted body dumper must remain in contact with the ground during the braking test (4.6.3) (modified);

i) the assessment of visibility for dumpers where the load can affect visibility shall be done with the dump body loaded (4.7) (added);

j) inclinometers shall be fitted to machines with front mounted dump body (4.4.2) (added);

k) exemptions from dump body down requirements (4.10.3) (modified);

l) verification methods (Clause 5) (added);

m) list of significant hazards (Annex A) (updated);

n) Annex ZA (updated).

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

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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.

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Introduction

This document is a type-C standard as stated in EN 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 (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.

The machinery concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the scope of this document.

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.

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1 Scope

This document together with EN 474-1:2022 deals with all significant hazards, hazardous situations and events relevant to dumpers when used as intended and under the conditions of misuse which are reasonably foreseeable by the manufacturer (see Annex A) associated with the whole lifetime of the machine as described in EN ISO 12100:2010, 5.4.

The requirements of this document are complementary to the common requirements formulated in EN 474-1:2022. This document does not repeat the requirements of EN 474-1:2022 but supplements or modifies the requirements for dumpers.

This document does not provide requirements for main electrical circuits and drives of machinery when the primary source of energy is an external electrical supply.

This document does not provide performance requirements for safety related functions of control system(s).

Pedestrian controlled dumpers are excluded from scope of this document.

This document does not deal with the hazards associated with self-loading equipment.

The following significant and relevant hazards are not covered in this document:

— Transmission of power between self-propelled machinery (or tractor) and recipient machinery;

— Laser;

— Lightning.

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

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.

EN 474-1:2022, *Earth-moving machinery — Safety — Part 1: General requirements*

EN ISO 3449:2008, *Earth-moving machinery — Falling-object protective structures — Laboratory tests and performance requirements (ISO 3449:2005)*

EN ISO 3450:2011, *Earth-moving machinery — Wheeled or high-speed rubber-tracked machines — Performance requirements and test procedures for brake systems (ISO 3450:2011)*

EN ISO 3471:2008, *Earth-moving machinery — Roll-over protective structures — Laboratory tests and performance requirements (ISO 3471:2008)*

EN ISO 7096:2020, *Earth-moving machinery — Laboratory evaluation of operator seat vibration (ISO 7096:2020)*

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

ISO 6483:1980, *Earth-moving machinery — Dumper bodies — Volumetric rating*

ISO 6483:1980/Cor 1:1994, *Earth-moving machinery — Dumper bodies — Volumetric rating*

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ISO 5006:2017, *Earth-moving machinery — Operator's field of view — Test method and performance criteria*

ISO 10268:1993, *Earth-moving machinery — Retarders for dumpers and tractor-scrapers — Performance tests*

ISO 13333:1994, *Earth-moving machinery — Dumper body support and operator's cab tilt support devices*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 474-1:2022, EN ISO 12100:2010 and the following apply.

NOTE Terminology for dumpers is specified in ISO 7132:2003 and is illustrated in Annex B of this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at https://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
dumper
self-propelled crawler or wheeled machine, with an open dump body, which transports and dumps or spreads material

[SOURCE: EN ISO 6165:2012, modified]

Note 1 to entry: See Figures B.1, B.2 and B.3.

3.2
rigid frame dumper
dumper with a rigid frame and wheel or crawler steering

[SOURCE: EN ISO 6165:2012, modified]

Note 1 to entry: See Figures B.1 and B.3.

3.3
articulated frame dumper
dumper with an articulated frame for steering

[SOURCE: EN ISO 6165:2012, modified]

Note 1 to entry: See Figure B.2.

3.4
swing dumper
dumper having a 360° swing upper structure

[SOURCE: EN ISO 6165:2012, modified]

Note 1 to entry: The upper structure comprises a rigid frame, open body and operator's station; the under-carriage consists of a track type or wheeled unit.

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