



BSI Standards Publication

## Hearing protectors — Testing

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Part 2: Acoustic test methods

This is a preview of "BS EN 13819-2:2020". [Click here to purchase the full version from the ANSI store.](#)

## National foreword

This British Standard is the UK implementation of EN 13819-2:2020. It supersedes BS EN 13819-2:2002, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PH/7, Hearing protectors.

A list of organizations represented on this committee can be obtained on request to its committee manager.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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**Compliance with a British Standard cannot confer immunity from legal obligations.**

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### Amendments/corrigenda issued since publication

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## EUROPÄISCHE NORM

November 2020

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English Version

## Hearing protectors - Testing - Part 2: Acoustic test methods

Protecteurs individuels contre le bruit - Essais - Partie  
2 : Méthodes d'essai acoustique

Gehörschützer - Prüfung - Teil 2: Akustische  
Prüfverfahren

This European Standard was approved by CEN on 24 February 2020.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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## European foreword

This document (EN 13819-2:2020) has been prepared by Technical Committee CEN/TC 159 "Hearing protectors", 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 2021, and conflicting national standards shall be withdrawn at the latest by May 2021.

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 will supersede EN 13819-2:2002.

In comparison with the previous edition, the following technical modifications have been made:

- 4.2.3 some details on the test procedure for the sound attenuation of earplugs and custom moulded earplugs added;
- 4.3 of EN 13819-2:2002 (Sound level effective to the ear ( earmuffs only)) deleted;
- Annex ZA of EN 13819-2:2002 deleted.

The technical changes referred to include the significant technical changes from the European Standard revised but is not an exhaustive list of all modifications from the previous edition.

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

## Introduction

This document specifies procedures for the testing of personal hearing protection devices in relation to Regulation (EU) 2016/425 - Personal Protective Equipment.

A series of standards EN 352 describes product requirements of hearing protectors:

- EN 352-1, *Hearing protectors — General requirements — Part 1: Earmuffs*
- EN 352-2, *Hearing protectors — General requirements — Part 2: Earplugs*
- EN 352-3, *Hearing protectors — General requirements — Part 3: Earmuffs attached to head protection and/or face protection devices*
- EN 352-4, *Hearing protectors — Safety requirements — Part 4: Level-dependent earmuffs*
- EN 352-5, *Hearing protectors — Safety requirements — Part 5: Active noise reduction earmuffs*
- EN 352-6, *Hearing protectors — Safety requirements — Part 6: Earmuffs with safety-related audio input*
- EN 352-7, *Hearing protectors — Safety requirements — Part 7: Level-dependent earplugs*
- EN 352-8, *Hearing protectors — Safety requirements — Part 8: Entertainment audio earmuffs*
- EN 352-9, *Hearing protectors — Safety requirements — Part 9: Earplugs with safety-related audio input*
- EN 352-10, *Hearing protectors — Safety requirements — Part 10: Entertainment audio earplugs*

Test methods for these requirements are described in the series of standards EN 13819:

- EN 13819-1, *Hearing protectors — Testing — Part 1: Physical test methods*
- EN 13819-2, *Hearing protectors — Testing — Part 2: Acoustic test methods*
- EN 13819-3, *Hearing protectors — Testing — Part 3: Supplementary acoustic test methods*

An associated standard EN 458 covers selection, use, care and maintenance of hearing protectors.

EN 13819-2 is intended as a supplement to the specific product standards for hearing protectors.

4.1 specifies a method of measuring the insertion loss of earmuffs using an acoustic test fixture.

4.2 specifies a method of measuring the sound attenuation of hearing protectors using human test subjects.

The performance requirements are given in the hearing protector product standard.

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## 1 Scope

This document specifies acoustic test methods for hearing protectors. The purpose of these tests is to enable assessment of the performance of the hearing protector as specified in the appropriate product standard.

## 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.

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

EN ISO 4869-2:2018, *Acoustics — Hearing protectors — Part 2: Estimation of effective A-weighted sound pressure levels when hearing protectors are worn (ISO 4869-2:2018)*

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

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

### 3.1

#### **acoustic test fixture**

##### **ATF**

device that approximates certain dimensions of an average adult human head and is used for measuring the insertion loss of earmuffs

[SOURCE: EN ISO 4869-3:2007, 3.4, modified – The words “and is used for measuring the insertion loss of earmuffs” have been added. The note has been deleted.]

### 3.2

#### **insertion loss**

mean algebraic difference in decibels between the one-third-octave band sound pressure level, measured by the microphone of the acoustic test fixture in a specified sound field under specified conditions, with the hearing protector absent, and the sound pressure level with the hearing protector on, with other conditions identical

[SOURCE: EN ISO 4869-3:2007, 3.5, modified — The words “mean”, “in a specified sound field under specified conditions” and “with other conditions identical” have been added. “with the hearing protector present” has been replaced by “with the hearing protector on”.]