



**SLOVENSKI STANDARD**  
**SIST EN 474-7:2022**

**01-maj-2022**

**Nadomešča:**

**SIST EN 474-7:2007+A1:2009**

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**Stroji za zemeljska dela - Varnost - 7. del: Zahteve za grabilnike (skreperje)**

Earth-moving machinery - Safety - Part 7: Requirements for scrapers

Erdbaumaschinen - Sicherheit - Teil 7: Anforderungen für Scraper

Engins de terrassement - Sécurité - Partie 7 : Prescriptions applicables aux décapeuses

**Ta slovenski standard je istoveten z: EN 474-7:2022**

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**ICS:**

53.100

Stroji za zemeljska dela

Earth-moving machinery

**SIST EN 474-7:2022**

**en,fr,de**

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EUROPEAN STANDARD

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ICS 53.100

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English Version

## Earth-moving machinery - Safety - Part 7: Requirements for scrapers

Engins de terrassement - Sécurité - Partie 7 :  
Prescriptions applicables aux décapeuses

Erdbaumaschinen - Sicherheit - Teil 7: Anforderungen  
für Scraper

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

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COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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## European foreword

This document (EN 474-7:2022) 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of an identical text or by endorsement, at the latest by September 2022, and conflicting national standards shall be withdrawn at the latest by March 2024.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 474-7:2006+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 [SIST EN 474-7:2022  
https://standards.iteh.ai/catalog/standards/sist/43eb5791-791c1714-9814-472344793f5f/sist-en-474-7-2022](https://standards.iteh.ai/catalog/standards/sist/43eb5791-791c1714-9814-472344793f5f/sist-en-474-7-2022)
- 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.

**EN 474-7:2022 (E)**

The main differences between this document and EN 474-7:2006+A1:2009 are as follows:

- a) the normative reference (Clause 2) (updated);
- b) scrapers greater than 20 tonnes payload capacity or scrapers with travel speed greater than 40 km/h shall be equipped with a retarder system (4.3) (added);
- c) verification methods table (Clause 5) (added);
- d) safety related functions of control systems (excluded);
- e) list of significant hazards (Annex A) (updated);
- f) 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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**EN 474-7:2022 (E)****1 Scope**

This document, together with EN 474-1:2022, deals with all significant hazards, hazardous situations and events relevant to scrapers as defined in 3.1, except towed scrapers, when used as intended and under the conditions of misuse which are reasonably foreseeable by the manufacturer (see Annex A), associated with the whole life time of the machine as described in EN ISO 12100:2010, 5.4.

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

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.

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 scrapers.

This document is not applicable to scrapers 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 7096:2020, *Earth-moving machinery — Laboratory evaluation of operator seat vibration (ISO 7096:2020)*

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

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

**3 Terms and definitions**

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

NOTE 1 Terminology for scrapers is specified in ISO 7133:2013 and illustrated in Annex B of this document.

NOTE 2 Crawler scrapers are not covered in ISO 7133:2013 but are 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

#### **scraper**

self-propelled or towed crawler or wheeled machine, which has a bowl with a cutting edge positioned between the axles and which cuts, loads, transports, discharges and spreads material through a forward motion

[SOURCE: EN ISO 6165:2012]

### 3.2

#### **towed scraper**

scraper (3.1) that is not self-propelled but which is propelled instead by a towing machine on the operator's station

[SOURCE: EN ISO 6165:2012]

### 3.3

#### **retarder**

energy absorption device normally used to control machine speed while descending grades

[SOURCE: ISO 10268:1993]

## 4 Safety requirements and/or protective/risk reduction measures

### 4.1 General

#### 4.1.1 Context

Scrapers shall comply with the safety requirements and/or protective/risk reduction measures of this clause. In addition, the machines shall be designed according to the principles of EN ISO 12100:2010 for relevant but not significant hazards which are not dealt with by this document.

#### 4.1.2 Specific relation to EN 474-1

Scrapers shall comply with the requirements of EN 474-1:2022, as far as not modified or replaced by the requirements of this part.

There are general requirements specified in EN 474-1:2022 that are not applicable because the risk assessment has shown that for scrapers the corresponding hazard does not exist. For scrapers 4.4.2, 4.5.10, 4.6.3, 4.7.3, 4.12, 4.23, 4.24, Annex B, Annex C and Annex D in EN 474-1:2022, are not applicable.

### 4.2 Operator's seat

EN 474-1:2022, 4.4.1 shall apply with the addition that the seat shall meet the input spectral class EM2 according to EN ISO 7096:2020.

### 4.3 Operator's Controls and Indicators

#### 4.3.1 General

EN 474-1:2022, 4.5 shall apply with the addition stated in 4.3.2 below.

#### 4.3.2 Retarder

Scrapers greater than 20 t payload capacity or scrapers with travel speed greater than 40 km/h shall be equipped with a retarder and meet the performance test of ISO 10268:1993.

**EN 474-7:2022 (E)****4.4 Protective measures and devices**

EN 474-1:2022, 4.14 shall apply except 4.14.2.3.

**4.5 Recovery, towing away for recovery purposes (TARP), tying-down, lifting and transporting****4.5.1 General**

EN 474-1:2022, 4.15 shall apply with the following modification stated in 4.5.2 below.

**4.5.2 Towing devices for towing other machines**

Attachment points (push and pull mechanisms) on scrapers that are there only to permit two scrapers to assist each other in loading, are not deemed to be towing devices as defined in EN 474-1:2022, 4.15.5.

**5 Verification of the safety requirements and/or protective/risk reduction measures**

EN 474-1:2022, Clause 5 shall apply with the following additions:

Safety requirements and/or protective/risk reduction measures of Clause 4 of this document shall be verified according to Table 1.

Table 1 sets out verification methods which shall be applied for each safety requirement in this document. Where (X) is indicated in the table, the corresponding verification method(s) shall be applied.

Table 1 shall be read in conjunction with the corresponding clauses.

Table 1 includes the following verification methods:

- a) calculation: to establish that the requirements of this document have been met;
- b) visual verification: to establish that something is present (e.g. a guard, a marking, a document);
- c) measurement: to show that the required numerical values have been met (e.g. geometric dimensions, safety distances, resistance of insulation of the electric circuits, results of physical tests);
- d) functional tests: to show that the adequate signals intended to be forwarded to the main control system of the complete machine are available and comply with the requirements and with the technical documentation;
- e) special verification: by reference to a standard which is mentioned in the corresponding clause.

Table 1 — Verification of safety requirements and/or protective/risk reduction measures

| Clause number | Title  | a) Calculation | b) Visual verification | c) Measurement | d) Functional test | e) Special verification |
|---------------|--|----------------|------------------------|----------------|--------------------|-------------------------|
| 4.1           | General  |                |                        |                |                    | X                       |
| 4.2           | Operator's seat  |                |                        |                |                    | X                       |
| 4.3           | Operator's Controls and Indicators   |                |                        |                |                    | X                       |
| 4.4           | Protective measures and devices  | X              |                        | X              |                    |                         |
| 4.5           | Recovery, towing away for recovery purposes (TARP), tying-down, lifting and transporting | X              |                        | X              |                    |                         |

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### 6 Information for use

#### 6.1 General

Information for use shall be provided in accordance with EN ISO 12100:2010, 6.4.

#### 6.2 Operator's manual

EN 474-1:2022, 6.3 shall apply with the following additions:  
[SIST EN 474-7:2022  
https://standards.iteh.ai/catalog/standards/sist/43eb5791-6781-4744-98d4-472344793131/sist-en-474-7-2022](https://standards.iteh.ai/catalog/standards/sist/43eb5791-6781-4744-98d4-472344793131/sist-en-474-7-2022)

- instructions for the use of push-blades;
- instructions for use and maintenance for elevator and auger.