

Australian Standard[®]

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

**Part 2: Reference equivalent threshold
sound pressure levels for pure tones
and insert earphones**



This Australian Standard® was prepared by Committee AV-003, Acoustics—Human Effects. It was approved on behalf of the Council of Standards Australia on 3 November 2006. This Standard was published on 20 February 2007.

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 - Association of Australian Acoustical Consultants
 - Association of Consulting Engineers Australia
 - Audiological Society of Australia
 - Australasian Faculty of Occupational Medicine
 - Australian Acoustical Society
 - Australian Chamber of Commerce and Industry
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 - Safety Institute of Australia
 - The Australian Society of Otolaryngological Head and Neck Surgery
 - Victorian WorkCover Authority
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Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through public comment period.

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STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS ISO 389.2—2007

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

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Technical Committee AV-003 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

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Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 22 August 2019.

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NOTES

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee AV-003 Acoustics—Human Effects. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this Standard is to specify reference equivalent threshold sound pressure levels (RETSPL) for the calibration of pure tone audiometers supplementary to those given in AS ISO 389.1.

As this Standard is reproduced from an International Standard, the following applies:

- (a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.
- (b) In the source text ‘this part of ISO 389’ should read ‘this Australian Standard’.
- (c) A full point should be substituted for a comma when referring to a decimal marker.

As forecast in a footnote, ISO reissued the referenced document ISO 389:1991 as ISO 389-1:1998, which has been adopted by Standards Australia as AS ISO 389.1, *Acoustics—Reference zero for the calibration of audiometric equipment, Part 2: Reference equivalent threshold sound pressure levels for pure tones and supra-aural earphones*.

The designation of the IEC referenced documents has been changed by adding 60 000 to the number such that IEC 126 becomes IEC 60126 and IEC 711 becomes IEC 60711.

The term ‘informative’ has been used in this Standard to define the application of the annex to which it applies. An ‘informative’ annex is only for reference and guidance.

INTRODUCTION

Each part of International Standard ISO 389 specifies a specific reference zero for the calibration of audiometric equipment. ISO 389:1991 (to be re-issued as ISO 389-1) contains values of reference equivalent threshold sound pressure levels (RETSPL) for pure tones and two specified patterns of supra-aural earphones used in conjunction with an acoustic coupler conforming to IEC 303, and for other supra-aural earphones of specified patterns in conjunction with an artificial ear conforming to IEC 318. ISO 389-4 specifies reference levels for narrow-band masking noise based on these RETSPL data.

In some audiological applications it may, however, be desirable to use insert earphones to deliver either the test signal or the masking noise, e.g. to reduce the occlusion effect or interaural effects. RETSPL data for these kinds of earphone are specified in this part of ISO 389. It is based on an assessment of technical data provided by laboratories in different countries representing the most reliable data available at the time.

It is recognized that small differences may occur between results of hearing threshold level measurements obtained by audiometric equipment using different patterns of earphone, i.e. supra-aural or insert earphones.

AUSTRALIAN STANDARD

Acoustics—Reference zero for the calibration of audiometric equipment**Part 2: Reference equivalent threshold sound pressure levels for pure tones and insert earphones****1 Scope**

This part of ISO 389 specifies reference equivalent threshold sound pressure levels (RET SPL) for the calibration of pure-tone audiometers supplementary to those specified in ISO 389:1991¹⁾. Values given in this part of ISO 389 are applicable to insert earphones of a pattern specified in clause 4.

NOTE 1 For information, a note on the derivation of the reference values and the origin of the data input is given in annex A, and a bibliography is given in annex B.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 389. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 389 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 389:1991, *Acoustics — Standard reference zero for the calibration of pure-tone air conduction audiometers*.¹⁾

IEC 126:1973, *IEC reference coupler for the measurement of hearing aids using earphones coupled to the ear by means of ear inserts*.

1) To be re-issued as ISO 389-1.

IEC 711:1981, *Occluded-ear simulator for the measurement of earphones coupled to the ear by ear inserts*.

3 Definitions

For the purposes of this part of ISO 389, the definitions given in ISO 389:1991 together with the following definitions apply.

3.1 ear insert: Device used to provide the acoustic coupling between an earphone and the ear canal.

NOTE 2 This may be, for example, an earmould or a similar device with or without a connecting tube.

3.2 insert earphone: Small earphone coupled to the ear canal by means of an ear insert, or attached to a connecting element which is inserted into the ear canal. The ear insert may be a part of the insert earphone.

3.3 ear simulator: Device for measuring the output sound pressure of an earphone under well-defined loading conditions in a specified frequency range. It consists essentially of a principal cavity, acoustic load networks and a calibrated microphone. The location of the microphone is chosen so that the sound pressure at the microphone corresponds approximately to the sound pressure existing at the human eardrum.