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Acoustics - Hearing protectors - Part 3:  
Measurement of insertion loss of ear-muff type  
protectors using an acoustic test fixture

**EESTI STANDARDI EESSÕNA****NATIONAL FOREWORD**

<p>Käesolev Eesti standard EVS-EN ISO 4869-3:2008 sisaldab Euroopa standardi EN ISO 4869-3:2007 ingliskeelset teksti.</p>	<p>This Estonian standard EVS-EN ISO 4869-3:2008 consists of the English text of the European standard EN ISO 4869-3:2007.</p>
<p>Standard on kinnitatud Eesti Standardikeskuse 27.02.2008 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p>	<p>This standard is ratified with the order of Estonian Centre for Standardisation dated 27.02.2008 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.</p>
<p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 01.07.2007.</p>	<p>Date of Availability of the European standard text 01.07.2007.</p>
<p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>The standard is available from Estonian standardisation organisation.</p>

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**Võtmesõnad:** akustika, akustilised testid, kaitsevahendid, kuulmiskaitsevahendid, kvaliteedi kontrollimine, testid

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English Version

Acoustics - Hearing protectors - Part 3: Measurement of  
insertion loss of ear-muff type protectors using an acoustic test  
fixture (ISO 4869-3:2007)

Acoustique - Protecteurs individuels contre le bruit - Partie  
3: Mesurage de l'affaiblissement acoustique des  
protecteurs du type serre-tête au moyen d'un montage  
d'essai acoustique (ISO 4869-3:2007)

Akustik - Gehörschützer - Teil 3: Messung der  
Schalldämmung von Kapselgehörschützern unter  
Verwendung einer akustischen Prüfvorrichtung (ISO 4869-  
3:2007)

This European Standard was approved by CEN on 30 June 2007.

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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 CEN Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
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## Foreword

This document (EN ISO 4869-3:2007) 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 January 2008, and conflicting national standards shall be withdrawn at the latest by January 2008.

This document supersedes EN 24869-3:1993.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

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, 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.

## Endorsement notice

The text of ISO 4869-3:2007 has been approved by CEN as EN ISO 4869-3:2007 without any modifications.

## **ANNEX ZA**

(informative)

### **Relationship between this International Standard and the Essential Requirements of EU Directive 89/686**

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the EU Directive 89/686.

Once this standard is cited in the Official Journal of the European Communities under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative clauses of this standard confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding Essential Requirements of that Directive and associated EFTA regulations.

**WARNING:** Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

## Introduction

A Technical Report describing the use of an acoustic test fixture (ATF) to measure the insertion loss of ear-muff type protectors was published as ISO/TR 4869-3 in 1989. As testing laboratories around the world commonly use the ATF, it was decided that this Technical Report should be revised and changed into an International Standard.

Compared to the original Technical Report, the most important aspect of this part of ISO 4869 is the specification of the ATF. The ATF specified herein is not intended to supplant those dummy heads which include simulation of various anatomical features and which are used, for example, for development testing purposes.

The method specified in this part of ISO 4869 does not provide results which are the same as those obtained by the subjective method, ISO 4869-1.

# Acoustics — Hearing protectors —

## Part 3:

# Measurement of insertion loss of ear-muff type protectors using an acoustic test fixture

## 1 Scope

This part of ISO 4869 specifies a method for measuring the insertion loss of ear-muff type hearing protectors using an acoustic test fixture. The method is applicable to the investigation of production spreads of performance as part of type approval or certification procedures, and to the investigation of the change of performance with age. It is intended to ensure that ear-muff hearing protector samples submitted for subjective testing of attenuation according to ISO 4869-1 have performances typical of the type.

The method specified in this part of ISO 4869 is not applicable as the basic test for type approval. Performance data obtained by this method are not intended to be quoted as representing the real-ear sound attenuation of an ear-muff, nor the protection provided by the ear-muff.

For the testing of certain ear-muffs (such as those attached to safety helmets, or those with contoured ear-cups or ear-cushions, or supra-aural ear-muffs), the procedure described in this part of ISO 4869 might need to be modified.

## 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 48, *Rubber, vulcanized or thermoplastic — Determination of hardness (hardness between 10 IRHD and 100 IRHD)*

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

ISO/IEC Guide 98:1995, *Guide to the expression of uncertainty in measurement (GUM)*

IEC 60263, *Scales and sizes for plotting frequency characteristics and polar diagrams*

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

IEC 61094-4, *Measurement microphones — Part 4: Specifications for working standard microphones*