

SLOVENSKI STANDARD

SIST EN ISO 8253-1:2011

01-marec-2011

Nadomešča:

SIST EN 26189:1999

SIST EN ISO 8253-1:1999

Akustika - Avdiometrijske preskusne metode - 1. del: Avdiometrija s čistimi toni za zračno in kostno prevodnost (ISO 8253-1:2010)

Acoustics - Audiometric test methods - Part 1: Pure-tone air and bone conduction audiometry (ISO 8253-1:2010)

iTeh STANDARD PREVIEW

Akustik - Audiometrische Prüfverfahren - Teil 1: Grundlegende Verfahren der Luft- und Knochenleitungs-Schwellenaudiometrie mit reinen Tönen (ISO 8253-1:2010)

[SIST EN ISO 8253-1:2011](https://standards.itih.si/catalog/standards/sist/en-iso-8253-1-2011)

Acoustique - Méthodes d'essais audiométriques - Partie 1: Audiométrie à sons purs en conduction aérienne et en conduction osseuse (ISO 8253-1:2010)

Ta slovenski standard je istoveten z: EN ISO 8253-1:2010

ICS:

13.140	Vpliv hrupa na ljudi	Noise with respect to human beings
17.140.01	Akustična merjenja in blaženje hrupa na splošno	Acoustic measurements and noise abatement in general

SIST EN ISO 8253-1:2011

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO 8253-1:2011](https://standards.iteh.ai/catalog/standards/sist/efe51fde-ec70-40c1-9ce4-d456d9a36b1b/sist-en-iso-8253-1-2011)

<https://standards.iteh.ai/catalog/standards/sist/efe51fde-ec70-40c1-9ce4-d456d9a36b1b/sist-en-iso-8253-1-2011>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 8253-1

November 2010

ICS 13.140

Supersedes EN 26189:1991, EN ISO 8253-1:1998

English Version

Acoustics - Audiometric test methods - Part 1: Pure-tone air and bone conduction audiometry (ISO 8253-1:2010)

Acoustique - Méthodes d'essais audiométriques - Partie 1:
Audiométrie à sons purs en conduction aérienne et en
conduction osseuse (ISO 8253-1:2010)

Akustik - Audiometrische Prüfverfahren - Teil 1:
Grundlegende Verfahren der Luft- und Knochenleitungs-
Schwellenaudiometrie mit reinen Tönen (ISO 8253-1:2010)

This European Standard was approved by CEN on 25 September 2010.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

[SIST EN ISO 8253-1:2011](https://standards.iteh.ai/catalog/standards/sist/efe51fde-ec70-40c1-9ce4-d456d9a36b1b/sist-en-iso-8253-1-2011)

<https://standards.iteh.ai/catalog/standards/sist/efe51fde-ec70-40c1-9ce4-d456d9a36b1b/sist-en-iso-8253-1-2011>



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....3

**iTeh STANDARD PREVIEW
(standards.iteh.ai)**

[SIST EN ISO 8253-1:2011](https://standards.iteh.ai/catalog/standards/sist/efe51fde-ec70-40c1-9ce4-d456d9a36b1b/sist-en-iso-8253-1-2011)

<https://standards.iteh.ai/catalog/standards/sist/efe51fde-ec70-40c1-9ce4-d456d9a36b1b/sist-en-iso-8253-1-2011>

Foreword

This document (EN ISO 8253-1:2010) has been prepared by Technical Committee ISO/TC 43 "Acoustics" in collaboration with Technical Committee CEN/TC 211 "Acoustics" the secretariat of which is held by DS.

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 2011, and conflicting national standards shall be withdrawn at the latest by May 2011.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 26189:1991 and EN ISO 8253-1:1998.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

iTeh STANDARD PREVIEW
Endorsement notice
(standards.iteh.ai)

The text of ISO 8253-1:2010 has been approved by CEN as a EN ISO 8253-1:2010 without any modification.

[SIST EN ISO 8253-1:2011](https://standards.iteh.ai/catalog/standards/sist/efe51fde-ec70-40c1-9ce4-d456d9a36b1b/sist-en-iso-8253-1-2011)

<https://standards.iteh.ai/catalog/standards/sist/efe51fde-ec70-40c1-9ce4-d456d9a36b1b/sist-en-iso-8253-1-2011>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO 8253-1:2011](https://standards.iteh.ai/catalog/standards/sist/efe51fde-ec70-40c1-9ce4-d456d9a36b1b/sist-en-iso-8253-1-2011)

<https://standards.iteh.ai/catalog/standards/sist/efe51fde-ec70-40c1-9ce4-d456d9a36b1b/sist-en-iso-8253-1-2011>

INTERNATIONAL STANDARD

ISO
8253-1

Second edition
2010-11-01

Acoustics — Audiometric test methods —

Part 1: Pure-tone air and bone conduction audiometry

Acoustique — Méthodes d'essais audiométriques —

*Partie 1: Audiométrie à sons purs en conduction aérienne et en
conduction osseuse*

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO 8253-1:2011](https://standards.iteh.ai/catalog/standards/sist/efe51fde-ec70-40c1-9ce4-d456d9a36b1b/sist-en-iso-8253-1-2011)

[https://standards.iteh.ai/catalog/standards/sist/efe51fde-ec70-40c1-9ce4-
d456d9a36b1b/sist-en-iso-8253-1-2011](https://standards.iteh.ai/catalog/standards/sist/efe51fde-ec70-40c1-9ce4-d456d9a36b1b/sist-en-iso-8253-1-2011)



Reference number
ISO 8253-1:2010(E)

© ISO 2010

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)

[SIST EN ISO 8253-1:2011](https://standards.iteh.ai/catalog/standards/sist/efe51fde-ec70-40c1-9ce4-d456d9a36b1b/sist-en-iso-8253-1-2011)

<https://standards.iteh.ai/catalog/standards/sist/efe51fde-ec70-40c1-9ce4-d456d9a36b1b/sist-en-iso-8253-1-2011>

**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2010

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword	v
Introduction.....	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 General aspects of audiometric measurements	4
4.1 General	4
4.2 Standard reference zero for the calibration of audiometric equipment	5
4.3 Requirements on audiometric equipment	5
4.4 Qualified tester	5
4.5 Test time	5
4.6 Conditions for audiometric test environments	5
4.7 Measurement uncertainty	6
5 Preparation and instruction of test subjects before audiometric testing and positioning of transducers	6
5.1 Preparation of test subjects	6
5.2 Instruction of test subjects	7
5.3 Placement of transducers	7
6 Air conduction hearing threshold level determinations using fixed-frequency audiometry	7
6.1 General	7
6.2 Manually controlled threshold determination	8
6.3 Hearing threshold determination with an automatic recording audiometer	10
6.4 Computer-controlled threshold determination.....	12
7 Air conduction hearing threshold level determinations using sweep-frequency audiometry	12
7.1 General	12
7.2 Presentation of test tone	12
7.3 Familiarization	12
7.4 Hearing threshold level measurement	12
7.5 Calculation of hearing threshold level at a specified frequency	12
8 Bone conduction hearing threshold audiometry	13
8.1 Method of audiometry	13
8.2 Occlusion	13
8.3 Airborne sound radiation from the bone vibrator	13
8.4 Vibrotactile sensation	13
8.5 Procedures for testing with masking in bone conduction audiometry	13
9 Screening audiometry.....	14
9.1 General	14
9.2 Procedure for the screening test	14
10 Audiograms.....	15
11 Permissible ambient noise	16
11.1 Permissible ambient noise for threshold determinations.....	16
11.2 Psycho-acoustic check on ambient noise	16
12 Maintenance and calibration of audiometric equipment.....	20
12.1 General	20
12.2 Intervals between checks	20

ISO 8253-1:2010(E)

12.3	Stage A — Routine checking and subjective tests	20
12.4	Stage B — Periodic objective checks.....	21
12.5	Stage C — Basic calibration tests.....	22
Annex A (informative) Measurement uncertainty		23
Bibliography		28

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO 8253-1:2011](https://standards.iteh.ai/catalog/standards/sist/efe51fde-ec70-40c1-9ce4-d456d9a36b1b/sist-en-iso-8253-1-2011)

<https://standards.iteh.ai/catalog/standards/sist/efe51fde-ec70-40c1-9ce4-d456d9a36b1b/sist-en-iso-8253-1-2011>

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 8253-1 was prepared by Technical Committee ISO/TC 43, *Acoustics*.

This second edition cancels and replaces the first edition (ISO 8253-1:1989) and ISO 6189:1983, which have been technically revised.

ISO 8253 consists of the following parts, under the general title *Acoustics — Audiometric test methods*:

- *Part 1: Pure-tone air and bone conduction audiometry*
- *Part 2: Sound field audiometry with pure-tone and narrow-band test signals*
- *Part 3: Speech audiometry*

ISO 8253-1:2010(E)**Introduction**

This International Standard specifies requirements and procedures for carrying out basic audiometric tests in which pure tones are presented to the test subject using earphones or bone vibrators. Electrophysiological test methods are not included.

In order to obtain a reliable measure of hearing ability, many factors are involved. IEC 60645-1 specifies requirements for audiometers. It is essential that audiometric equipment, when in service, be checked and the calibration maintained. This part of ISO 8253 outlines a calibration scheme. To avoid masking of the test signal by ambient noise in the audiometric test room, the levels of the ambient noise shall not exceed certain values, depending upon the method of signal presentation to the test subject, i.e. by different earphones or by bone vibrator. This part of ISO 8253 gives maximum permissible ambient sound pressure levels which shall not be exceeded when hearing threshold levels down to 0 dB have to be measured. It indicates the maximum ambient sound pressure levels which are permissible when other minimum hearing threshold levels require measurement. It sets out procedures for determining hearing threshold levels by pure-tone air conduction and bone conduction audiometry. For screening purposes, only methods for air conduction audiometry are outlined.

Audiometry can be performed by using:

- a) a manual audiometer;
- b) an automatic recording audiometer;
- c) computer-controlled audiometric equipment.

Methods for threshold audiometry are given for these three types of signal presentation. For screening purposes, only methods using a manual or a computer-controlled audiometer are set out. The procedures are applicable to the majority of adults and children. Other procedures may yield results equivalent to those derived by the procedures specified in this part of ISO 8253. For very young, aged or sick people, some modification of the recommended procedures is likely to be required. This may result in a less accurate measurement of hearing.

Acoustics — Audiometric test methods —

Part 1: Pure-tone air and bone conduction audiometry

1 Scope

This part of ISO 8253 specifies procedures and requirements for pure-tone air conduction and bone conduction threshold audiometry. For screening purposes, only pure-tone air conduction audiometric test methods are specified. It is possible that the procedures are not appropriate for special populations, e.g. very young children.

This part of ISO 8253 does not cover audiometric procedures to be carried out at levels above the hearing threshold levels of the subjects.

Procedures and requirements for speech audiometry, electrophysiological audiometry, and where loudspeakers are used as a sound source are not specified.

2 Normative references

SIST EN ISO 8253-1:2011

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 389-1, *Acoustics — Reference zero for the calibration of audiometric equipment — Part 1: Reference equivalent threshold sound pressure levels for pure tones and supra-aural earphones*

ISO 389-2, *Acoustics — Reference zero for the calibration of audiometric equipment — Part 2: Reference equivalent threshold sound pressure levels for pure tones and insert earphones*

ISO 389-3:1994, *Acoustics — Reference zero for the calibration of audiometric equipment — Part 3: Reference equivalent threshold force levels for pure tones and bone vibrators*

ISO 389-5, *Acoustics — Reference zero for the calibration of audiometric equipment — Part 5: Reference equivalent threshold sound pressure levels for pure tones in the frequency range 8 kHz to 16 kHz*

ISO 389-8, *Acoustics — Reference zero for the calibration of audiometric equipment — Part 8: Reference equivalent threshold sound pressure levels for pure tones and circumaural earphones*

IEC 60645-1:2001, *Electroacoustics — Audiological equipment — Part 1: Pure-tone audiometers*

IEC 61260, *Electroacoustics — Octave-band and fractional-octave-band filters*

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

ISO/IEC Guide 98-3, *Uncertainty of measurement — Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)*