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Standards

Irish Standard  
I.S. EN ISO 14457:2012

# Dentistry - Handpieces and motors (ISO 14457:2012)

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## I.S. EN ISO 14457:2012

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## Dentistry - Handpieces and motors (ISO 14457:2012)

Médecine bucco-dentaire - Pièces à main et moteurs (ISO  
14457:2012)

Zahnheilkunde - Handstücke und Motoren (ISO  
14457:2012)

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## **Foreword**

This document (EN ISO 14457:2012) has been prepared by Technical Committee ISO/TC 106 “Dentistry” in collaboration with Technical Committee CEN/TC 55 “Dentistry” 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of an identical text or by endorsement, at the latest by March 2013, and conflicting national standards shall be withdrawn at the latest by March 2013.

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**Dentistry — Handpieces and motors**

*Médecine bucco-dentaire — Pièces à main et moteurs*



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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.

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 14457 was prepared by Technical Committee ISO/TC 106, *Dentistry*, Subcommittee SC 4, *Dental instruments*.

ISO 14457 cancels and replaces ISO 7785-1:1997, ISO 7785-2:1995, ISO 11498:1997 and ISO 13294:1997, which have been technically revised.

## **Introduction**

Dental handpieces and dental motors have been used in dental treatment procedures for many years.

Technical development creates handpieces and motors that are better and easier to use. The combination of these items is very important for good performance.

This International Standard combines the content of the following four ISO standards, which have now been withdrawn.

ISO 7785-1:1997, *Dental handpieces — Part 1: High-speed air turbine handpieces*

ISO 7785-2:1995, *Dental handpieces — Part 2: Straight and geared angle handpieces*

ISO 11498:1997, *Dental handpieces — Dental low-voltage electrical motors*

ISO 13294:1997, *Dental handpieces — Dental air-motors*

# Dentistry — Handpieces and motors

## 1 Scope

This International Standard is applicable to handpieces and motors used in dentistry for patient contact, regardless of their construction. It specifies requirements, test methods, manufacturer's information, marking and packaging.

This International Standard is applicable to:

- a) straight and geared-angle handpieces, including handpiece attachments;
- b) high-speed air turbine handpieces;
- c) air motors;
- d) electrical motors;
- e) prophy handpieces.

This International Standard is not applicable to:

- 1) intraoral camera handpieces;
- 2) powered polymerization handpieces;
- 3) air-powered scalers;
- 4) electrical powered scalers;
- 5) air-powder polishing handpieces;
- 6) multifunction handpieces (syringes).

NOTE See Annex A for clarification of the handpieces, attachments and motor types covered by this International Standard.

## 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 1797-1, *Dentistry — Shanks for rotary instruments — Part 1: Shanks made of metals*

ISO 1797-2, *Dental rotary instruments — Shanks — Part 2: Shanks made of plastics*

ISO 1942, *Dentistry — Vocabulary*

ISO 3964, *Dental handpieces — Coupling dimensions*

ISO 5349-1, *Mechanical vibration — Measurement and evaluation of human exposure to hand-transmitted vibration — Part 1: General requirements*

ISO 5349-2, *Mechanical vibration — Measurement and evaluation of human exposure to hand-transmitted vibration — Part 2: Practical guidance for measurement at the workplace*

ISO 6507-1, *Metallic materials — Vickers hardness test — Part 1: Test method*

ISO 7405, *Dentistry — Evaluation of biocompatibility of medical devices used in dentistry*

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ISO 7494-1, *Dentistry — Dental units— Part 1: General requirements and test methods*

ISO 9168, *Dentistry — Hose connectors for air driven dental handpieces*

ISO 9687, *Dental equipment — Graphical symbols*

ISO 10993-1, *Biological evaluation of medical devices — Part 1: Evaluation and testing within a risk management process*

ISO 13295, *Dentistry — Mandrels for rotary instruments*

ISO 15223-1, *Medical devices — Symbols to be used with medical device labels, labelling and information to be supplied — Part 1: General requirements*

ISO 17664, *Sterilization of medical devices — Information to be provided by the manufacturer for the processing of resterilizable medical devices*

ISO 21531, *Dentistry — Graphical symbols for dental instruments*

IEC 60601-1:2005, *Medical electrical equipment — Part 1: General requirements for basic safety and essential performance*

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

IEC 62366, *Medical devices — Application of usability engineering to medical devices*

IEC 80601-2-60:2012, *Medical electrical equipment — Part 2-60: Particular requirements for basic safety and essential performance of dental equipment*

### 3 Terms and definitions

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

#### 3.1

##### **air motor**

motor powered by compressed air, which is supplied by a dental unit

#### 3.2

##### **air-powered powder jet handpiece**

handpiece powered by air, designed to transfer powder to the patient

#### 3.3

##### **air-powered scaler**

handpiece powered by air, with an oscillating working part

#### 3.4

##### **angle handpiece**

handpiece with an angle between the input and output axes, driven by an air motor or an electrical motor or with an internal power supply

#### 3.5

##### **contra-angle handpiece**

angle handpiece with one or more additional angles placed so as to bring the working part of the instrument or tool approximately into line with the main axis of the handpiece

#### 3.6

##### **non-metallic chuck**

handpiece chuck with non-metallic material on the contact surface of the shank holding mechanism

#### 3.7

##### **electrical motor**

motor powered by electrical energy, which is supplied by a dental unit

**3.8**

**electrical powered scaler**

handpiece powered by electrical energy, with an oscillating working part

**3.9**

**working part**

part of a fixed or interchangeable instrument connected to a handpiece

**3.10**

**handpiece**

powered handheld instrument used to operate a rotary, oscillating or reciprocating working part

**3.11**

**handpiece attachment**

extension part of a handpiece designed to hold a working part

**3.12**

**handpiece chuck**

part of the handpiece designed to securely hold the shank of a working part

**3.13**

**high-speed air turbine handpiece**

handpiece propelled by a small air-powered turbine (or rotor), capable of high speed, which is integrated into the head of the handpiece and has a chucking device coaxial with the turbine

**3.14**

**intraoral camera handpiece**

handpiece designed to take optical images in the oral cavity of the patient

**3.15**

**motor**

device, powered by air or electricity supplied by a dental unit, designed to transform energy into movement

**3.16**

**polymerization handpiece**

handpiece producing light that is applied directly to polymerizable dental materials in the oral cavity of a patient

**3.17**

**prophy handpiece**

angle handpiece used for dental prophylaxis, driven by an air motor or an electrical motor

**3.18**

**rotary instrument**

rotating instrument used in a high-speed air turbine handpiece or in a straight and geared-angle handpiece, consisting of a shank and a working end used for dental procedures

**3.19**

**reciprocating instrument**

oscillating instrument used in a high-speed air turbine handpiece, or in a straight and geared-angle handpiece, consisting of a shank and a working end used for dental procedures

**3.20**

**straight handpiece**

handpiece with the input and output axes in alignment, driven by an air motor or an electrical motor or with an internal power supply

**3.21**

**transmission part**

small tool (rotary or reciprocating) designed to transmit energy from the shank to the working end

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