



SLOVENSKI STANDARD
oSIST prEN ISO 19432-2:2025
01-marec-2025

Stroji in oprema za graditev objektov - Prenosni ročni brusni rezalniki z motorjem z notranjim zgorevanjem - 2. del: Naprave za brušenje verige - Varnostne zahteve (ISO/DIS 19432-2:2024)

Building construction machinery and equipment - Portable, hand-held, internal combustion engine driven abrasive cutting machines - Part 2: Machines for abrasive chains - Safety requirements (ISO/DIS 19432-2:2024)

Baumaschinen und -Ausrüstungen - Tragbare, handgeführte Trennschleifmaschinen mit Verbrennungsmotor - Teil 2: Maschinen für Schleifketten - Sicherheitsanforderungen (ISO/DIS 19432-2:2024)

Machines et matériels pour la construction des bâtiments - Machines de coupe par abrasion, portatives, à moteur à combustion interne - Partie 2: Tronçonneuses à chaîne abrasive - Exigences de sécurité (ISO/DIS 19432-2:2024)

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ISO/DIS 19432-2

Building construction machinery and equipment — Portable, hand- held, internal combustion engine- driven abrasive cutting machines —

Part 2: Machines for abrasive chains — Safety requirements

*Machines et matériels pour la construction des bâtiments —
Machines de coupe par abrasion, portatives, à moteur à
combustion interne —*

*Partie 2: Tronçonneuses à chaîne abrasive — Exigences de
sécurité*

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Contents

Page

Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	2
3 Terms and definitions	3
4 Safety requirements and verification	7
4.1 General.....	7
4.2 Water supply system.....	8
4.2.1 General requirements.....	8
4.2.2 Verification.....	8
4.3 Protection against broken and/or derailed chains at the rear handle.....	8
4.3.1 Rear hand guard.....	8
4.3.2 Chain catcher.....	11
4.4 Handles.....	14
4.4.1 Requirements.....	14
4.4.2 Verification.....	18
4.5 Front hand guard.....	19
4.5.1 Requirements.....	19
4.5.2 Verification.....	20
4.6 Engine-starting device.....	20
4.6.1 General requirements.....	20
4.6.2 Verification.....	20
4.7 Engine-stopping device.....	20
4.7.1 General requirements.....	20
4.7.2 Verification.....	21
4.8 Throttle control system.....	21
4.8.1 Throttle trigger/ Throttle trigger lockout.....	21
4.8.2 Throttle control linkage.....	22
4.8.3 Throttle control latch.....	22
4.9 Clutch.....	23
4.9.1 General requirements.....	23
4.9.2 Verification.....	23
4.10 Exhaust gases.....	24
4.10.1 General requirements.....	24
4.10.2 Verification.....	24
4.11 Cutting-debris discharge.....	24
4.11.1 General requirements.....	24
4.11.2 Verification.....	24
4.12 Fuel tank and fuel lines.....	25
4.12.1 Fuel tank filler location and identification.....	25
4.12.2 Fuel tank filler openings.....	25
4.12.3 Verification.....	25
4.13 Protection against contact with parts under high voltage.....	25
4.13.1 Requirements.....	25
4.13.2 Verification.....	26
4.14 Drive sprocket guard.....	26
4.14.1 Requirements.....	26
4.14.2 Verification.....	26
4.15 Protection against contact with hot parts.....	26
4.15.1 Requirements.....	26
4.15.2 Verification.....	28
4.16 Chain tensioning.....	29
4.16.1 Requirements.....	29
4.16.2 Verification.....	29

ISO/DIS 19432-2:2024(en)

4.17	Special tools	29
4.17.1	Requirements	29
4.17.2	Verification	29
4.18	Noise	29
4.18.1	Reduction by design at source and by protective measures	29
4.18.2	Noise measurement	29
4.19	Vibration	29
4.19.1	Reduction by design at source and by protective measures	29
4.19.2	Vibration measurement	30
4.20	Electromagnetic immunity	30
4.20.1	Requirements	30
4.20.2	Verification	30
5	Information for use	30
5.1	Instruction handbook	30
5.1.1	General	30
5.1.2	Technical data	30
5.1.3	Other information	31
5.2	Marking	33
5.3	Warning	33
5.4	Test of labels	34
5.4.1	General	34
5.4.2	Preparation of test specimens and control specimens	34
5.4.3	Wipe resistance test	35
5.4.4	Adhesion test	35
	Annex A (normative) Noise test code – Engineering method (grade 2 of accuracy)	36
	Annex B (normative) Measurement of vibration values at the handles	46
	Annex C (normative) Machines for abrasive chains - positions	56
	Annex D (informative) List of significant hazards	59
	Annex ZA (informative)	61
	Annex ZB (informative)	63
	Bibliography	65

ISO/DIS 19432-2:2024(en)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75% of the member bodies casting a vote.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 195, *Building construction machinery and equipment*.

ISO 19432 consists of the following parts, under the general title *Building construction machinery and equipment — Portable, hand-held, internal combustion engine driven abrasive cutting machines*:

Part 1: Cut-off machines for centre mounted rotating abrasive wheels — Safety requirements

Part 2: Machines for abrasive chains — Safety requirements

A list of all parts in the ISO 19432 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found [at www.iso.org/members.html](http://www.iso.org/members.html).

ISO/DIS 19432-2:2024(en)**Introduction**

This International Standard is a type-C standard as stated in ISO 12100:2010.

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

When requirements of this type-C standard are different from those which are stated in type-A or -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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Building construction machinery and equipment — Portable, hand-held, internal combustion engine-driven abrasive cutting machines —

Part 2: Machines for abrasive chains — Safety requirements

1 Scope

This International Standard specifies safety requirements and measures for their verification for the design and construction of portable, hand-held, internal combustion engine-driven machines for abrasive chains, intended to be used by a single operator only in the cutting of construction materials, such as concrete, stone and metal. It is applicable only to those machines designed purposely for use with a water-cooled abrasive chain only, where the top of the abrasive chain rotates away from the operator (see [Figure 1](#)) and the water supply system is integrated.

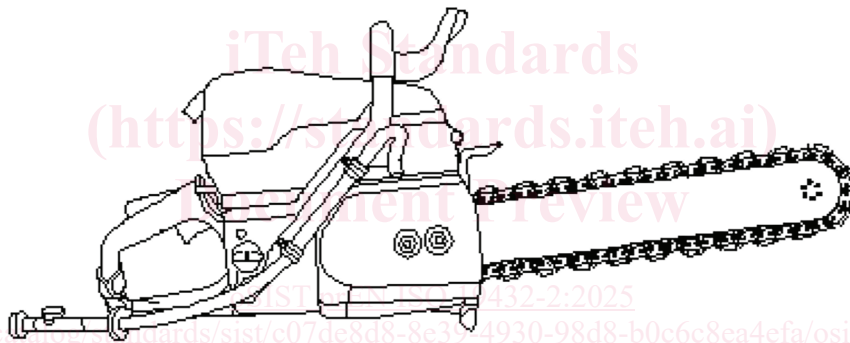


Figure 1 — Machine with abrasive chain

ISO 19432-2 is not applicable to:

“Cut-off machines for centre-mounted rotating abrasive wheels” which are covered by ISO 19432-1.

“Chain saws for forestry service” which are covered by ISO 11681-1.

“Chain saws for tree service” which are covered by ISO 11681-2.

NOTE Clarification of product class. The cutting means is by grinding with an abrasive chain through the workpiece, using a continuous water supply as a coolant, lubricant and dust suppression. This kind of machinery is not intended for use with conventional wood cutting saw chains with defined sharpened cutting edges.

This International Standard deals with all significant hazards, hazardous situations or hazardous events significant to these machines when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer. (See [Annex A](#) for a list of significant hazards.)

This International Standard specifies methods for the elimination or reduction of hazards arising from their use, as well as the type of information on safe working practices to be provided with the machines.

This International Standard is not applicable to machines manufactured before the date of its publication.

ISO/DIS 19432-2:2024(en)

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.

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 4871:1996, *Acoustics — Declaration and verification of noise emission values of machinery and equipment*

ISO 5349-2:2001, *Mechanical vibration — Measurement and evaluation of human exposure to hand-transmitted vibration — Part 2: Practical guidance for measurement at the workplace*

ISO 6533:2020, *Forestry machinery — Portable chain-saw front hand-guard — Dimensions and clearances*

ISO 6534:2023, *Forestry machinery — Portable chain-saw hand-guards — Mechanical strength*

ISO 7293:2021, *Forestry machinery — Portable chain-saws — Engine performance and fuel consumption*

ISO 7574-4:1985, *Acoustics — Statistical methods for determining and verifying stated noise emission values of machinery and equipment — Part 4: Methods for stated values for batches of machines*

ISO 7914:2023, *Forestry machinery — Portable chain-saws — Minimum handle clearance and sizes*

ISO 7915:2021, *Forestry machinery — Portable chain-saws — Determination of handle strength*

ISO 8041-1:2017, *Human response to vibration — Measuring instrumentation — Part 1: General purpose vibration meters*

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 11681-1:2022, *Machinery for forestry — Portable chain-saw safety requirements and testing — Part 1: Chain-saws for forest service*

ISO 11681-2:2022, *Machinery for forestry — Portable chain-saw safety requirements and testing — Part 2: Chain-saws for tree service*

ISO 11684:2023, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Safety labels — General principles*

ISO/TR 11688-1:1995, *Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 1: Planning*

ISO 11691:2020, *Acoustics — Measurement of insertion loss of ducted silencers without flow — Laboratory survey method*

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

ISO 13849-2:2012, *Safety of machinery — Safety-related parts of control systems — Part 2: Validation*

ISO 13857:2019, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs*

ISO 14982:1998, *Agricultural and forestry machinery — Electromagnetic compatibility — Test methods and acceptance criteria*

ISO 16063-1:1998, *Methods for the calibration of vibration and shock transducers — Part 1: Basic concepts*

ISO 16063-1:1998/Amd 1:2016, *Methods for the calibration of vibration and shock transducers — Part 1: Basic concepts — Amendment 1*

ISO/DIS 19432-2:2024(en)

ISO 19432-1:2020, *Building construction machinery and equipment — Portable, hand-held, internal combustion engine-driven abrasive cutting machines — Part 1: Safety requirements for cut-off machines for centre-mounted rotating abrasive wheels*

ISO 22867:2021, *Forestry and gardening machinery — Vibration test code for portable hand-held machines with internal combustion engine — Vibration at the handles*

ISO 22868:2021, *Forestry and gardening machinery — Noise test code for portable hand-held machines with internal combustion engine — Engineering method (Grade 2 accuracy)*

IEC 61032:1997/COR1:2003, *Corrigendum 1 - Protection of persons and equipment by enclosures - Probes for verification*

IEC 61672-1:2013, *Electroacoustics - Sound level meters - Part 1: Specifications*

EN ISO 5349-2:2001/A1:2015, *Mechanical vibration - Measurement and evaluation of human exposure to hand-transmitted vibration - Part 2: Practical guidance for measurement at the workplace (ISO 5349 2:2001/Amd 1:2015)*

EN ISO 13849-1:2023, *Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design (ISO 13849-1:2023)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12100:2010 and the following apply.

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

Operating position

the typical cutting position is shown in [Figure 19](#)

3.2

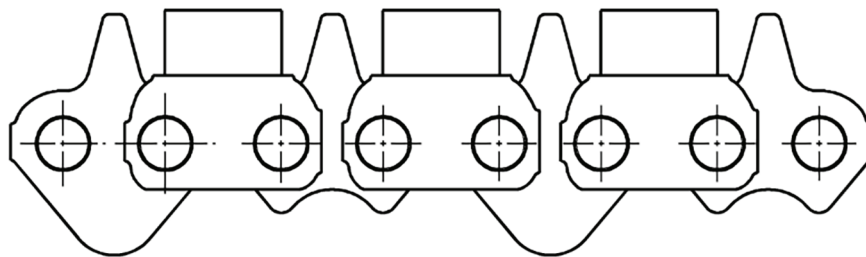
Water supply system

system, to provide water for cooling and lubrication to the abrasive chain

3.3

Abrasive chain

chain serving as an abrasive tool, consisting of drive links and tie straps held together by rivets with abrasive elements affixed to the chain assembly

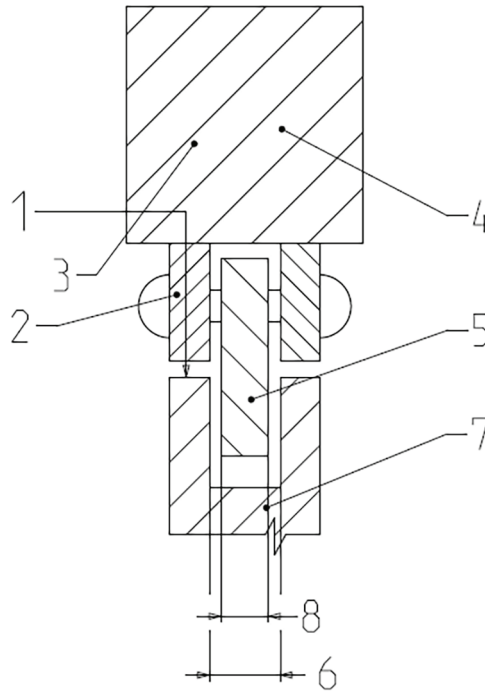


Key

- x distance between three adjacent rivets

Figure 2 — Part of abrasive chain

ISO/DIS 19432-2:2024(en)



Key

- 1 guide bar rail
- 2 tie strap
- 3 rivet
- 4 abrasive element
- 5 drive link
- 6 guide bar groove width
- 7 guide bar
- 8 chain gauge

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Figure 3 — Abrasive chain details

3.4

Drive sprocket

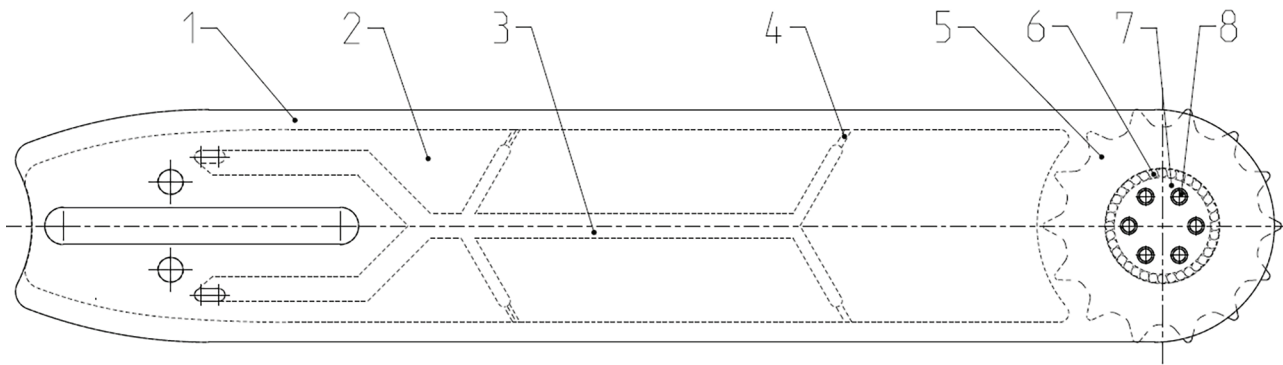
chain drive wheel with teeth

3.5

Guide bar

part that supports and guides the abrasive chain [3.3](#)

ISO/DIS 19432-2:2024(en)

**Key**

1	lateral plate
2	middle plate
3	water channel
4	water jet/water port
5	nose sprocket
6	cylindrical roller
7	inner racer
8	rivet

Figure 4 — Example of guide bar including details with internal features

3.6**Nose sprocket**

rotating part at the tip of the guide bar [3.5](#) which supports the abrasive chain [3.3](#) around the tip

3.7**Chain pitch**

arithmetic mean of the distances between three adjacent rivets see dimension x in [Figure 1](#)

3.8**Chain catcher**

device for restraining the abrasive chain [3.3](#) if it breaks or comes off the guide bar

3.9**Choke**

device for enriching the fuel air mixture in the carburettor to aid starting

3.10**Clutch**

device for connecting and disconnecting the driven member to and from a rotating source of power

3.11**Engine-stopping device**

device by which the stopping of the engine is initiated

3.12**Front handle**

handle located at or towards the front of the engine housing

3.13**Rear handle**

handle located at or towards the rear of the engine housing

ISO/DIS 19432-2:2024(en)**3.14****Idle speed**

speed at which the engine runs with no load and throttle trigger released and the abrasive chain does not rotate

3.15**Muffler**

device for reducing engine exhaust noise and directing the exhaust gases

3.16**Rated engine speed**

engine speed at which maximum corrected brake power is obtained

3.17**Racing speed**

maximum engine speed

3.18**Throttle trigger**

device for controlling the engine speed

3.19**Throttle lock**

device for setting the throttle in a partially open position to aid starting

3.20**Throttle trigger lock-out**

device that prevents the unintentional operation of the throttle trigger until manually released

3.21**Throttle control linkage**

mechanism which transmits motion from the throttle trigger to the throttle control valve

3.22**Reactive forces**

if the moving abrasive chain is slowed or stopped by frictional contact with any solid object including the workpiece or if it is pinched or bound in the cut, reactive forces are generated in a direction opposite to that in which the abrasive chain is travelling at the point of contact. Sub-clauses [3.22.1](#), [3.22.2](#), and [3.22.3](#) which further describe these reactions are based on the abrasive chain having a direction of travel away from the operator on the top of the guide bar

Note 1 to entry: For a wood cutting saw chain the cutting edges are designed to feed into the material. This cutting action itself produces the primary reactive forces. Secondly, friction produces an additional small amount of reactive force. Abrasive chains produce reactive forces via friction only. Furthermore, friction in this case is further reduced by the use of water which is always necessary for cooling, lubrication, flushing and dust suppression.

3.22.1**Pulling**

if the abrasive chain on the bottom of the guide bar is slowed or suddenly stopped, the machine may be pulled forward, away from the operator, toward the workpiece (pull-away)

3.22.2**Pushback**

the backward motion of the guide bar, occurring when the chain on the top of the guide bar is slowed or suddenly stopped. The machine may be pushed back towards the operator, away from the workpiece (pushback)

3.22.3**Kickback**

the rapid backward and upward motion of the guide bar, occurring when the chain on the upper quadrant of the guide bar nose is slowed or suddenly stopped