



SLOVENSKI STANDARD
oSIST prEN 474-13:2017
01-junij-2017

Stroji za zemeljska dela - Varnost - 13. del: Zahteve za valjarje

Earth-moving machinery - Safety - Part 13: Requirements for rollers

Engins de terrassement - Sécurité - Partie 13: Prescriptions applicables aux compacteurs

(standards.iteh.ai)

Ta slovenski standard je istoveten z: prEN 474-13

oSIST prEN 474-13:2017
<https://standards.iteh.ai/catalog/standards/sist/e078259b-af89-4852-857b-9e94448ab66a/osist-pren-474-13-2017>

ICS:

53.100 Stroji za zemeljska dela Earth-moving machinery

oSIST prEN 474-13:2017

en,fr,de

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[oSIST prEN 474-13:2017](#)

<https://standards.iteh.ai/catalog/standards/sist/e078259b-af89-4852-857b-9e94448ab66a/osist-pren-474-13-2017>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 474-13

March 2017

ICS 53.100

English Version

Earth-moving machinery - Safety - Part 13: Requirements for rollers

Engins de terrassement - Sécurité - Partie 13:
Prescriptions applicables aux compacteurs

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.....		6
Introduction		7
1	Scope	8
2	Normative references	8
3	Terms and definitions	8
4	List of additional significant hazards	10
5	Safety requirements and/or protective measures	12
5.1	General	12
5.2	Operator's station	12
5.2.1	General requirements	12
5.2.2	prEN 474-1:2017, 5.3 applies with the following modification:	12
5.2.3	Roll-over protective structure (ROPS)	12
5.3	Pedestrian-controlled rollers	12
5.3.1	Handle bar	12
5.3.2	Protection device against crushing	13
5.4	Operator's controls and indicators	14
5.4.1	Controls for towed machines	14
5.4.2	Remote control	14
5.4.3	Cable remote control	14
5.5	Brake systems	14
5.5.1	Braking systems for rollers with ride-on operators	14
5.6	Noise and vibration	14
5.6.1	Noise measurement of rollers	14
5.6.2	Vibration measurement of pedestrian-controlled (hand-guided) rollers	15
5.7	Fuel tanks, hydraulic tanks and pressure vessels	15
5.8	Frequent maintenance	15
6	Verification of safety requirements/measures	15
7	Information for use	16
7.1	Warning signs	16
7.2	Operation manual	17
Annex A (normative) Remote controls for rollers with attending operator		18
A.1	General	18
A.2	Scope	18
A.3	Terms and definitions	18
A.4	Safety requirements and measures	18
A.5	Components and equipment	19
Annex B (normative) Measurement of the hand-arm vibration of hand-guided vibratory rollers		21
B.1	General	21

B.2	Terminology	21
B.3	Quantities to be measured	21
B.3.1	R.m.s. value of the weighted acceleration.....	21
B.3.2	Frequency analysis.....	21
B.3.3	Time records	21
B.3.4	Other quantities to be measured	21
B.4	Measuring equipment.....	22
B.4.1	Requirements for the acceleration transducers	22
B.4.2	Fastening of the acceleration transducers	22
B.4.3	Frequency weighting filter	22
B.4.4	R.m.s. detector	22
B.4.5	Calibration.....	22
B.5	Measurement direction and measurement location	22
B.5.1	Measurement direction	22
B.5.2	Measurement location	24
B.6	Specification of working procedure.....	24
B.6.1	Operator.....	24
B.6.2	Other quantities to be determined (forces).....	24
B.6.3	Operating conditions.....	24
B.6.4	Requirements for the test site.....	25
B.6.5	Measurement procedure	25
B.7	Test report	26
B.7.1	Reference.....	26
B.7.2	Description of the object to be measured	26
B.7.3	List of measuring equipment.....	26
B.7.4	Fastening of the acceleration transducers	26
B.7.5	Operating conditions.....	26
B.7.6	Further specifications.....	26
B.7.7	Results	28
B.8	Report of results.....	28
B.9	Measurement uncertainty	28
Annex C	(normative) Noise test code for vibratory rollers	29
C.1	Scope	29
C.2	Determination of the A-weighted sound power level.....	29
C.2.1	General	29
C.2.2	Measurement surface.....	29

prEN 474-13:2017 (E)

C.2.2.1	Size of the measurement surface.....	29
C.2.2.2	Microphone positions.....	30
C.2.3	Positioning of the machine.....	31
C.2.4	Repetition of the test.....	35
C.3	Determination of the A-weighted emission sound pressure level at the operators positions for vibratory rollers.....	35
C.3.1	General.....	35
C.3.2	Operator's positions.....	35
C.3.3	Enclosed operator's positions.....	35
C.3.4	Quantities to be determined.....	35
C.3.5	Microphone position(s).....	35
C.3.6	Test procedure.....	35
C.3.7	Repetition of the test.....	36
C.4	Test conditions.....	36
C.4.1	Installation and mounting conditions.....	36
C.4.2	Operating conditions.....	36
C.5	Uncertainty.....	36
C.6	Information to be recorded.....	37
C.7	Information to be reported.....	37
C.8	Declaration and verification of noise emission values.....	38
Annex D (normative)	Noise test code for non-vibrating rollers.....	39
D.1	Scope.....	39
D.2	Determination of the A-weighted sound power level.....	39
D.2.1	General.....	39
D.2.2	Measurement surface.....	39
D.2.2.1	Size of the measurement surface.....	39
D.2.2.2	Microphone positions.....	40
D.2.3	Positioning of the machine.....	41
D.2.4	Repetition of the test.....	42
D.3	Determination of the A-weighted emission sound pressure level at operator's positions for non-vibrating rollers.....	42
D.3.1	General.....	42
D.3.2	Operators positions.....	42
D.3.3	Enclosed operator's positions.....	42
D.3.4	Quantities to be determined.....	42
D.3.5	Microphone position(s).....	42
D.3.6	Test procedure.....	42

D.3.7	Repetition of the test	43
D.4	Test conditions	43
D.4.1	Installation and mounting conditions	43
D.4.2	Operating conditions	43
D.5	Uncertainty	43
D.6	Information to be recorded	43
D.7	Information to be reported	44
D.8	Declaration and verification of noise emission values	44
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	46
Bibliography	47

iTeh STANDARD PREVIEW (standards.iteh.ai)

[oSIST prEN 474-13:2017](https://standards.iteh.ai/catalog/standards/sist/e078259b-af89-4852-857b-9e94448ab66a/osist-pren-474-13-2017)

<https://standards.iteh.ai/catalog/standards/sist/e078259b-af89-4852-857b-9e94448ab66a/osist-pren-474-13-2017>

prEN 474-13:2017 (E)**European foreword**

This document (prEN 474-13:2017) 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 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.

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 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 European Standard.

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.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[oSIST prEN 474-13:2017](https://standards.iteh.ai/catalog/standards/sist/e078259b-af89-4852-857b-9e94448ab66a/osist-pren-474-13-2017)

<https://standards.iteh.ai/catalog/standards/sist/e078259b-af89-4852-857b-9e94448ab66a/osist-pren-474-13-2017>

prEN 474-13:2017 (E)**1 Scope**

This document, together with part 1, deals with all significant hazards for earth-moving machinery – rollers 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 – rollers.

This part of prEN 474 is not applicable for seated ride-on operated rollers with a drum width less than nominal 0,8 m.

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, *Mobile road construction machinery — Safety — Part 1: General requirements*

EN ISO 13849-1:2015, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2015)*

EN ISO 3164:2013, *Earth-moving machinery — Laboratory evaluations of protective structures — Specifications for deflection-limiting volume (ISO 3164:2013)*

EN ISO 3744:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure - Engineering methods for an essentially free field over a reflecting plane (ISO 3744:2010)*

<https://standards.iteh.ai/catalog/standards/sist/e078259b-af89-4852-857b-9e94448ab66a/osist-pr-en-474-13-2017>

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

EN ISO 11201:2010, *Acoustics — Noise emitted by machinery and equipment - Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections (ISO 11201:2010)*

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

EN ISO 13850:2015, *Safety of machinery — Emergency stop function — Principles for design (ISO 13850:2015)*

EN ISO 20643:2008, *Mechanical vibration — Hand-held and hand-guided machinery — Principles for evaluation of vibration emission (ISO 20643:2005)*

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.

Earth-moving machinery and their families are defined in EN ISO 6165:2012.

Note 1 to entry: Definitions used in EN and ISO standards referred to in this European Standard are also valid for this document.

3.1**roller**

see EN ISO 6165:2012, 4.10 and the following

Note 1 to entry: The wheel bodies (metallic cylinders) can be rubber-coated or fitted with pads.

3.1.1**roller for ride-on operators**

self-propelled compaction machine with one or more metallic cylindrical bodies (drums) or rubber tyres; the operator's station is an integral part of the machine

3.1.1.1**single-drum roller**

self-propelled compaction machine with one vibrating metallic cylindrical body (drum) and two rubber tyres

3.1.1.2**tandem roller**

self-propelled compaction machine with one metallic cylindrical body (drum) in the front and one in the rear

Note 1 to entry: They can be either static or vibrating and they can be split

3.1.1.3**combined roller**

self-propelled compaction machine with one or more metallic cylindrical body (drum) and more than two rubber tyres

3.1.1.4**three-wheel roller**

self-propelled compaction machine with one metallic body (drum) in the front (or rear) and two in the rear (or front)

Note 1 to entry: The drums can be split

3.1.1.5**pneumatic-tyre roller**

self-propelled compaction machine with three or more tyres in the front and the rear

3.1.2**pedestrian-controlled roller**

self-propelled compaction machine with one or more metallic cylindrical bodies (drums) or rubber tyres in which the operating facilities for travelling, steering, braking and vibrating are disposed in such a way that the intended operation of the machine has to be undertaken by an attending operator or by remote control in accordance with Annex A

3.1.3**towed roller**

compaction machine with one or more metallic cylindrical bodies (drums) or rubber tyres which do not possess an independent drive system and where the operator's station is located at the towing unit

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[oSIST prEN 474-13:2017](https://standards.iteh.ai/catalog/standards/sist/e078259b-af89-4852-857b-9e94448ab66a/osist-pren-474-13-2017)

<https://standards.iteh.ai/catalog/standards/sist/e078259b-af89-4852-857b-9e94448ab66a/osist-pren-474-13-2017>

prEN 474-13:2017 (E)**3.2****machine mass****3.2.1****operating mass**

mass of the base machine, with equipment and empty attachment in the most usual configuration as specified by the manufacturer, and with the operator (75 kg), full fuel tank and all fluid systems (i.e. hydraulic oil, transmission oil, engine oil, engine coolant) at the levels specified by the manufacturer and, when applicable, with sprinkler water tank(s) half full

Note 1 to entry: The mass of an operator is not included for non-riding and remote controlled machines.

Note 2 to entry: Ballast mass at delivery can be included if specified by the manufacturer.

3.3**hold-to-run control**

device by which the operating function is only carried out as long as the control is actuated. The operation is automatically reset into hazardless conditions as the control is released

3.4**braking system**

system affecting all machine components between the operator and the wheels and drums, which effects the machine stopping and holding

4 List of additional significant hazards

The list of hazards shown in prEN 474-1:2017, Annex A applies, with the following additions.

Table 1 — List of additional significant hazards

No.	Hazard	Relevant clauses of this European Standard
	Hazards, hazardous situations and hazardous events	
1	Mechanical hazards due to machine parts and workpieces, e.g. shape, location, mass and stability, mass and velocity, mechanical strength, accumulation of energy inside the machine e.g.: elastic elements (springs), liquids and gases under pressure, effect of vacuum	
1.1	Crushing hazard	5.2.2, 5.3.2, 5.4, 7.1
1.2	Cutting or severing hazard	5.2.2
1.3	Impact hazard	5.3.2
1.4	Friction or abrasion hazard	5.3.2
2	Hazards generated by noise, resulting in:	
2.1	Hearing loss (deafness), other physiological disorders (e.g. loss of balance, loss of awareness)	5.6, 5.6.1
3	Hazards generated by vibration	5.6, 5.6.2, 7.2, Annex B, Annex C

No.	Hazard	Relevant clauses of this European Standard
4	Hazards generated by neglecting ergonomic principles in machinery design as , e.g. hazards from:	
4.1	Unhealthy postures or excessive effort	5.2.1
4.2	Inadequate consideration of hand-arm or foot-leg anatomy	5.4, 7.2
4.3	Inadequate design, location or identification of manual controls	5.5
5	Unexpected start-up, unexpected overrun/overspeed (or similar malfunction) from:	
5.1	Failure/disorder of control system	5.4.1
6	Impossibility of stopping the machine in the best possible conditions	5.4, 5.5
7	Failure of the power/energy supply	5.4, 5.5
8	Failure of the control circuit	5.4, 5.5
9	Loss of stability/overturning of machinery	5.2.2, 7.1, 7.2
10	Relating to travelling function	
10.1	Travelling function	5.5
10.2	Excessive oscillation when moving	5.6.2
10.3	Insufficient ability of machinery to be slowed down, stopped and immobilised	5.5
10.4	Remote control	5.4.2, 5.4.3, Annex A
11	Linked to the work position (including driving station) on the machine	
11.1	Mechanical hazards at the work position: a) contact with the wheels; b) rollover; c) fall of objects, penetration by objects.	5.2.2
11.2	Noise at the work position	5.6, 5.6.1, Annex D
11.3	Vibration at the drive/work position(s)	5.6.2, Annex B, Annex C
12	Due to control system	
12.1	Inadequate design of energy/control circuits	5.5
12.2	Inadequate location of manual controls	5.4
12.3	Inadequate design of manual controls and their mode of operation	5.5
13	Due to the power source and to the transmission of power	
13.1	Hazards from the engine and the batteries	5.4.1
14	From/to third persons	