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Acoustics - Reference zero for the calibration of audiometric equipment - Part 8: Reference equivalent threshold sound pressure levels for pure tones and circumaural earphones (ISO 389-8:2004)

Akustik - Standard-Bezugspegel für die Kalibrierung audiometrischer Geräte - Teil 8: Äquivalente Bezugs-Schwellenschalldruckpegel für reine Töne und circumaurale Kopfhörer (ISO 389-8:2004) (standards.iteh.ai)

Acoustique - Zéro de référence pour l'étalonnage d'équipements audiométriques - Partie 8: Niveaux de référence équivalents de pression acoustique liminaire pour les écouteurs a sons purs circumauraux (ISO 389-8:2004)

**Ta slovenski standard je istoveten z: EN ISO 389-8:2004**

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**ICS:**

13.140	Vpliv hrupa na ljudi	Noise with respect to human beings
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**SIST EN ISO 389-8:2004****en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN ISO 389-8**

May 2004

ICS 13.140

English version

**Acoustics - Reference zero for the calibration of audiometric  
equipment - Part 8: Reference equivalent threshold sound  
pressure levels for pure tones and circumaural earphones (ISO  
389-8:2004)**

Acoustique - Zéro de référence pour l'étalonnage  
d'équipements audiométriques - Partie 8: Niveaux de  
référence équivalents de pression acoustique liminaire pour  
les écouteurs à sons purs circumauraux (ISO 389-8:2004)

Akustik - Bezugspegel für die Audiometrie - Teil 8: Bezugs-  
Schwellen-Schalldruckpegel für Reintöne und circumaurale  
Kopfhörer (ISO 389-8:2004)

This European Standard was approved by CEN on 16 April 2004.

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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 Central Secretariat has the same status as the official versions.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

**EN ISO 389-8:2004 (E)****Foreword**

This document (EN ISO 389-8:2004) 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 November 2004, and conflicting national standards shall be withdrawn at the latest by November 2004.

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

**Endorsement notice**

The text of ISO 389-8:2004 has been approved by CEN as EN ISO 389-8:2004 without any modifications.

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# INTERNATIONAL STANDARD

**ISO**  
**389-8**

First edition  
2004-05-15

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## Acoustics — Reference zero for the calibration of audiometric equipment —

Part 8:

### Reference equivalent threshold sound pressure levels for pure tones and circumaural earphones

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*Acoustique — Zéro de référence pour l'étalonnage d'équipements  
audiométriques —*

*Partie 8: Niveaux de référence équivalents de pression acoustique  
liminaire pour les écouteurs à sons purs circumauraux*



Reference number  
ISO 389-8:2004(E)

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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 389-8 was prepared by Technical Committee ISO/TC 43, *Acoustics*.

ISO 389 consists of the following parts, under the general title *Acoustics — Reference zero for the calibration of audiometric equipment*:

- *Part 1: Reference equivalent threshold sound pressure levels for pure tones and supra-aural earphones*
- *Part 2: Reference equivalent threshold sound pressure levels for pure tones and insert earphones*
- *Part 3: Reference equivalent threshold force levels for pure tones and bone vibrators*
- *Part 4: Reference levels for narrow-band masking noise*
- *Part 5: Reference equivalent threshold sound pressure levels for pure tones in the frequency range 8 kHz to 16 kHz*
- *Part 6: Reference equivalent threshold sound pressure levels for acoustic test signals of short duration*
- *Part 7: Reference threshold of hearing under free-field and diffuse-field listening conditions*
- *Part 8: Reference equivalent threshold sound pressure levels for pure tones and circumaural earphones*

Part 9 on preferred test conditions for the standardization of reference equivalent threshold sound pressure levels or vibratory force levels, is under preparation.

**ISO 389-8:2004(E)****Introduction**

This part of ISO 389 has been established in order to be able to use the same earphone for pure tone audiometry in the frequency range 125 Hz to 16 000 Hz. It specifies reference values from 125 Hz to 8 000 Hz. ISO/TR 389-5 specifies values from 8 000 Hz to 16 000 Hz.

The reference values are based on information provided by laboratories in different countries, representing the most reliable data available at this time.

At present, reference values for only one type of circumaural earphone, SENNHEISER HDA 200, are available. This earphone provides a good attenuation of background noise and its frequency response is without pronounced resonances on a human ear as well as on an ear simulator.

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# Acoustics — Reference zero for the calibration of audiometric equipment —

## Part 8: Reference equivalent threshold sound pressure levels for pure tones and circumaural earphones

### 1 Scope

This part of ISO 389 specifies reference equivalent threshold sound pressure levels (RETSPLs) for pure tones in the frequency range from 125 Hz to 8 kHz, applicable to the calibration of air conduction audiometers equipped with a particular model of circumaural earphones (SENNHEISER HDA 200).

NOTE Some notes and references on the derivation and the test conditions used to determine the recommended reference levels are given in Annex A and the Bibliography.

The sound attenuation of the earphone is given in Annex B. For speech audiometers of types A-E and B-E (see IEC 60645-2), the correction figures of the earphone for a free-field equivalent output are given in Annex C.

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### 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 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 4869-1, *Acoustics — Hearing protectors — Part 1: Subjective method for the measurement of sound attenuation*

IEC 60318-1, *Electroacoustics — Simulators of human head and ear — Part 1: Ear simulator for the calibration of supra-aural earphones*

IEC 60318-2:1998, *Electroacoustics — Simulators of human head and ear — Part 2: An interim acoustic coupler for the calibration of audiometric earphones in the extended high-frequency range*

IEC 60645-2, *Audiometers — Part 2: Equipment for speech audiometry*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 389-1, ISO 4869-1, IEC 60318-1 and IEC 60645-2 apply.