

<b>STN</b>	<b>Stomatológia</b> <b>Dentálne násadce a mikromotory (ISO 14457:</b> <b>2017)</b>	<b>STN</b> <b>EN ISO 14457</b>  85 6005
------------	--	--

Dentistry - Handpieces and motors (ISO 14457:2017)

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 05/18

Obsahuje: EN ISO 14457:2017, ISO 14457:2017

Oznámením tejto normy sa ruší  
STN EN ISO 14457 (85 6005) z apríla 2013

**126593**



EUROPEAN STANDARD

**EN ISO 14457**

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2017

ICS 11.060.25

Supersedes EN ISO 14457:2012

English Version

**Dentistry - Handpieces and motors (ISO 14457:2017)**Médecine bucco-dentaire - Pièces à main et moteurs  
(ISO 14457:2017)Zahnheilkunde - Handstücke und Motoren (ISO  
14457:2017)

This European Standard was approved by CEN on 17 August 2017.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

**EN ISO 14457:2017 (E)**

<b>Contents</b>	<b>Page</b>
<b>European foreword.....</b>	<b>3</b>

## **European foreword**

This document (EN ISO 14457:2017) 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 June 2018, and conflicting national standards shall be withdrawn at the latest by June 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.

This document supersedes EN ISO 14457:2012.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

### **Endorsement notice**

The text of ISO 14457:2017 has been approved by CEN as EN ISO 14457:2017 without any modification.



# INTERNATIONAL STANDARD

**ISO**  
**14457**

Second edition  
2017-10

---

---

## **Dentistry — Handpieces and motors**

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



Reference number  
ISO 14457:2017(E)

© ISO 2017

## ISO 14457:2017(E)



### **COPYRIGHT PROTECTED DOCUMENT**

© ISO 2017, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Ch. de Blandonnet 8 • CP 401  
CH-1214 Vernier, Geneva, Switzerland  
Tel. +41 22 749 01 11  
Fax +41 22 749 09 47  
copyright@iso.org  
www.iso.org



# Contents

Page

<b>Foreword</b> .....	<b>vi</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>2</b>
<b>4 Classification of handpieces</b> .....	<b>4</b>
<b>5 Requirements and performance</b> .....	<b>4</b>
5.1 General.....	4
5.2 Materials.....	4
5.3 Drop test.....	5
5.4 Noise level.....	5
5.5 Surfaces.....	5
5.6 Power supply.....	5
5.6.1 Electrical power supply.....	5
5.6.2 Air supply.....	5
5.6.3 Water supply.....	6
5.7 Air and water pressure.....	6
5.8 Temperature.....	6
5.8.1 General.....	6
5.8.2 Temperature rise of housing.....	7
5.8.3 Excessive temperature.....	7
5.9 Vibrations.....	8
5.10 Resistance to reprocessing.....	8
5.11 Leakage and/or ingress of water.....	8
5.12 Electromagnetic compatibility.....	8
5.13 Operating controls.....	8
5.14 Usability.....	8
5.15 Connection and supply.....	8
5.15.1 General.....	8
5.15.2 Connections for high-speed air turbine handpiece and air motor connectors.....	9
5.15.3 Connection for handpieces and motors.....	9
5.16 Chuck system for shanks.....	11
5.16.1 Metallic chuck system.....	11
5.16.2 Non-metallic chuck system.....	11
5.17 Test mandrel.....	11
5.18 Speed.....	13
5.19 Eccentricity.....	13
5.20 Stall torque.....	13
5.21 Dimensions of head and nose.....	13
5.22 Output power of high-speed air turbine handpiece.....	14
5.23 Handpieces with light.....	15
<b>6 Sampling</b> .....	<b>15</b>
<b>7 Testing</b> .....	<b>15</b>
7.1 General test conditions.....	15
7.2 Visual inspection.....	15
7.3 Power supply — Electrical.....	15
7.4 Power supply — Air.....	15
7.4.1 Apparatus.....	15
7.4.2 Procedure.....	15
7.5 Spray air supply.....	16
7.5.1 Apparatus.....	16
7.5.2 Procedure.....	16
7.6 Water supply.....	16

**ISO 14457:2017(E)**

7.6.1	Apparatus.....	16
7.6.2	Procedure.....	16
7.7	Air and water pressure.....	16
7.7.1	Apparatus.....	16
7.7.2	Procedure.....	17
7.8	Motor cooling air.....	17
7.8.1	Apparatus.....	17
7.8.2	Procedure.....	17
7.9	Handpiece cooling air.....	17
7.9.1	Apparatus.....	17
7.9.2	Procedure.....	18
7.10	Connection for handpieces and motors.....	19
7.11	Connection and supply.....	19
7.11.1	Apparatus.....	19
7.11.2	Procedure.....	19
7.12	Test mandrels.....	19
7.13	Chuck for shanks.....	19
7.13.1	Extraction test.....	19
7.13.2	Torque test.....	19
7.14	Dimensions of head and nose.....	20
7.14.1	Apparatus.....	20
7.14.2	Procedure.....	20
7.15	Eccentricity.....	20
7.15.1	Apparatus.....	20
7.15.2	Procedure.....	20
7.16	Stall torque.....	20
7.16.1	Apparatus.....	20
7.16.2	Procedure.....	20
7.17	Noise level.....	21
7.17.1	Apparatus.....	21
7.17.2	Test conditions.....	21
7.17.3	Procedure.....	21
7.18	Speed.....	21
7.18.1	Apparatus.....	21
7.18.2	Procedure.....	21
7.19	Temperature rise of housing.....	21
7.19.1	Temperature rise of motors.....	21
7.19.2	Temperature rise for handpieces.....	21
7.20	Excessive temperature.....	22
7.20.1	Excessive temperature for motors.....	22
7.20.2	Excessive temperature for handpieces.....	22
7.21	Resistance to reprocessing.....	23
7.22	Output power of high-speed air turbine handpieces.....	23
7.22.1	Apparatus.....	23
7.22.2	Procedure.....	23
7.23	Handpieces with light.....	24
7.23.1	Apparatus.....	24
7.23.2	Procedure.....	24
<b>8</b>	<b>Instructions for use, maintenance and service.....</b>	<b>25</b>
<b>9</b>	<b>Technical description.....</b>	<b>26</b>
<b>10</b>	<b>Marking.....</b>	<b>26</b>
10.1	General.....	26
10.2	Handpieces.....	26
10.3	Motors.....	26
<b>11</b>	<b>Labelling.....</b>	<b>26</b>
<b>12</b>	<b>Packaging.....</b>	<b>27</b>

<b>Annex A (informative) Handpiece and motor category tree</b> .....	<b>28</b>
<b>Annex B (informative) Test report form</b> .....	<b>30</b>
<b>Bibliography</b> .....	<b>34</b>

**ISO 14457:2017(E)****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).

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

This second edition cancels and replaces the first edition (ISO 14457:2012), which has been technically revised.

The main changes compared to the previous edition are as follows:

- use of terms for handpieces and motors has been clarified;
- output power for high-speed air turbine handpieces has been added;
- light for handpieces has been added;
- a few technical data have been corrected;
- an example for the test report has been added in [Annex B](#).

# Dentistry — Handpieces and motors

## 1 Scope

This document specifies requirements and test methods for handpieces and motors used in dentistry for treatment of patients and having patient contact, regardless of their construction. It also specifies requirements for manufacturer's information, marking and packaging.

This document is applicable to the following:

- a) straight and angle handpieces;
- b) high-speed air turbine handpieces;
- c) air motors;
- d) electrical motors;
- e) prophylaxis handpieces.

This document is not applicable to the following:

- intraoral camera handpieces;
- powered polymerization handpieces;
- air-powered scalers;
- electrical-powered scalers;
- powder jet handpieces;
- multifunction handpieces (syringes).

NOTE See [Annex A](#) for clarification of handpieces and motor types covered by 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, *Dentistry — Shanks for rotary and oscillating instruments*

ISO 1942, *Dentistry — Vocabulary*

ISO 2768-1, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications*

ISO 2768-2, *General tolerances — Part 2: Geometrical tolerances for features without individual tolerance indications*

ISO 3964, *Dentistry — Coupling dimensions for handpiece connectors*

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

**ISO 14457:2017(E)**

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

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

ISO 9687, *Dentistry — Graphical symbols for dental equipment*

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+AMD1:2012, *Medical electrical equipment — Part 1: General requirements for basic safety and essential performance*

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

IEC 62366-1, *Medical devices — Part 1: 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*

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**