



SLOVENSKI STANDARD

SIST EN 12418:2000

01-december-2000

Masonry and stone cutting-off machines for job site - Safety

Masonry and stone cutting-off machines for job site - Safety

Steintrennmaschinen für den Baustelleneinsatz - Sicherheit

Scies de chantier a tronçonner les matériaux - Sécurité

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Ta slovenski standard je istoveten z: **EN 12418:2000**

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ICS:

91.220

Gradbena oprema

Construction equipment

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English version

Masonry and stone cutting-off machines for job site - Safety

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This European Standard was approved by CEN on 3 May 2000.

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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of an identical text or by endorsement, at the latest by November 2000, and conflicting national standards shall be withdrawn at the latest by November 2000.

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.

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.

The annex A is normative and contains "Noise test code - Grade 2 of accuracy", annex B is normative and contains "Dimensions of the flanges for cutting-off diamond wheel", annex C is normative and contains "Strength of cutting-off wheel guards", the annex D is normative and contains "Pictograms", the annex E is normative and contains „Verification of surface temperature” and the annex ZA is informative and contains „Relationship of this European Standard with EU Directives“; this European Standard also contains a Bibliography.

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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 applies to transportable masonry and stone cutting-off machines stationary during work, principally used on job site building construction for cutting-off stones, other mineral construction materials and composite materials having at least one supporting surface. The power for the tool rotation is supplied by electrical or internal combustion prime motor. This European Standard deals with all significant hazards pertinent to masonry and stone cutting-off machines for job site (see clause 4), when they are used as intended and under the conditions foreseen by the manufacturer. This European Standard specifies the appropriate technical measures to eliminate or reduce risks arising from the significant hazards.

These machines are designed for use with rotating diamond cutting-off wheels with a continuous rim and/or segmented rim.

This European Standard does not apply to:

- metal cutting-off machines;
- wood and timber sawing machines;
- machines with a feed or descent mechanism other than manual, or with a pedal;
- mobile machines on a trolley travelling on the ground;
- hand-held portable grinding and cutting-off machines;
- hand-held portable grinding and cutting-off machines mounted on a support to be used in a fixed position.

This European Standard does not cover the operation of transportable masonry and stone cutting-off machines in potential explosive atmospheres.

This European Standard covers electrical hazards making reference to relevant European Standards (see 5.2).

Those hazards that are relevant for all mechanical, electrical, hydraulic, pneumatic and other equipment of machinery and that are dealt with in standards for common use are not covered by this European Standard. Reference to pertinent standards of this kind is made where such standards are applicable and so far necessary.

In this standard, the masonry and stone cutting-off machines for job site construction are called: "cutting-off machines" or "machines", and cutting-off wheels are also called: „tools“.

This standard applies primarily to the machines which are manufactured after the date of approval of the standard by CEN.

2 Normative references

This European Standard incorporates, by dated or undated reference, 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 (including amendments).

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 specifications
EN 294:1992	Safety of machinery - Safety distances to prevent danger zones being reached by the upper limbs
EN 563:1994	Safety of machinery - Temperatures of touchable surfaces - Ergonomics data to establish temperature limit values for hot surfaces
EN 953:1997	Safety of machinery - General requirements for the design and construction of guards (fixed, movable)
EN 1070:1998	Safety of machinery - Terminology
prEN 13218:1998	Machine tools – Safety – Stationary grinding machines
EN 60204-1:1997	Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1:1997)
EN 60335-1:1994	Safety of household and similar appliances - Part 1: General requirements (IEC 60335-1:1991, modified)
EN 60335-2-41:1996	Safety of household and similar appliances - Part 2: Particular requirements for electric pumps for liquid having a temperature not exceeding 35 °C (IEC 60335-2-41:1996)
EN 61029-1:1995	Safety of transportable motor operated electric tools - Part 1: General requirements (IEC 61029-1:1990, modified)
prEN 61029-2-7:1992	Safety of transportable motor operated electric tools - Part 2-7: Particular requirements for diamond saws with water supply
EN ISO 3744:1995	Acoustics - Determination of sound power levels of noise sources using sound pressure - Engineering method in an essentially free field over a reflecting plane (ISO 3744:1994)
EN ISO 11201:1995	Acoustics - Noise emitted by machinery and equipment - Measurement of emission sound pressure levels at the work station and at other specified positions - Engineering method in an essential free field over a reflecting plane (ISO 11201:1995)

3 Terms and definitions

For the purposes of this Standard the terms and definitions stated in EN 1070:1998 apply. Additional terms and definitions specifically needed for this Standard are added below.

3.1 cutting-off machine

transportable machine used in building and site construction, operating at a stationary position and is intended for cutting primarily construction material of different weight, shape and dimensions, for example natural stone, concrete (reinforced or otherwise), bricks, concrete blocks (breeze blocks), paving slabs or cobblestones, roof tiles and ceramic tiles.

The feed of the material or of the table where it is placed is made by hand. The cutting head, if movable, is moved manually or by a pedal.

The power source of a cutting-off machine is an electrical motor or an internal combustion engine with built-in tank.

3.2 types of cutting-off machines

cutting-off machines can be basically classified in four different types defined below :

- Type 1: Machine with a movable table having a fixed (permanently or by means of clamps) or swinging moveable cutting head (tiltable or not) which is located over the table;
- Type 2: Machine with a fixed table having a horizontal moving cutting head and, if applicable, vertically adjustable and tiltable cutting head located over the table;
- Type 3: Machine with a fixed table having a vertically moving cutting head;
- Type 4: Machine with a fixed or movable and/or inclinable table having a fixed cutting head, and only intended for use with continuous rim tools having a maximum diameter of 250 mm. The motor is located under the table.

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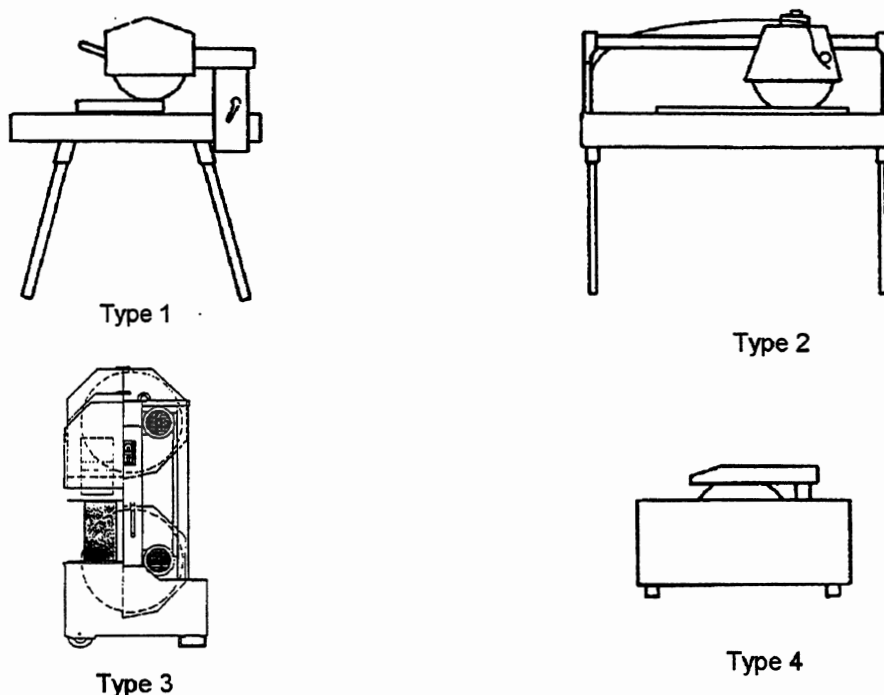


Figure 1 - Sketches of the different types of cutting-off machines

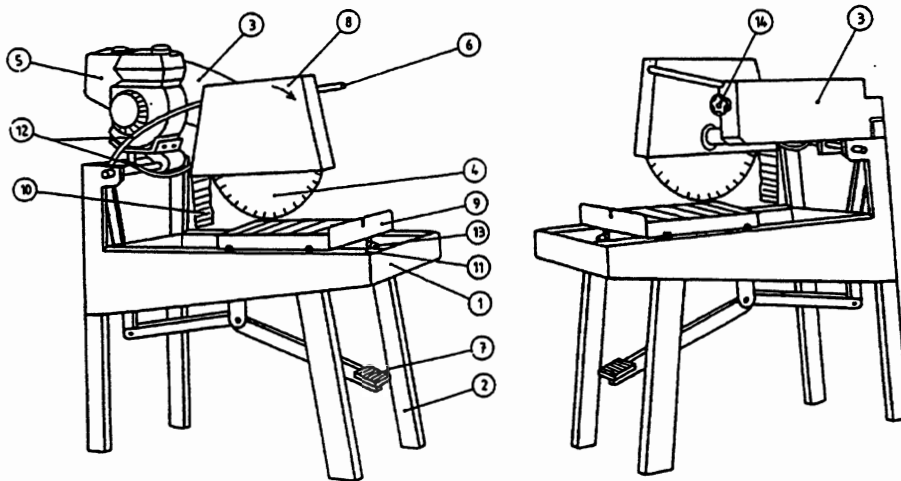
3.3

parts of a cutting-off machine

cutting-off machine comprising the following parts:

- frame;
- electric motor or an ICE (internal combustion engine) to drive the cutting-off wheel in rotation;
- cutting head;
- rotating cutting-off wheel (see clause 1);
- material-carrying table (movable and/or tiltable or not);
- cutting-off wheel guard;
- self containing water tank with an electrical or mechanical water pump or an alternative water supply.

See also figure 2.



Cutting-off machine with internal combustion engine

Cutting-off machine with electric motor

- 1 frame (incorporating the water tank)
- 2 legs (demountable or otherwise)
- 3 cutting head
- 4 cutting-off wheel
- 5 electric motor (or engine)
- 6 handle for moving the cutting head
- 7 foot pedal for lowering the cutting head (if any)
- 8 cutting-off wheel guard
- 9 moveable table including material stop for supporting materials to be cut
- 10 water splash deflector
- 11 table guiding tracks
- 12 water supply system
- 13 front stop of the table
- 14 cutting depth stop (for types 1 and 2 machines)

Figure 2 - Examples of cutting-off machines

3.4 cutting head

cutting head, also called mobile unit, consisting of:

- the cutting-off wheel; (standards.iteh.ai)
- its fixing means on the spindle; [SIST EN 12418:2000](https://standards.iteh.ai/catalog/standards/sist/1105db6d-b5d3-4427-712e-4957e-4812e-c12-b5-70)
- the power unit or if the prime mover is fixed, the power transmission to the cutting-off wheel;
- the handle;
- the control panel;
- the guards which are moveable relative to the frame.

3.5 rated spindle speed

speed of the drive spindle in revolutions per minute (min^{-1}) at the rated conditions specified by the machine manufacturer but without cutting-off wheel and under no load.

3.6 nominal mass

mass of the cutting-off machine equipped with all its dismountable parts, but without the cutting-off wheel, the tanks being empty.

3.7 maximum operating mass

mass of the cutting-off machine equipped with all its dismountable parts, ready for use, with the cutting-off wheel mounted and the tanks being full.

4 List of significant hazards

This clause contains all significant hazards and hazardous situations, as far as they are dealt with in this European Standard, identified by risk assessment significant for this type of machinery and which require action to eliminate or reduce risk.

Table 1 - List of significant hazards

	Hazards	Relevant subclauses
4.1	Crushing hazard	5.1.1, 5.1.2, 5.1.3, 5.1.4, 5.1.5, 5.1.6, 5.1.7, 5.1.8, 5.1.9, 5.1.10, 7.2.1
4.2	Shearing hazard	5.1.1, 5.1.2, 5.1.3, 5.1.5, 5.1.6, 5.1.8, 5.1.9, 5.1.10
4.3	Cutting and severing hazard	5.1.1, 5.1.2, 5.1.3, 5.1.6, 5.1.8, 5.1.9, 5.1.10
4.4	Entanglement hazard	5.1.1, 5.1.2, 5.1.3, 5.1.6, 5.1.8, 5.1.9, 5.1.10
4.5	Drawing-in or trapping hazard	5.1.1, 5.1.2, 5.1.3, 5.1.6, 5.1.9, 5.1.10
4.6	Impact hazard	5.1.1, 5.1.2, 5.1.3, 5.1.5, 5.1.6, 5.1.7, 5.1.8, 5.1.9, 5.1.10, 7.2.1

(continued)

Table 1 - List of significant hazards (continued)

	Hazards	Relevant subclauses
4.7	Fluid ejection hazard	5.6
4.8	Hazards caused by ejection of parts (material/work pieces)	5.1.1, 5.1.2, 5.1.3, 5.1.6, 5.1.7, 5.1.8, 5.1.9, 5.1.10, 5.7, 7.2.1
4.9	Hazards caused by loss of stability (machinery and machine parts)	5.1.4, 5.1.5, 5.1.9, 7.2.1
4.10	Slip, trip and fall hazard in relationship with machinery	5.5, 7.2.1
4.11	Hazards caused by electrical contact direct or indirect	5.2, 7.2.1
4.12	Hazards resulting in burns and/or scalds, by possible contact of persons, by flames or explosions and also by radiation of heat sources	5.3, 7.2.1
4.13	Health-damaging effects by hot or cold work environment and by noise	5.8, 7.2.1
4.14	Hazards resulting from contact with or inhalation of harmful fluids, gases, mists, fumes and dusts	5.4, 5.5, 5.9, 7.2.1
4.15	Hazards caused by fire and/or explosion	7.2.1
4.16	Unhealthy postures or excessive efforts	5.1.5, 5.1.7, 5.1.8, 7.2.1.3
4.17	Hazards caused by inadequate local lighting	7.2.1
4.18	Hazards caused by human errors	5.1.2, 5.2.1, 7.1, 7.2.1
4.19	Hazard combinations	5.1.1, 7.1, 7.2.1
4.20	Hazard caused by failure of energy supply (of energy and/or control circuits)	5.1.10, 5.2, 7.2.1
4.21	Hazards caused by failure/disorder of control system	5.1.9, 5.1.10, 5.2, 7.2.1
4.22	Hazards caused by errors of fitting	7.1, 7.2.1
4.23	Hazards caused by temporarily missing and/or incorrectly positioned safety related measures/means as:	
4.23.1	Guards of all kinds	7.2.1
4.23.2	Safety related protection devices of all kinds	7.2.1

(continued)