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**Dentistry — Laboratory cutters —  
Part 3:  
Carbide cutters for milling machines**

*Médecine bucco-dentaire — Fraises de laboratoire —*

*Partie 3: Fraises de laboratoire en carbure pour machines à fraiser*

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## 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](http://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](http://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 voluntary nature of standards, 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](http://www.iso.org/iso/foreword.html). (standards.iteh.ai)

This document was prepared by Technical Committee ISO/TC 106, *Dentistry*, Subcommittee SC 4, *Dental instruments*.

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This second edition cancels and replaces the first edition (ISO 7787-3:1991), which has been technically revised with the following changes:

- a) normative references have been updated;
- b) definitions were added;
- c) clauses have been renumbered;
- d) bibliography was added.

A list of all parts in the ISO 7787 series can be found on the ISO website.

## Introduction

This document is one of a series of International Standards relating to dental rotary instruments.

The various dimensional and other requirements specified for carbide laboratory cutters are those considered important to ensure the interchangeability of these instruments.

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# Dentistry — Laboratory cutters —

## Part 3: Carbide cutters for milling machines

### 1 Scope

This document specifies dimensional and other requirements for the three most commonly used carbide cutters for milling machines which are predominantly used in the dental laboratory.

Other characteristics of laboratory cutters (for example, spiralled blades or cross-cut) are not covered by this document.

Cutters intended for use with CAD/CAM systems are excluded from the scope of this document.

### 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 1797: 2017, *Dentistry — Shanks for rotary and oscillating instruments*

ISO 1942, *Dentistry — Vocabulary* [ISO 7787-3:2017](#)

ISO 2157, *Dentistry — Nominal diameters and designation code numbers for rotary instruments*  
<https://standards.iteh.ai/catalog/standards/sist/2c24f82e-4a96-4857-a376-d50870c1494/iso-7787-3-2017>

ISO 8325, *Dentistry — Test methods for rotary instruments*

### 3 Terms, definitions and symbols

#### 3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1942 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

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

##### 3.1.1

##### **laboratory cutter**

cutting instrument designed for use with dental materials in the *dental laboratory* (3.1.2)

##### 3.1.2

##### **dental laboratory**

facility where dental technician procedures complementing dental clinical treatment are carried out

[SOURCE: ISO 1942:2009, 2.77]

##### 3.1.3

##### **milling machine**

device used in the *dental laboratory* (3.1.2) for milling of dental prosthetic parts

### 3.2 Symbols

- $d_1$  diameter of the working part, head diameter
- $d_2$  diameter at the end of the working part
- $l_1$  length of the working part, head length
- $l_2$  total length of laboratory cutter

## 4 Requirements

### 4.1 Material

The shank of the laboratory cutter shall be made of steel or other suitable material.

The working part shall be made of tungsten carbide.

The selection of the type of material and the treatment given to it shall be left to the discretion of the manufacturer.

### 4.2 Dimensions, shank and head shape

All dimensions are in millimetres.

The dimensions shall be as specified in [Table 1](#), [Table 2](#) and [Table 3](#) and as shown in [Figure 1](#), [Figure 2](#) and [Figure 3](#).

The shank of the laboratory cutter shall be Type 2 or Type 4 in accordance with ISO 1797.

In this document, the laboratory cutters are differentiated according to the shape of the head of the laboratory cutters.

Test in accordance with [6.1](#).

### 4.3 Cylindrical, side cutting only

A cylindrical cutter for side cutting only shall be as specified in [Figure 1](#) and [Table 1](#).

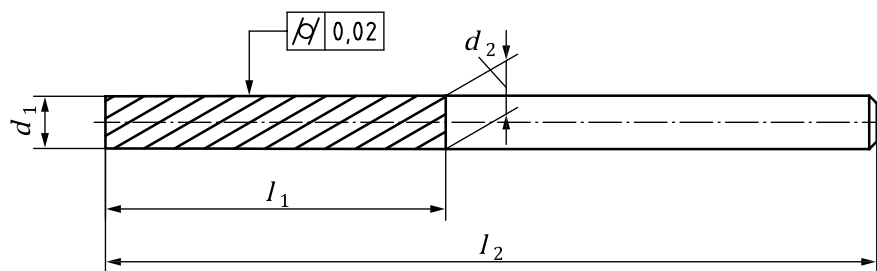


Figure 1 — Cylindrical, side cutting only



**Table 1 — Cylindrical, side cutting only — Dimensions and number of blades**

Dimensions in millimetres

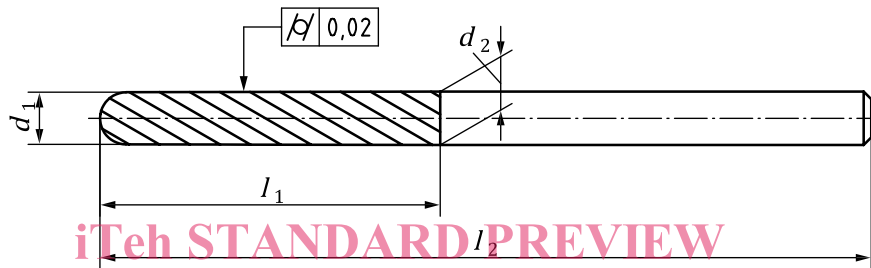
Nominal size	$d_1 \pm 0,08$	$l_1 \pm 0,5$	$l_2^a \pm 0,5$	$d_2$ max.	Number of blades min.
010	1,0	8	30	1,08	12
015	1,5	10	30	1,58	16
023	2,3	15	34	2,35	22

<sup>a</sup> The limitations of ISO 1797:2017, Table 1 do not apply because these cutters are used in milling machines in the dental laboratory.

Test in accordance with 6.1.

**4.4 Cylindrical, hemispherical**

A cylindrical cutter, hemispherical, shall be as specified in Figure 2 and Table 2.



**Figure 2 — Cylindrical, hemispherical**

ISO 7787-3:2017

**Table 2 — Cylindrical, hemispherical — Dimensions and number of blades**

Dimensions in millimetres

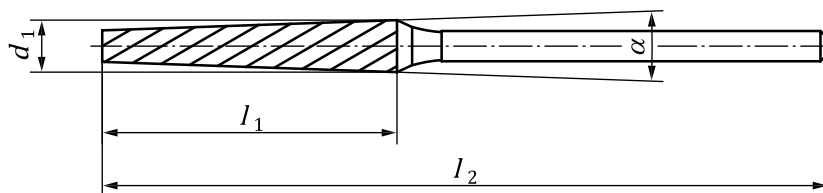
Nominal size	$d_1 \pm 0,08$	$l_1 \pm 0,5$	$l_2^a \pm 0,5$	$d_2$ max.	Number of blades min.
010	1,0	8	30	1,08	12
015	1,5	10	30	1,58	16
023	2,3	15	34	2,35	22

<sup>a</sup> The limitations of ISO 1797:2017, Table 1 do not apply because these cutters are used in milling machines in the dental laboratory.

Test in accordance with 6.1.

**4.5 Conical, truncated, side cutting only**

A conical cutter, truncated, for side cutting only shall be as specified in Figure 3 and Table 3.



**Figure 3 — Conical, truncated, side cutting only**