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Orodja za obdelavo lesa - Varnostne zahteve - 1. del: Rezkalno orodje, listi krožnih žag

Tools for woodworking - Safety requirements - Part 1: Milling tools, circular saw blades

Maschinen-Werkzeuge für Holzbearbeitung - Sicherheitstechnische Anforderungen - Teil 1: Fräs- und Hobelwerkzeuge, Kreissägeblätter

Outils pour le travail du bois - Prescriptions de sécurité - Partie 1 : Outils de fraisage, lames de scies circulaires

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Tools for woodworking - Safety requirements - Part 1: Milling tools, circular saw blades

Outils pour le travail du bois - Prescriptions de sécurité - Partie 1 : Outils de fraisage, lames de scies circulaires

Maschinen-Werkzeuge für Holzbearbeitung - Sicherheitstechnische Anforderungen - Teil 1: Fräs- und Hobelwerkzeuge, Kreissägeblätter

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European foreword

This document (EN 847-1:2017) has been prepared by Technical Committee CEN/TC 142 “Woodworking machines - Safety”, the secretariat of which is held by UNI.

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of an identical text or by endorsement, at the latest by May 2018, and conflicting national standards shall be withdrawn at the latest by May 2018.

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.

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Introduction

The extent to which hazards are covered is indicated in the scope of this document.

The requirements of this document concern designers, manufacturers, suppliers and importers of tools for cutting wood and materials with similar physical characteristics to wood.

This document also includes information that the manufacturer will provide to the user.

1 Scope

This European Standard specifies all hazards arising from the use of tools for woodworking machines, and describes the methods for the elimination or reduction of these hazards by tool design and by the provision of information. This European Standard deals with milling tools (bore mounted, shank mounted) and circular saw blades, designed for chip removal machining (cutting) of wood and materials with similar physical characteristics to wood, hereinafter referred to as “tools”. The hazards are listed in Clause 4.

This European Standard does not cover any hazard related to the strength of shank of shank mounted milling tools.

This European Standard does not apply to boring bits, eccentric single router cutters, cutters with cutting circle less than 16 mm and to tools used in rotary knife lathes and copying lathes where the hazard of ejection and contact with the tool is always prevented by a system of fixed guards and/or movable guards interlocked with guard-locking and/or self-closing guards.

This European Standard is not applicable for tools according to this scope, which are manufactured before the date of its publication.

NOTE For woodworking machines and materials with similar physical characteristics to wood, see ISO 19085-1.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 847-2:2017, *Tools for woodworking - Safety requirements - Part 2: Requirements for the shank of shank mounted milling tools*

EN 23878, *Hardmetals - Vickers hardness test (ISO 3878)*

ISO 286-2, *Geometrical product specifications (GPS) — ISO code system for tolerances on linear sizes — Part 2: Tables of standard tolerance classes and limit deviations for holes and shafts*

3 Terms, definitions, symbols and abbreviations

3.1 Terms and definitions

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

3.1.1
milling tool
rotating cutting tool (e.g. milling cutter, planing cutter, thicknessing cutter) normally having its main feed direction perpendicular to the rotation axis, for working various surfaces

Note 1 to entry: The cutting edge of the cutting part can be
- parallel to the axis of rotation,
- square to the axis of rotation, or
- a profile which is a combination of the two.

The tool can be
- a one-piece tool,
- a composite tool,
- a complex tool, or
- in the form of a tool set.

3.1.2
circular saw blade
rotating cutting tool for cross-cutting or ripping

Note 1 to entry: The tools cut on the periphery and on both flanks simultaneously, and can be

- a one-piece tool,
- a composite tool,
- a complex tool, or
- in a form of a stack of circular saw blades with equal diameter.

3.1.3
one-piece tool
tool without bonded or detachable parts: the body and the cutting parts are one-piece

3.1.4
composite tool
tool where the cutting parts (tips) are firmly connected by bonding to the body, e.g. welding, brazing, adhesive fixing

3.1.5
complex tool
tool where one or more cutting parts are exchangeably mounted in a body through detachable fixing elements

Note 1 to entry: The cutting parts can be one-piece or composite.

3.1.6
tool set
one or more individual tools (e.g. milling tool, circular saw blade) clamped together on a tool carrier (e.g. sleeve, arbor) designed to function as one tool

3.1.7
shank tool
tool with integrated shank (e.g. cylindrical, HSK, taper)

3.1.8
integrated tool
milling tool where the body is part of the machine and only the cutting parts are exchangeable

3.1.9
body
part of the tool which holds the cutting parts or on which the cutting parts are formed

3.1.10
cutting part
functional part or parts of the tool each comprised of chip producing elements

Note 1 to entry: The cutting edges, face and flank are therefore elements of the cutting part. In the case of a multi-toothed cutter tool, each tooth has a cutting part.

[SOURCE: ISO 3002-1:1982, 3.2.5]

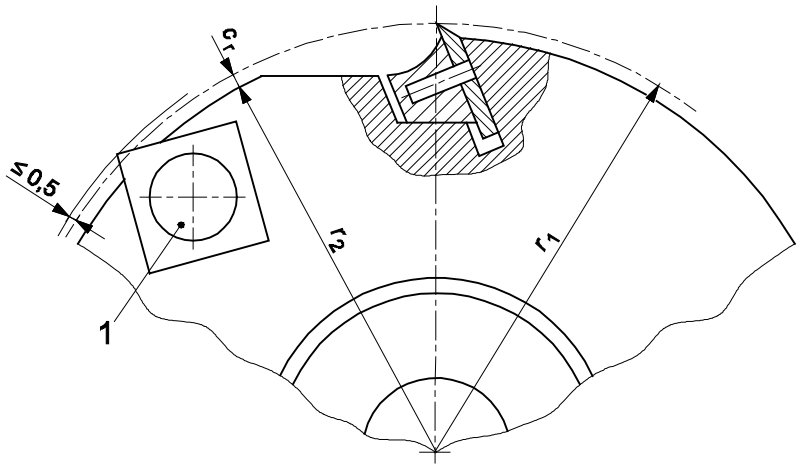
3.1.11
auxiliary cutting part
additional cutting part with a cutting width of less than or equal to 12 mm and a radial cutting edge projection to the body of less than or equal to 13 mm

EXAMPLE Inserts for grooving, edge rounding and chamfering.

3.1.12
spur
cutting part which operates both on its periphery and on its flank

Note 1 to entry: The spur projects from the major cutting edge in radial, and if applicable, in axial direction. A spur is either a separate cutting part (see Figure 1) or a part of the major cutting edge.

Dimensions in millimetres



Key

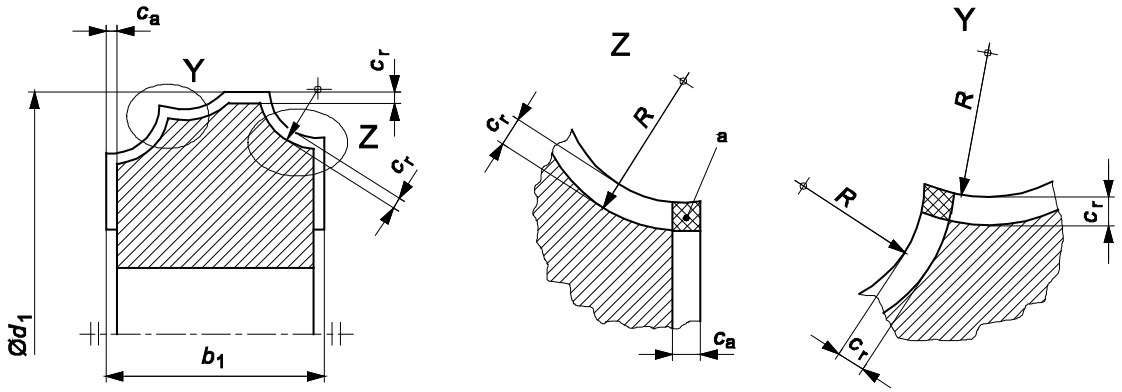
1 screw at the choice of the manufacturer

Figure 1 — Milling tool with a spur

3.1.13
cutting diameter
***d*$_1$ (cutting radius *r*$_1$)**
maximum possible diameter of the cutting edge

Note 1 to entry: For tools where various cutting parts can be mounted, d_1 is defined by the maximum possible cutting part

Note 2 to entry: See Figure 2.



key

a Shaded area

Figure 2 — Cutting diameter and cutting width

3.1.14
cutting width
***b*$_1$**
maximum possible width of the cutting edge

Note 1 to entry: For tools where various cutting parts can be mounted, b_1 is defined by the maximum possible cutting part

Note 2 to entry: See Figure 2.

3.1.15
deflector
projecting part exchangeably mounted or firmly connected by bonding to the body or part of the body which performs chip thickness limitation

Note 1 to entry: The deflector can also be called a “counter-knife”.

Note 2 to entry: See Figures 3 b), 3 c), 3 d), 3 e) and 3 g).

3.1.16
cutting part projection
t
difference between the radius r_1 of the cutting circle and the radius r_5 of the back supporting circle where $t = r_1 - r_5$

Note 1 to entry: See Figure 3.

3.1.17
radial cutting edge projection
c_r
difference between the deflector (not round form tool) or the body (round form tool) and the cutting edge measured in the direction of the normal to the profile

Note 1 to entry: See Figures 2 and 3.

3.1.18
axial cutting edge projection
c_a
distance measured axially between the axial cutting edge and the body or the deflector

Note 1 to entry: See Figures 2, 3 a), 3 d) and 3 g)

3.1.19
round form tool
tool where the body has a circular shape in any cross section perpendicular to the rotational axis of the tool and which performs chip thickness limitation

Note 1 to entry: Auxiliary cutting parts with a deflector or spurs are not to be considered.

Note 2 to entry: See Figure 3 a)

3.1.20
not round form tool
tool where chip thickness limitation is performed by a deflector or where the cross section of the body is not circular

Note 1 to entry: See Figures 3 b), 3 c), 3 d), 3 e), 3 f) and 3 g)

3.1.21
round form tool set
functional unit consisting of a number of individual not round form and/or round form tools clamped together and forming a round form tool with radial gaps of less than 5 mm and axial gaps less than 15 mm and the top and the bottom side is a full round

3.1.22
tool combination
unit consisting of a number of loose tools arranged in a variable sequence to each other or extendable in an axial position to each other

3.1.23
friction lock fixing
fixing where the relative change of position in radial direction during rotation is prevented only by the friction forces

Note 1 to entry: See Figure 4.

3.1.24
form lock fixing
fixing where the relative change of position in radial direction during rotation is prevented by the form and arrangement of the components

Note 1 to entry: See Figure 5.

3.1.25
radial and axial approach flats
flat on the radial and/or axial surface of the deflector or of the body, in front of the deflector edge

Note 1 to entry: See Figure 6.

3.1.26
radial approach angle
τ_r
angle between the approach flat and the tangent to the deflector circle at the deflector edge or to the body circle at the point where the radial approach flat begins

Note 1 to entry: See Figure 6.

3.1.27
axial approach angle
τ_a
angle between a plane perpendicular to the axis of the tool and the axial approach flat

Note 1 to entry: See Figure 6.

3.1.28
basic number of teeth
number of teeth cutting in each part of the profile

3.1.29
hand feed
manual holding and/or guiding of the workpiece or of a machine element incorporating a tool

Note 1 to entry: Hand feed includes the use of hand-operated carriage on which the workpiece is placed manually or clamped and the use of demountable power feed unit

3.1.30
integrated feed
feed mechanism for the workpiece or tool which is integrated with the machine and where the workpiece or machine element with incorporated tool is held and controlled mechanically during the machining operation

3.1.31
maximum rotational speed
maximum rotational speed for the operation for which the tool is designed

3.1.32
speed range
minimum and maximum rotational speeds within which the tool spindle or tool is designed to operate

3.1.33
loading the machine
manual or automatic placing of the workpiece onto a carriage, magazine, lift, hopper, movable bed, conveyor or the presentation of the workpiece to an integrated feed device