

AS/NZS 1591.4:1995
IEC 373:1990

Australian/New Zealand Standard

**Acoustics—Instrumentation for
audiometry**

**Part 4: A mechanical coupler for
calibration of bone vibrators**



AS/NZS 1591.4:1995

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee AV/3, Acoustics, Human effects. It was approved on behalf of the Council of Standards Australia on 22 May 1995 and on behalf of the Council of Standards New Zealand on 22 May 1995. It was published on 5 September 1995.

The following interests are represented on Committee AV/3:

APPITA

Audiological Society of Australia
Auckland Manufacturers Association
Australian and New Zealand Environment and Conservation Council
Australian Acoustical Society
Australian Chamber of Commerce and Industry
Australian Hearing Services Authority
Department of Labour, New Zealand
Department of Labour, South Australia
Department of Occupational Health Safety and Welfare, W.A.
Institute of Marine Engineers, N.S.W.
Ministry of Health, New Zealand
National Occupational Health and Safety Commission, Australia
New South Wales Nurses Association
Occupational Health and Safety Authority, Victoria
Otolaryngological Society of Australia
Royal Institute of Naval Architects, Australia
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Additional interests participating in preparation of Standard:

Better Hearing, Australia
National Association of Testing Authorities, Australia
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Acoustics—Instrumentation for audiometry

Part 4: A mechanical coupler for calibration of bone vibrators

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee AV/3 on Acoustics, Human Effects, to supersede AS 1591.4—1974, *Acoustics—Instrumentation for audiometry Part 4: A mechanical coupler for calibration of bone vibrators used in hearing aids and audiometers*. This Standard is technically identical to IEC 373:1990, *Mechanical coupler for measurements on bone vibrators*.

This is Part 4 in a proposed series of Standards on instrumentation for audiometry. The objective of this Standard is to specify requirements for mechanical couplers used for calibrating bone-conduction audiometers and for making measurements on bone vibrators and bone conduction hearing aids in the frequency range from 125 Hz to 8000 Hz inclusive. It differs from AS 1591.4—1974 in that the frequency range has been widened and the construction of the mechanical coupler is different.

Under arrangements made between Standards Australia/Standards New Zealand and the international Standards bodies, ISO and IEC, as well as certain other Standards organizations, users of this Standard are advised that the number of this Standard is not reproduced on each page. Its identity is shown only on the cover.

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- (a) *Terminology* The words ‘Australian/New Zealand Standard’ should replace the words ‘International Standard’ wherever they appear.
- (b) *Decimal marker* Substitute a full point for a comma as a decimal marker.
- (c) *References* The references to International Standards should be replaced by references to the following Australian/New Zealand Standards:

Reference to International Standard or other publication		Australian/New Zealand Standard	
IEC		AS	
118	Hearing aids	—	
118-9	Part 9: Methods of measurement of characteristics of hearing aids with bone vibrator output		
645	Audiometers	2586	Audiometers
ISO			
266	Acoustics—Preferred frequencies for measurements	2533	Acoustics—Preferred frequencies for measurements
		AS/NZS	
7566	Acoustics—Standard reference zero for the calibration of pure-tone bone conduction audiometers	1591	Acoustics—Instrumentation for audiometry
		1591.1	Part 1: Reference zero for the calibration of pure-tone bone conduction audiometers

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AUSTRALIAN/NEW ZEALAND STANDARD

Acoustics—Instrumentation of audiometry**Part 4:****A mechanical coupler for calibration of bone vibrators****1. Scope**

This standard specifies requirements for mechanical couplers used for calibrating bone-conduction audiometers and for making measurements on bone vibrators and bone-conduction hearing aids in the frequency range from 125 Hz to 8 000 Hz inclusive.

2. Objects**2.1 Audiometry**

The purpose of this standard, as applied to audiometry, is to provide a means of calibrating bone vibrators of the types used in bone-conduction audiometry by specifying a standardized mechanical impedance with which to load the vibrator and a device for measuring the alternating force produced. Reference equivalent threshold force levels corresponding to the normal threshold of hearing are specified by ISO 7566. For this application the bone vibrator is required to have a plane circular tip area of $175 \pm 25 \text{ mm}^2$ and to be applied to the mechanical coupler with a static force of $5,4 \pm 0,5 \text{ N}$, as specified in IEC 645. The mechanical coupler is also intended for other measurements on bone vibrators for audiometers viz. frequency response, unwanted sound radiation, harmonic distortion, etc.

2.2 Hearing aids

The purpose of this standard, as applied to hearing aids, is to provide a means of measuring the electro-mechanical characteristics (sensitivity, frequency response, harmonic distortion, etc.) of bone vibrators used in hearing aids, or the acousto-mechanical characteristics of complete hearing aids of the bone conduction type, when dynamically loaded by a specified mechanical impedance and applied with a static force in the range 1,7 N to 4 N.

3. Definitions

For the purpose of this standard the following terms apply:

3.1 Bone vibrator

An electro-mechanical transducer intended to produce the sensation of hearing by vibrating the cranial bones.