

# SLOVENSKI STANDARD oSIST prEN ISO 19432:2017

01-november-2017

#### Stroji in oprema za graditev objektov - Prenosni ročni brusni rezalniki z motorjem z notranjim zgorevanjem - 1. del: Varnostne zahteve za rezalne stroje z osno vpetimi krožnimi brusnimi ploščami (ISO/DIS 19432-1:2017)

Building construction machinery and equipment - Portable, hand-held, internalcombustion-engine-driven abrasive cutting machines - Part 1: Safety requirements for cut-off machines for centre-mounted rotating abrasive wheels (ISO/DIS 19432-1:2017)

# (https://standards.iteh.ai)

Machines et matériels pour la construction des bâtiments -- Machines de coupe par abrasion, portatives, à moteur à combustion interne - Partie 1: Exigences de sécurité des tronçonneuses à disque abrasif monté au centre (ISO/DIS 19432-1:2017)

Ta slovenski standard je istoveten z: prEN ISO 19432-1

ICS:

91.220 Gradbena oprema

Construction equipment

oSIST prEN ISO 19432:2017

en,fr,de

oSIST prEN ISO 19432:2017

# iTeh Standards (https://standards.iteh.ai) Document Preview

# DRAFT INTERNATIONAL STANDARD ISO/DIS 19432-1

ISO/TC **195** 

Voting begins on: **2017-07-14** 

Secretariat: SAC

Voting terminates on: 2017-10-05

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

### Part 1: Safety requirements for cut-off machines for centremounted rotating abrasive wheels

Machines et matériels pour la construction des bâtiments — Tronçonneuses à disque, portatives, à moteur à combustion interne —

Partie 1: Exigences de sécurité pour les machines à couper pour les roues abrasives rotatives montées au centre

ICS: 91.220

# iTeh Standards (https://standards.iteh.ai) Document Preview

SIST EN ISO 19432-1:2020

https://standards.iteh.ai/catalog/standards/sist/3471f7a3-8ba5-43e0-8185-564a22815eee/sist-en-iso-19432-1-2020

THIS DOCUMENT IS A DRAFT CIRCULATED FOR COMMENT AND APPROVAL. IT IS THEREFORE SUBJECT TO CHANGE AND MAY NOT BE REFERRED TO AS AN INTERNATIONAL STANDARD UNTIL PUBLISHED AS SUCH.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

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. This document is circulated as received from the committee secretariat.

## **ISO/CEN PARALLEL PROCESSING**



Reference number ISO/DIS 19432-1:2017(E)

# iTeh Standards (https://standards.iteh.ai) Document Preview

<u>SIST EN ISO 19432-1:2020</u>

https://standards.iteh.ai/catalog/standards/sist/3471f7a3-8ba5-43e0-8185-564a22815eee/sist-en-iso-19432-1-2020



© ISO 2017, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office Ch. de Blandonnet 8 • CP 401 CH-1214 Vernier, Geneva, Switzerland Tel. +41 22 749 01 11 Fax +41 22 749 09 47 copyright@iso.org www.iso.org

### Contents

#### Page

Forewo	ord	4
Introdu	ıction	4
1	Scope	1
2	Normative references	1
3	Terms and definitions	2
4	Safety requirements and verification	6
5	Information for use	21
Annex	A (normative) Strength test of cut-off wheel guard	29
Annex	B (normative) Noise test code — Engineering method (grade 2 of accuracy)	31
Annex	C (normative) Measurement of vibration values at the handles	39
Annex l	D (normative) Cut-off machine positions	46
Annex	E (informative) Summary of results from round-robin tests (2007 and 2008) on one	
	cut-off machine	48
Annex l	F (informative) List of significant hazards	49
Bibliog	raphy	51

# iTeh Standards (https://standards.iteh.ai) Document Preview

#### 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 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.

The committee responsible for this document is ISO/195, Building construction machinery and equipment.

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

This third edition cancels and replaces the second edition (ISO 19432:2012).

SIST EN ISO 19432-1:2020

https://standards.iteh.ai/catalog/standards/sist/3471f7a3-8ba5-43e0-8185-564a22815eee/sist-en-iso-19432-1-2020

#### Introduction

This document is a type-C standard as stated in ISO 12100.

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 -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.

# iTeh Standards (https://standards.iteh.ai) Document Preview

oSIST prEN ISO 19432:2017

# iTeh Standards (https://standards.iteh.ai) Document Preview

#### **DRAFT INTERNATIONAL STANDARD**

### 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

#### 1 Scope

This document specifies safety requirements and measures for their verification for the design and construction of portable, hand-held, internal combustion engine-driven, cut-off machines intended to be used by a single operator in the cutting of construction materials, such as asphalt, concrete, stone and metal. It is applicable only to those machines designed purposely for use with a rotating, bonded-abrasive and/or super-abrasive (for example diamond) cut-off wheel having a maximum outer diameter of 430 mm, centre-mounted on and driven by a spindle shaft where the top of the wheel rotates away from the operator (see Figure 1).

This document 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 F for a list of significant hazards.)

This document 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.

Cut-off wheel specifications are not considered in this document. Cut-off wheels shall comply to existing cut-off wheel standards.

NOTE For example see bibliography. ST EN ISO 19432-1:2020

standards.iteh.ai/catalog/standards/sist/347117a3-8ba5-43e0-8185-564a22815eee/sist-en-iso-19432-1-2020 All through the document, portable, hand-held, internal combustion engine driven cut-off machines are called "cut-off machines".

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

#### 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 3767-5:2016, Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Symbols for operator controls and other displays — Part 5: Symbols for manual portable forestry machines

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 handtransmitted vibration — Part 2: Practical guidance for measurement at the workplace

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

ISO 8041, Human response to vibration — Measuring instrumentation

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

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

ISO 13857:2008, 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, Methods for the calibration of vibration and shock transducers — Part 1: Basic concepts

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

IEC 60745-1:2006, Hand-held motor-operated electric tools — Safety — Part 1: General requirements

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

### 3 Terms and definitions **Document Preview**

For the purposes of this document, the following terms and definitions apply.

<u>ST EN ISO 19432-1:20</u>2

ISO and IEC maintain terminological databases for use in standardization at the following addresses: 19432-1-2020

- IEC Electropedia: available at <u>http://www.electropedia.org/;</u>
- ISO Online browsing platform: available at <u>http://www.iso.org/obp</u>.

#### 3.1

#### cut-off wheel

wheel designed to be fitted to a hand held portable cut-off machine, the peripheral edge of the wheel cuts material such as asphalt, concrete, stone and metal

#### 3.1.1

#### bonded abrasive wheels

entire wheel is made of abrasive particles, bonded together with synthetic resin and reinforced with glass fibre matting

#### 3.1.2

#### superabrasive wheels

the wheel has diamond grains set into segments secured around the circumference of a steel core disc (the wheel body)

### 3.2

#### arbor hole

centre hole of the cut-off wheel used for mounting the cut-off wheel on the machine spindle

#### 3.3

#### blotter

washers made from compressible material (e.g. paper, card or similar), attached to each side of the cut-off wheel

Note 1 to entry: The function of the blotter is to smooth imperfections in the cut-off wheel and allow a limited degree of slip when the wheel stalls in use

#### 3.4

#### choke

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

#### 3.5

#### clutch

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

#### 3.6

#### cut-off wheel guard

partial enclosure intended to deflect cutting debris as well as pieces of the cut-off wheel in the event that the wheel is broken in operation, and to reduce the risk of unintentional contact with the cut-off wheel

#### 3.7

#### engine-stopping device

device by which the stopping of the engine is initiated

#### 3.8

#### flange contact surface

area between the inner and outer circumference on the flange which forms the contact surface between the flange and the cut-off wheel

#### 3.9

#### SIST EN ISO 19432-1:2020

ttps://s**flange assembly** atalog/standards/sist/347117a3-8ba5-43e0-8185-564a22815eee/sist-en-iso-19432-1-2020 device provided to clamp and drive the cut-off wheel

#### 3.10

#### handle

device designed to facilitate safe and easy control of the machine

#### 3.10.1

#### front handle

handle located at or towards the front of the engine housing

#### 3.10.2

#### rear handle

handle located at or towards the rear of the engine housing

#### 3.11

#### idle speed

speed at which the engine runs with no load and throttle trigger released and the cut-off wheel does not rotate

#### 3.12

#### reactive forces

if the spinning cut-off wheel is slowed or stopped by frictional contact with any solid object, including the work piece, or if it is pinched or bound in the cut, reactive forces are generated in a direction opposite to that in which the wheel is moving at the point of contact. Subclauses 3.12.1, 3.12.2, and 3.12.3, which further describe these reactions, are based on an abrasive cut-off wheel rotation with the top of the wheel rotating away from the operator

#### 3.12.1

#### rotational forces and kickback

if the spinning cut-off wheel is slowed or stopped by frictional contact with any solid object in its upper quadrant, the wheel may attempt to move back and up towards the operator. If it is abruptly slowed or stopped by a pinch or binding in the upper quadrant, the wheel may be thrown back and up towards the operator in a rotational kickback motion

#### 3.12.2

#### climbing

if the spinning cut-off wheel is slowed or stopped by frictional contact with any solid object or by a pinch or binding at the front of the wheel, the wheel may attempt to climb the object being cut (climbing)

#### 3.12.3

#### pull-away

if the spinning cut-off wheel is slowed or stopped by frictional contact with any solid object or by a pinch or binding at the bottom of the wheel, the wheel may attempt to pull away from the operator (pull-away)

#### 3.13

#### gyroscopic forces

Forces that can be caused by the rapid spinning of the cut-off wheel that result in opposition to directional change of the cut-off machine

#### 3.14

#### reducing bushing

**Document Preview** 

inserts or devices used to reduce the hole size in a grinding wheel so that it can be mounted on a smaller diameter spindle

#### <u>SIST EN ISO 19432-1:2020</u>

**3:15**//standards.iteh.ai/catalog/standards/sist/3471f7a3-8ba5-43e0-8185-564a22815eee/sist-en-iso-19432-1-2020

## maximum depth of cut

distance to which the cut-off wheel can enter the work-piece as measured from the outer diameter of the wheel to the outside diameter of the flange

#### 3.16

#### maximum cut-off wheel speed

maximum permitted speed of a new cut-off wheel marked on the cut-off wheel

#### 3.17

#### maximum spindle speed

maximum speed at which the spindle rotates with a fully open throttle and no load

#### 3.18

#### muffler

device for reducing engine exhaust noise and directing the exhaust gases

#### 3.19

#### rated speed

engine speed at which maximum power occurs as determined by the manufacturer

#### 3.20

spindle

shaft of the cut-off machine which supports, retains and drives the cut-off wheel in connection with the flanges

#### 3.21

#### spindle sleeve

device used to increase the spindle shaft diameter at the contact area of the abrasive wheel for mounting an abrasive wheel with a larger diameter arbor hole

#### 3.22

#### throttle trigger

device for controlling the engine speed

#### 3.23

#### throttle lock

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

#### 3.24

#### throttle trigger lock-out

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

#### 3.25

#### throttle control linkage

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

#### 3.26

#### transmission cover

device between the engine and the cutting equipment designed to prevent unintentional contact with the transmission

# **Document Preview**

#### SIST EN ISO 19432-1:2020

https://standards.iteh.ai/catalog/standards/sist/3471f7a3-8ba5-43e0-8185-564a22815eee/sist-en-iso-19432-1-2020

#### oSIST prEN ISO 19432:2017

#### ISO/DIS 19432-1:2017(E)



#### Кеу

- 1 rear handle
- 2 throttle trigger *see clause 3.19*
- 3 throttle trigger lock-out see clause 3.21
- 4 engine stopping device
- 5 fuel tank/fuel tank cap
- 6 starter
- 7 muffler see clause 3.16
- 8 front handle
- 9 cut-off wheel guard *see clause 3.6*
- 10 cut-off wheel see clause 3.1
- 11 flange assembly see clause 3.9
- 12 spindle
- 13 foot/standing base

# Figure 1 — Example of cut-off machine

#### 4 Safety requirements and verification

#### 4.1<sup>3:</sup>/Generals.iteh.ai/catalog/standards/sist/3471f7a3-8ba5-43e0-8185-564a22815eee/sist-en-iso-19432-1-2020

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

The safe operation of cut-off machines depends on both compliance with the safety requirements of this clause and using safe working practices. The use of appropriate personal protection equipment (PPE), such as gloves, leg protection, boots, eye, hearing, dust protection mask and head protection equipment, are an integral part of safe working practices (see 5.1).

Cut-off machines shall be marked in accordance with 5.2. Cut-off machines shall carry warnings in accordance with 5.3.

An instruction handbook shall be provided with the machine and shall comply with the requirements of 5.1.

For protection from contact with moving parts, except the cut-off wheel, any opening shall have a safety distance to the moving part that meets the requirements of ISO 13857:2008, 4.2.4.1 and 4.2.4.3.