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Hearing protectors - Testing - Part 1: Physical test methods

## EESTI STANDARDI EESSÕNA

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EUROPEAN STANDARD

**EN 13819-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2020

ICS 13.340.20

Supersedes EN 13819-1:2002

English Version

## Hearing protectors - Testing - Part 1: Physical test methods

Protecteurs individuels contre le bruit - Essais - Partie  
1 : Méthodes d'essai physiques

Gehörschützer - Prüfung - Teil 1: Physikalische  
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 13819-1:2020) 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of an identical text or by endorsement, at the latest by May 2021, and conflicting national standards shall be withdrawn at the latest by May 2021.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 supersedes EN 13819-1:2002.

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

- all figures revised and clarified where necessary;
- flowcharts for test procedures revised and additional ones added for single tests;
- new definition 3.6 external vertical distance added;
- 4 limitation to industrial helmets eliminated, so that the test method can be applied to any carrier;
- test headforms in 4.2.2.2 updated to EN 960:2006;
- 4.2.2.3 pinna simulators: allow for 3D printing;
- Figure 5 and 13 error corrected: 5° instead of 15°;
- Table 3 specifications on adjustability of mounted earmuffs changed;
- 4.13 and 5.6 changes and relaxations on the requirements for the equipment for ignitability testing: form of steel rod and temperature measuring device;
- 5.1.3 clarification on testing schemes added in order to specify the tests to be carried out with the number of samples;
- 5.2.3 clarification for flanged earplugs added;
- Tables 6 and 7 error in title corrected;
- Figure 9 of EN 13819-1:2002 deleted;
- Annex ZA of EN 13819-1:2002 deleted.

**NOTE** The technical changes referred to include the significant technical changes from the EN 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 13819-1 is intended as a supplement to the specific product standards for hearing protectors.

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

## 1 Scope

This document EN 13819-1 specifies physical 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 352-1:2020, *Hearing protectors — General requirements — Part 1: Earmuffs*

EN 352-2:2020, *Hearing protectors — General requirements — Part 2: Earplugs*

EN 352-3:2020, *Hearing protectors — General requirements — Part 3: Earmuffs attached to head protection and/or face protection devices*

EN 960:2006, *Headforms for use in the testing of protective helmets*

EN 13819-2:2020, *Hearing protectors — Testing — Part 2: Acoustic test methods*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 352-1, EN 352-2, EN 352-3 and the following 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

#### **headband earmuffs**

earmuffs satisfying the requirements of EN 352-1

### 3.2

#### **mounted earmuffs**

earmuffs fitted to a carrier (head or face protection device) by means of cup supporting arms such that the combination satisfies the requirements of EN 352-3

### 3.3

#### **test height**

vertical distance between the axis through the centres of the mounting holes of the pinna simulators in the mounting fixture or test headform shown in Figures 5 or 6 respectively, and the top of the headband support pad or headform

Note 1 to entry: The dimensions given in Tables 1, 2, 3, 4, 6 and 7 correspond with the definitions given in 3.3, 3.4 and 3.5 (as appropriate).