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Acoustics - Hearing protectors - Part 1: Subjective method for the measurement of sound attenuation (ISO 4869-1:2018)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 04/19

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EN ISO 4869-1

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Supersedes EN 24869-1:1992

English Version

Acoustics - Hearing protectors - Part 1: Subjective method for the measurement of sound attenuation (ISO 4869-1:2018)

Acoustique - Protecteurs individuels contre le bruit - Partie 1: Méthode subjective de mesurage de l'affaiblissement acoustique (ISO 4869-1:2018)

Akustik - Gehörschützer - Teil 1: Subjektive Methode zur Messung der Schalldämmung (ISO 4869-1:2018)

This European Standard was approved by CEN on 23 April 2018.

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Ref. No. EN ISO 4869-1:2018 E

Contents

Page

European foreword

This document (EN ISO 4869-1:2018) 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 DIN.

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of an identical text or by endorsement, at the latest by May 2019, and conflicting national standards shall be withdrawn at the latest by May 2019.

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

This document supersedes EN 24869-1:1992.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

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Endorsement notice

The text of ISO 4869-1:2018 has been approved by CEN as EN ISO 4869-1:2018 without any modification.

INTERNATIONAL STANDARD

ISO 4869-1

Second edition
2018-10

Acoustics — Hearing protectors —

Part 1: Subjective method for the measurement of sound attenuation

Acoustique — Protecteurs individuels contre le bruit —

Partie 1: Méthode subjective de mesurage de l'affaiblissement acoustique

Reference number
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Contents

Page

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 1, *Noise.*

This second edition cancels and replaces the first edition (ISO 4869-1:1990), which has been technically revised.

The main changes compared to the previous edition are as follows:

The revision includes changes mainly of the sound field requirements, specification of test equipment, test procedures and instructions to the test subjects, and uncertainty of the measurements. The sound field requirements are based on published and unpublished laboratory experience, especially [10] and [11] in the Bibliography.

A list of all parts in the ISO 4869 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Hearing protectors are commonly used to reduce the noise to which the ear is exposed. Hearing protectors are manufactured as earplugs, earmuffs or helmets. A standardized method of sound attenuation measurement allows comparison of performance data obtained in different locations under similar conditions.

INTERNATIONAL STANDARD **ISO 4869-1:2018(E)**

Acoustics — Hearing protectors —

Part 1: Subjective method for the measurement of sound attenuation

1 Scope

This document specifies a subjective method for measuring sound attenuation of hearing protectors at the threshold of hearing. The method is a laboratory method designed to yield reproducible values under controlled measurement conditions. The values reflect the attenuating characteristics of the hearing protector only to the extent that users wear the device in the same manner as did the test subjects.

For a more representative indication of field performance the methods of ISO/TS 4869-5 can be used.

This test method yields data which are collected at low sound pressure levels (close to the threshold of hearing) but which are also representative of the attenuation values of hearing protectors at higher sound pressure levels. An exception occurs in the case of amplitude-sensitive hearing protectors for sound pressure levels above the point at which their level-dependent characteristics become effective. At those sound pressure levels the method specified in this document is inapplicable, as it will usually underestimate sound attenuation for these devices.

NOTE Due to masking from physiological noise in the occluded ear tests, sound attenuations below 500 Hz can be overestimated by a few decibels.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 8253-2, *Acoustics — Audiometric test methods — Part 2: Sound field audiometry with pure-tone and narrow-band test signals*

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

IEC 61260-1, *Electroacoustics — Octave-band and fractional-octave-band filters — Part 1: Specifications*

