INTERNATIONAL STANDARD

ISO
22037

First edition
2007-02-15

Solid end mills with corner radii and cylindrical shanks made of hard cutting materials — Dimensions

Fraises toriques deux tailles monobloc, à queue cylindrique, en matériaux durs de coupe — Dimensions

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

iTeh STANDARD PREVIEW

(standards.iteh.ai)

ISO 22037:2007
https://standards.iteh.ai/catalog/standards/sist/f098ea58-c752-4df7-b1be-
4301c2a01aea/iso-22037-2007

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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.

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.

ISO 22037 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 9, *Tools with cutting edges made of hard cutting materials*.

iTeh STANDARD PREVIEW

(standards.iteh.ai)

ISO 22037:2007
https://standards.iteh.ai/catalog/standards/sist/f098ea58-c752-4df7-b1be-
4301c2a01aea/iso-22037-2007

ISO 22037:2007
https://standards.iteh.ai/catalog/standards/sist/f098ea58-c752-4df7-b1be-
4301c2a01aea/iso-22037-2007

Solid end mills with corner radii and cylindrical shanks made of hard cutting materials — Dimensions

1 Scope

This International Standard specifies types and dimensions of solid end mills, with corner radii and cylindrical shanks, made of hard cutting materials in accordance with ISO 513.

2 Normative references

The following referenced documents are indispensable for the application 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 286-2, *ISO system of limits and fits — Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts*

ISO 513, *Classification and application of hard cutting materials for metal removal with defined cutting edges — Designation of the main groups and groups of application*

3 Types of radiused end mills

The end mills with corner radii are divided into two types:

— Type 1: End mills with corner radii, short according to Figure 1 and Table 1;

— Type 2: End mills with corner radii, long according to Figure 2 and Table 2.

NOTE   Both types of end mills with corner radii can be designed with or without a recess. The dimension of the neck recess (diameter of recess) d_3 is shown in Figures 1 and 2.
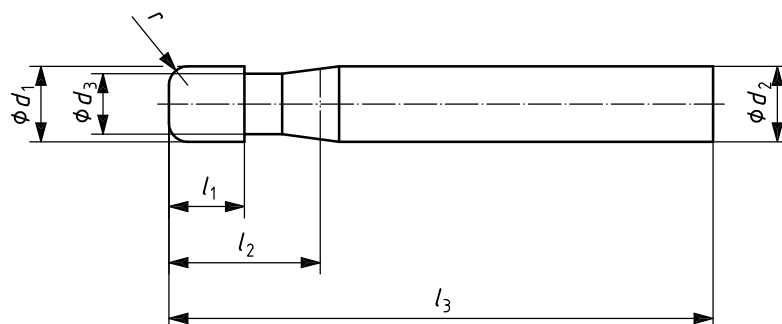
4 Dimensions

Figure 1 — Type 1: End mills with corner radii, short

Table 1 — Type 1: End mills with corner radii, short

Dimensions in millimetres

Cutting diameter d_1	Radius r [d]	Length of cut l_1 Minimum	Usable length l_2 [a] Minimum	Diameter of recess d_3 [b]	Overall length l_3 $+2 \atop 0$	Shank diameter d_2 [c] h6
0,5		0,5	1,0			
0,6		0,6	1,2		38,0	3,0
0,8		0,8	1,6			
1,0		1,0	2,0			
1,2		1,2	2,4			
1,4		1,4	2,8			
1,5		1,5	3,0		43,0	4,0
1,6		1,6	3,2			
1,8		1,8	3,6			
2,0		2,0	4,0			
2,5		2,5	5,0			
3,0		3,0	6,0			
3,5		3,5	7,0			
4,0	Blank column	4,0	8,0	Blank column	57,0	6,0
4,5		4,5	9,0			
5,0		5,0	10,0			
5,5		5,5	11,0			
6,0		6,0	12,0			
7,0		7,0	14,0		63,0	8,0
8,0		8,0	16,0			
9,0		9,0	18,0		72,0	10,0
10,0		10,0	20,0			
11,0		11,0	22,0			12,0
12,0		12,0	24,0		83,0	
13,0		13,0	26,0			14,0
14,0		14,0	28,0			
16,0		16,0	32,0		92,0	16,0
18,0		18,0	36,0			18,0
20,0		20,0	40,0		104,0	20,0

[a] l_2 is taken as the length extended in parallel to the axis from the top of the end mill to the intersection of cutting diameter d_1 with a recess taper part.

[b] Dimension is at the manufacturer's option.

[c] Tolerances on d_2 according to ISO 286-2.

[d] See Table 3.
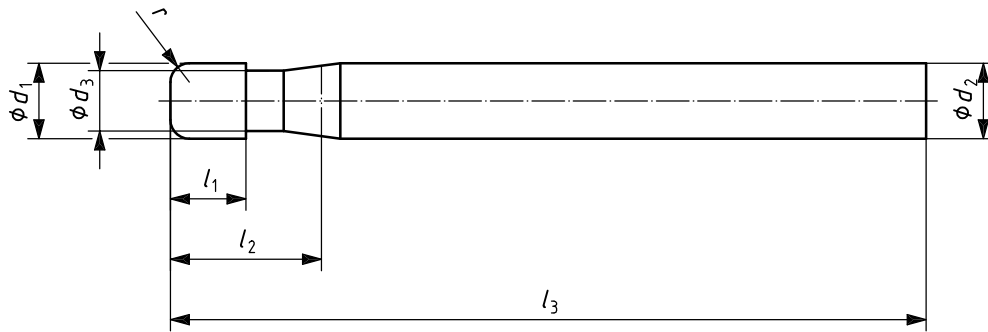
Figure 2 — Type 2: End mills with corner radii, long

Table 2 — Type 2: End mills with corner radii, long

Dimensions in millimetres

Cutting diameter d_1	Radius r [d]	Length of cut l_1 Minimum	Usable length l_2[a] Minimum	Diameter of recess d_3[b]	Overall length l_3 $^{+2}_{\ 0}$	Shank diameter d_2[c] h6
0,5		0,5	1,0		50,0	3,0
0,6		0,6	1,2			
0,8		0,8	1,6			
1,0		1,0	2,0		60,0	4,0
1,2		1,2	2,4			
1,4		1,4	2,8			
1,5		1,5	3,0			
1,6		1,6	3,2			
1,8		1,8	3,6			
2,0		2,0	4,0		80,0	6,0
2,5		2,5	5,0			
3,0		3,0	6,0			
3,5		3,5	7,0			
4,0	Blank column	4,0	8,0	Blank column		
4,5		4,5	9,0			
5,0		5,0	10,0			
5,5		5,5	11,0			
6,0		6,0	12,0			
6,0		6,0	12,0		100,0	8,0
7,0		7,0	14,0			
8,0		8,0	16,0			
8,0		8,0	16,0			10,0
9,0		9,0	18,0			
10,0		10,0	20,0			
10,0		10,0	20,0		120,0	12,0
11,0		11,0	22,0			
12,0		12,0	24,0			
13,0		13,0	26,0			14,0
14,0		14,0	28,0			
13,0		13,0	26,0		140,0	16,0
14,0		14,0	28,0			
16,0		16,0	32,0			
18,0		18,0	36,0		160,0	18,0
18,0		18,0	36,0			20,0
20,0		20,0	40,0			

[a] l_2 is taken as the length extended in parallel to the axis from the top of the end mill to the intersection of cutting diameter d_1 with a recess taper part.

[b] Dimension is at the manufacturer's option.

[c] Tolerances on d_2 according to ISO 286-2.

[d] See Table 3.

Table 3 — Radii for end mills, short and long

Dimensions in millimetres

Diameter	Radius r ± 0,010										
	0,1	0,2	0,3	0,5	1	1,5	2	3	4	5	6
0,5	+										
0,6	+	+									
0,8	+	+									
1,0	+	+	+								
1,2	+	+	+								
1,4	+	+	+	+							
1,5	+	+	+	+							
1,6	+	+	+	+							
1,8	+	+	+	+							
2,0	+	+	+	+							
2,5		+	+	+							
3,0		+	+	+	+						
3,5		+	+	+	+						
4,0		+									
4,5			+	+	+						
5,0			+	+	+						
5,5			+	+							
6,0			+	+	+	+					
7,0				+	+	+	+				
8,0				+	+	+	+				
9,0				+	+	+	+				
10,0				+	+	+	+				
11,0					+	+	+	+			
12,0					+	+	+	+	+		
13,0					+	+	+	+	+		
14,0					+	+	+	+	+		
16,0					+	+	+	+	+	+	+
18,0					+	+	+	+	+	+	+
20,0					+	+	+	+	+	+	+

Key

+	first preference: radius covered by this International Standard
	non-shaded square, second preference: radius not covered by this International Standard
(shaded)	shaded squares: radius not recommended