



SLOVENSKI STANDARD
SIST EN 474-7:2000

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

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

Erdbaumaschinen - Sicherheit - Teil 7: Anforderungen für Scraper

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

Ta slovenski standard je istoveten z: EN 474-7:1998

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ICS:

53.100 Stroji za zemeljska dela Earth-moving machinery

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EUROPEAN STANDARD

EN 474-7

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 1998

ICS 53.100

Descriptors: earth moving equipment, scouring machines, safety of machines, accident prevention, safety requirements, specifications, operating stations, human factors engineering, control devices, engine noise, sound power, hazards

English version

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

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

Erdbaumaschinen - Sicherheit - Teil 7: Anforderungen für Scraper

This European Standard was approved by CEN on 2 March 1998.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

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Foreword

This European Standard 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 1998, and conflicting national standards shall be withdrawn at the latest by September 1998.

This European Standard 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 standard.

The annex A is normative and contains "List of additional hazards" and the annex B is informative and contains "Illustrations".

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 rope excavators.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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0 Introduction

This European Standard is a type C-standard as stated in EN 292.

The machinery concerned and the extent to which hazards are covered are indicated in the scope of this standard.

1 Scope

This European Standard specifies additional requirements to and/or exceptions from EN 474-1:1994 "Earth-moving machinery - Safety - Part 1: General requirements".

This European Standard applies to wheel and crawler scrapers defined in ISO 6165:1997, and gives additional requirements for derivated machinery.

This European Standard deals with all significant hazards pertinent to scrapers when they are used as intended and under the conditions foreseen by the manufacturer (see annex A of this European Standard and annex C of EN 474-1:1994). This European Standard specifies the appropriate technical measures to eliminate or reduce risks arising from the significant hazards.

2 Normative references

This European Standard incorporates by dated or undated references, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 292-1:1991	Safety of machinery - Basic concepts - General principles for design - Part 1: Basic terminology, methodology
EN 292-2:1991	Safety of machinery - Basic concepts - General principles for design - Part 2: Technical principles and specification
EN 474-1:1994	Earth-moving machinery - Safety - Part 1: General Requirements
ENV 1070:1993	Safety of machinery - Terminology
EN 60068-2-27:1993	Basic environmental testing procedures - Part 2: Tests - Test Ea and guidance: Shock
EN 60204-1:1992	Safety of machinery - Electrical equipment - Part 1: General requirements
EN 60529:1991	Degrees of protection provided by enclosures (IP Code)
ISO 3457:1986	Earth-moving machinery - Guards and shields - Definitions

ISO 4250-2:1991	Narrow and wide base off-road tyres and rims - Part 2: Loads and inflation pressures
ISO/DIS 4250-3:1993	Earth-mover tyres and rims - Part 3: Rims
ISO 5006-1:1991	Earth-moving machinery - Operator's field of view - Part 1: Test method
ISO 5353:1995	Earth-moving machinery, and tractors and machinery for agriculture and forestry - Seat index point
ISO 6014:1986	Earth-moving machinery - Determination of ground speed
ISO 6165:1997	Earth-moving machinery - Basic types - Vocabulary
ISO/DIS 6393:1995	Acoustics - Measurement of exterior noise emitted by earth-moving machinery - Stationary test conditions
ISO 6405-1:1991	Earth-moving machinery - Symbols for operator controls and other displays - Part 1: Common symbols
ISO 6405-2:1993	Earth-moving machinery - Symbols for operator controls and other displays - Part 2: Specific symbols for machines, equipment and accessories
ISO 6682:1986	Earth-moving machinery - Zones of comfort and reach for controls
ISO 7133:1994	Earth-moving machinery - Tractor-scrapers - Terminology and commercial specifications
ISO 9244:1995	Earth-moving machinery - General principles for safety signs and hazard pictorials
ISO/DIS 9249:1995	Earth-moving machinery - Engine test code - Net power
ISO 10263-2:1994	Earth-moving machinery - Operator enclosure environment - Part 2: Air filter test
ISO 10263-4:1994	Earth-moving machinery - Operator enclosure environment - Part 4: Operator enclosure ventilation, heating and/or air-conditioning test method
ISO 10268:1993	Earth-moving machinery - Retarders for dumpers and tractor-scrapers - Performance tests
ISO 10968:1995	Earth-moving machinery - Operator's controls
ISO 12509:1995	Earth-moving machinery - Lighting, signalling and marking lights, and reflex-reflector devices
ISO/DIS 13766:1996	Earth moving machinery - Electro-magnetic compatibility

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3 Definitions

For the purposes of this European Standard the definitions stated in ENV 1070:1993 apply.

Additional definitions specifically needed for this European Standard are added below.

3.1 Common definitions

Terminology for scrapers is specified in ISO 7133:1994 and illustrated in annex B of this European Standard.

Crawler mounted scrapers not covered in ISO 7133:1994 are illustrated in annex B.

Definitions used in EN and ISO standards referred to in this European Standard are also valid for this European Standard.

3.2 Additional definitions

Scraper: self-propelled or towed crawler or wheeled machine, having an open bowl with a cutting edge which cuts, loads, transports, discharges, and spreads material through a forward motion. Loading through the forward motion can be assisted by a powered mechanism (e. g. elevator) fixed to the scraper bowl.

4 Safety requirements

4.1 Operator's station

4.1.1 Heating and ventilation system

If a heating and ventilation system according to EN 474-1:1994, 4.2.2.6 is required the following applies. The heating and ventilation system shall:

- either comply with ISO 10263-4:1994;
- or have the capacity of increasing the temperature of the air inside the cab and maintain a temperature of + 18° C at the expected ambient temperature. The minimum capacity of the heating system shall have a ΔT of 25° C measured at - 10° C ambient temperature.

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Measurement of the system capacity shall be made at three points. The three points shall be located in a vertical plane through the SIP and parallel to the longitudinal axis of the machine as follows (see figure 1):

- at filament position centre-point as defined in ISO 5006-1:1991;
- at the SIP as defined in ISO 5353:1995;
- 100 mm above floor plate and 600 mm in front of SIP.

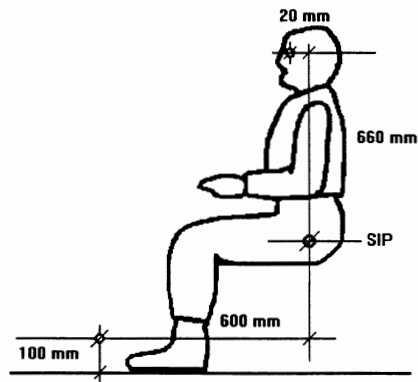


Figure 1: Location of measuring points

Alternatively the heating capacity can be determined by calculation.

The ventilation system shall be capable of providing the cab with filtered fresh air at the minimum of 43 m³/h. The filter shall be tested according to ISO 10263-2:1994

NOTE: The filter element selection depends on the intended operating environment conditions.

4.1.2 Rear visibility

EN 474-1:1994, 4.7.1, third paragraph, applies also for rear window(s) with the following provisions:

- arrangement to defrost the rear window(s) shall be made;
- the rear window(s) shall be fitted with a motorized wiper(s) and washer.

4.2 Fenders

Scrapers without a cab shall have fenders which comply with ISO 3457:1986.

Wheel scrapers with a maximum designed speed (see ISO 6014:1986) > 30 km/h shall be equipped with fenders that protect the operator's station from debris ejected by the tyres if the risk exists.

4.3 Operator's controls

Operator's controls shall comply with ISO 10968:1995. The normal engine stopping device shall be within the zone of reach (see ISO 6682:1986).

4.3.1 Remote control

EN 474-1:1994, 4.4.2.6 applies with the following additions: