



SLOVENSKI STANDARD
oSIST prEN 474-6:2017
01-junij-2017

Stroji za zemeljska dela - Varnost - 6. del: Zahteve za prekucnike

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

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

Ta slovenski standard je istoveten z: prEN 474-6

[oSIST prEN 474-6:2017](https://standards.iteh.ai/catalog/standards/sist/46bebd78-c32a-4465-b44d-6ba51be0002f/osist-pren-474-6-2017)

<https://standards.iteh.ai/catalog/standards/sist/46bebd78-c32a-4465-b44d-6ba51be0002f/osist-pren-474-6-2017>

ICS:

53.100 Stroji za zemeljska dela Earth-moving machinery

oSIST prEN 474-6:2017

en,fr,de

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[oSIST prEN 474-6:2017](#)

<https://standards.iteh.ai/catalog/standards/sist/46bebd78-c32a-4465-b44d-6ba51be0002f/osist-pren-474-6-2017>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 474-6

March 2017

ICS 53.100

Will supersede 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

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 151.

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-CENELEC Management Centre has the same status as the official versions.

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

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.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents	Page
European foreword.....	3
Introduction	4
1 Scope.....	4
2 Normative references.....	4
3 Terms and definitions	5
4 List of additional significant hazards.....	6
5 Safety requirements and/or measures	6
5.1 General.....	6
5.2 Dump body	6
5.2.1 Control device.....	6
5.2.2 Body lowering	6
5.2.3 Body lowering shall be possible without the use of special tools. Body down indicator	6
5.2.4 Body support device.....	6
5.2.5 Sticking load.....	7
5.3 Retarder.....	7
5.4 Roll-over protective structures (ROPS).....	7
5.5 Falling object protective structure (FOPS)	7
5.5.1 General.....	7
5.5.2 FOPS level (other than compact dumpers).....	7
5.5.3 Compact dumper	7
5.6 Operator's station	7
5.6.1 Cab.....	7
5.6.2 Operator's seat.....	7
5.6.3 Compact dumpers with a standing operator position	8
5.7 Steering system.....	8
5.7.1 General.....	8
5.7.2 Steering controls for machines with swivelling seats.....	8
5.7.3 Controls for steering and driving of machines with turnable upper structure.....	8
5.8 Stability.....	8
5.8.1 Braking.....	8
5.8.2 Sloping ground	9
5.9 Visibility.....	9
6 Information for use	9
Annex A (normative) List of additional significant hazards – Dumpers	10
Annex B (informative) Illustrations	11
Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2006/42/EC machinery, and amending Directive 95/16/EC (recast) [2006 L157] aimed to be covered.....	13
Bibliography.....	14

European foreword

This document (prEN 474-6:2017) 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 document is currently submitted to the CEN Enquiry.

This document will supersede EN 474-6:2006+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.

For bibliographic references, see prEN 474-1:2017.

prEN 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 European Standard is intended for use in combination with part 1 of the series.

Introduction

This part of prEN 474 is a type C standard as stated in EN ISO 12100:2010.

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, together with part 1, deals with all significant hazards for earth-moving machinery – dumpers when they are used as intended and under the conditions of misuse which are reasonably foreseeable by the manufacturer associated with the whole life time of the machine (see Clause 4).

The requirements of this part are complementary to the common requirements formulated in prEN 474-1. This document does not repeat the requirements from prEN 474-1, but adds or replaces the requirements for application for earth moving machinery – dumpers.

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

This part does not repeat the requirements from prEN 474-1:2017, but adds or replaces the requirements for application for dumpers.

This part specifies the appropriate technical measures to eliminate or reduce risks arising from the significant hazards, hazardous situations and events during commissioning, operation and maintenance of dumpers.

Pedestrian controlled dumpers are excluded from scope of this European Standard.

This European Standard is not applicable to dumpers, manufactured before the date of publication of this European Standard by CEN.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

prEN 474-1:2017, *Earth-moving machinery — Safety — Part 1: General requirements*

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

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

EN ISO 6165:2012, *Earth-moving machinery — Basic types — Identification and terms and definitions (ISO 6165:2012)*

ISO 6016:2008, *Earth-moving machinery — Methods of measuring the masses of whole machines, their equipment and components*

EN ISO 7096:2008, *Earth-moving machinery — Laboratory evaluation of operator seat vibration (ISO 7096:2000)*

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

ISO 10268:1993, *Earth-moving machinery — Retarders for dumpers and tractor-scraper — 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 prEN 474-1:2017, EN ISO 12100:2010 and the following apply.

Note 1 to entry: Terminology for dumpers is specified in ISO 7132:2003 and is illustrated in Annex B of this document.

Note 2 to entry: Definitions used in EN and ISO standards referred to in this document are also valid for this document.

3.1

dumper

self-propelled crawler or wheeled machine, with an open body, which transports and dumps or spreads material (see EN ISO 6165:2012 and Figures B.1 and B.2)

3.2

rigid frame dumper

dumper with a rigid frame and wheel or crawler steering (see EN ISO 6165:2012, Figure B.1 and Figure B.3)

3.3

articulated frame dumper

dumper with an articulated frame for steering (see EN ISO 6165:2012 and Figure B.2)

3.4

swing dumper

dumper having a 360° swing upper structure (see EN ISO 6165:2012)

Note 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.

3.5

compact dumper

articulated or rigid dumper having an operating mass (see ISO 6016:2008) of 4 500 kg or less (see EN ISO 6165:2012 and Figures B.4, B.5 and B.6)

3.6

self-loading equipment

integral mounted bucket-supporting structure and linkage permanently fitted to the dumper enabling it to fill its own open body with material (see Figure B.6)

prEN 474-6:2017 (E)**3.7****front mounted dump body**

dumper where the dump body is located in front of the operator's station

Note to entry: the dump body can be fixed front discharge, fixed side discharge, slewed, elevated

3.8**rear mounted dump body**

dumper where the dump body is located behind the operator's station

Note to entry: the dump body can be fixed rear discharge, fixed side discharge, slewed, elevated

4 List of additional significant hazards

See Annex A.

NOTE Annex A (normative) contains all the significant hazards, hazardous situations and events, as far as they are dealt with in this document, identified by risk assessment as significant for this type of machinery and which require action to eliminate or reduce the risk.

5 Safety requirements and/or measures**5.1 General**

Dumpers shall comply with the requirements of prEN 474-1:2017, as far as not modified or replaced by the requirements of this part.

5.2 Dump body**5.2.1 Control device**

<https://standards.iteh.ai/catalog/standards/sist/46bebd78-c32a-4465-b44d-6ba51be0002f/osist-pren-474-6-2017>

The body actuation control shall be suitably located such that the operator is not exposed to additional hazards during all movements of the body.

5.2.2 Body lowering

The body lowering control shall be suitably located such that the operator is not exposed to additional hazards during body lowering.

5.2.3 Body lowering shall be possible without the use of special tools. Body down indicator

Dumpers shall have the following provisions:

- a device preventing travelling with a speed higher than 10 km/h when the body is not completely lowered;
- an audible and/or visible warning device functioning when the body is not in a lowered position and the transmission is engaged.

Compact dumpers are excluded from this requirement.

5.2.4 Body support device

A mechanical body support device shall be provided to support the body in lifted position during service, maintenance and other non-operational purposes. The device shall meet the requirements in ISO 13333:1994.

5.2.5 Sticking load

Where there is a risk of losing stability while dumping due to the load freezing to the body, provisions shall be made to assist discharge of the load.

NOTE A solution is to provide an exhaust heating system for the dump body.

Compact dumpers are excluded from this requirement.

5.3 Retarder

Dumpers, except compact dumpers and crawler dumpers, shall be equipped with a retarder system, which meets the requirements of ISO 10268:1993.

5.4 Roll-over protective structures (ROPS)

prEN 474-1:2017, 5.3.3 shall apply with the following additions/exceptions for dumpers with a front mounted dump body:

Rigid frame dumpers with a front mounted dump body and a seated operator and articulated frame dumpers with a front mounted dump body and a seated operator shall have ROPS according to EN ISO 3471:2008 and shall meet the requirements of EN ISO 3471:2008, Table 1 option 7 rigid frame dumper – including dump body.

5.5 Falling object protective structure (FOPS)

5.5.1 General

prEN 474-1:2017, 5.3.4 shall apply with the additions/exceptions in 5.6.2 and 5.6.3.

5.5.2 FOPS level (other than compact dumpers)

Dumpers other than compact dumpers shall be fitted with FOPS meeting level II (see EN ISO 3449:2008).

5.5.3 Compact dumper

5.5.3.1 Compact dumper equipped with a cab

Compact dumper equipped with a cab shall be designed and built so that a FOPS can be fitted which shall meet the requirements of EN ISO 3449:2008, level I.

5.5.3.2 Compact dumper with a self-loading equipment

Compact dumper with self-loading equipment shall be fitted with a FOPS structure of level II of EN ISO 3449:2008, if the load passes over the operator's station.

5.6 Operator's station

5.6.1 Cab

prEN 474-1:2017, 5.3.2 applies with the exception that compact dumpers do not need a cab, except when they are used in conditions detrimental to the operator's health.

5.6.2 Operator's seat

prEN 474-1:2017, 5.4.1 applies with the addition that the seat shall meet the requirements of the following input spectral class according to EN ISO 7096:2008:

- class EM1 for wheeled dumpers;

prEN 474-6:2017 (E)

- class EM7 for compact dumpers;
- class EM6 crawler dumpers.

5.6.3 Compact dumpers with a standing operator position

5.6.3.1 General

Compact dumpers with a standing operator position, shall have a travel speed not exceeding 4 km/h in the forward direction and not exceeding 2,5 km/h in reverse.

5.6.3.2 Controls

Machine movements shall be controlled with hold-to-run controls.

A suitable device allowing the operator to hold, and support himself during machine travel shall be provided. If a ride on platform is fitted, the device shall not restrict or impede the operator's access to and from the platform.

Travel and directional controls shall be designed to allow the operator to have one hand free to support them self, reducing the risk of inadvertent contact with the controls.

5.6.3.3 Operator's station

Provisions shall be made to ensure that the operator, in the normal driving position, is contained within the overall plan dimensions of the machine.

If a foldable (deployable) ride on platform is fitted for the operator, it shall be possible to fix it in a vertical position.

The platform shall have a surface area of at least 1 400 cm² and shall be capable of containing a circle with a minimum diameter of 360 mm. The platform shall have a non-slip surface and a maximum height from the ground level of 250 mm.

The platform shall be designed to withstand a compressive force equal to 2,5 times the gross machinery mass, applied to its edge when travelling in the rearward direction. The platform shall not sustain any permanent deformation or change in position.

5.7 Steering system

5.7.1 General

prEN 474-1:2017, 5.6 shall apply with the addition in 5.7.2 and 5.7.3.

5.7.2 Steering controls for machines with swivelling seats

For dumpers equipped with a swivelling seat (180°) the steering system shall be such that the movement of the steering control corresponds to the intended direction in both seat positions.

5.7.3 Controls for steering and driving of machines with turnable upper structure

The movement of the control for the driving and the steering do not need to correspond to the intended direction of movement if the upper structure is not in normal driving direction.

5.8 Stability

5.8.1 Braking

All the tyres on dumpers with a front mounted dump body shall remain in contact with the ground throughout the stopping distance during brake testing described in EN ISO 3450:2011, Clause 6.