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**Varovala sluha - Splošne zahteve - 1. del: Naušniki**

Hearing protectors - General requirements - Part 1: Earmuffs

Gehörschützer - Allgemeine Anforderungen - Teil 1: Kapselgehörschützer

Protecteurs individuels contre le bruit - Exigences générales - Partie 1: Serre-tête

**Ta slovenski standard je istoveten z: prEN 352-1**

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## Hearing protectors - General requirements - Part 1: Earmuffs

Protecteurs individuels contre le bruit - Exigences  
générales - Partie 1: Serre-tête

Gehörschützer - Allgemeine Anforderungen - Teil 1:  
Kapselgehörschützer

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 159.

If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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## European foreword

This document (prEN 352-1:2018) has been prepared by Technical Committee CEN/TC 159 “Hearing protectors”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 352-1:2002.

This document has been prepared under a standardization request 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.

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## Introduction

This document sets requirements for personal hearing protection devices in relation to Regulation (EU) 2016/425 on personal protective equipment.

The particular requirement in relation to the ability of hearing protectors to reduce noise below daily limit levels is addressed in the standard by requiring the sound attenuation of the hearing protectors, measured in accordance with EN ISO 4869-1, to be not less than a specified minimum. Further, by requiring that the measured sound attenuation be declared, the selection of suitable hearing protectors for individual circumstances may be undertaken according to established practice.

EN 352-1 is part of a family of standards describing product requirements for 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 for all types of hearing protectors are described in the following standards:

- 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 protection.

The parts of EN 352, other than parts 1, 2 and 3, cover the performance of functions additional to passive hearing protection. Hearing protectors which incorporate one or more of these functions are subject to the requirements and tests of each of the relevant parts of EN 352, including parts 1, 2 or 3, as appropriate.

The requirements of this European Standard are concerned primarily with the physical and acoustic performance of the earmuffs.

The sizing requirements enable the majority of the industrial population to be fitted satisfactorily by "medium size range" earmuffs. Populations of other sizes may be accommodated by "small size range"

or "large size range" earmuffs, which are required to be accompanied by information regarding the range of sizes which they are designed to fit.

The standard also calls for the values of sound attenuation afforded by the earmuffs (measured in accordance with EN ISO 4869-1) in order to assist purchasers in selecting the most appropriate model of earmuffs for their needs. Minimum values of sound attenuation are also specified.

A maximum variability in insertion loss, measured objectively after a series of performance tests, is specified. The objective test method only facilitates the making of comparative measurements, and the insertion loss values obtained will differ from the measured sound attenuation values. The latter, which requires the earmuffs to be tested whilst being worn by human test subjects, is regarded as providing the reference test method for the measurement of the acoustic performance of hearing protectors.

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## 1 Scope

This document specifies requirements for construction, design, performance, marking and user information for earmuffs.

In particular, it specifies the sound attenuation of the earmuffs, measured in accordance with EN ISO 4869-1.

This document does not deal with earmuffs for attachment to head protection and/or face protection devices.

Ergonomic aspects are addressed by taking into account, within the requirements, the interaction between the user, the device and where possible the working environment in which the device is likely to be used (see Annex ZA and EN 458).

## 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 13819-1:2002, *Hearing protectors - Testing - Part 1: Physical test methods*

EN 13819-2:2002, *Hearing protectors - Testing - Part 2: Acoustic test methods*

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

## 3 Terms and definitions

For the purposes of this European Standard, 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

#### **cup**

hollow component which is mounted on the equivalent headband and to which a cushion and a liner are usually fitted

### 3.2

#### **cushion**

deformable component, usually containing a foam plastic or fluid filling, fitted to the rim of the cup to improve the comfort and fit of the earmuffs on the head

### 3.3

#### **liner**

acoustically absorptive material contained within the cup which is intended to increase the attenuation of the earmuffs at certain frequencies

### 3.4

#### **headband**

band, usually of metal and/or plastics, designed to enable the earmuffs to fit securely around the ears by exerting force against the cups and pressure through the cushions



**3.5****earmuff**

hearing protector consisting of circumaural cups pressed or held against the head around each pinna

**3.5.1****over-the-head earmuff**

earmuffs designed to be worn with the headband passing over the top of the head

**3.5.2****behind-the-head earmuff**

earmuffs designed to be worn with the headband passing behind the head

**3.5.3****under-the-chin earmuff**

earmuffs designed to be worn with the headband passing under the chin

**3.5.4****universal earmuff**

earmuffs designed to be worn as an over-the-head, a behind-the-head and an under-the-chin earmuffs

**3.6****headstrap**

flexible strap fitted to each cup, or to the headband close to the cup

Note 1 to entry: A headstrap is designed to support behind-the-head and under-the-chin earmuffs by passing over, and resting on top of the head.

**3.7****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 present, with other conditions identical

[SOURCE: EN ISO 4869-3:2007, 3.5, modified — The words “in a specified sound field under specified conditions” and “with other conditions identical” have been added.]

**3.8****sound attenuation**

for a given test signal, the mean difference in decibels between the threshold of hearing with and without the hearing protector in place

Note 1 to entry: Measured in accordance with EN ISO 4869-1 for a panel of test subjects

[SOURCE: EN ISO 4869-1:1990, 3.8, modified — The words “for a test subject” have been replaced by “, measured in accordance with EN ISO 4869-1 for a panel of test subjects” added as a Note to entry.]

**3.9****hygiene covers**

temporary, disposable covers fitted over the cushions and intended to protect them from the effects of dirt, perspiration, cosmetics, etc

## 4 Requirements

### 4.1 Sizing

Earmuffs shall be classified into three size ranges, 'medium size range', 'small size range' and 'large size range'.

'Medium size range' earmuffs shall be classified as 'medium size range' if their adjustability complies with 4.3.2.2 a) and 4.3.2.2 b), as appropriate.

'Small size range' earmuffs shall be classified as 'small size range' if their adjustability complies with 4.3.2.3 a) and 4.3.2.3 b), as appropriate.

'Large size range' earmuffs shall be classified as 'large size range' if their adjustability complies with 4.3.2.4 a) and 4.3.2.4 b), as appropriate.

'Small size range' and 'large size range' earmuffs shall be accompanied by the user information specified in 6 g).

A model of earmuffs can fall into more than one size range.

### 4.2 Materials and construction

#### 4.2.1 Materials

**4.2.1.1** Those parts of the earmuffs that may come into contact with the skin shall be non-staining, soft, pliable and not known to be likely to cause skin irritation, allergic reaction or any other adverse effect on health.

**4.2.1.2** All materials shall be visibly unimpaired after cleaning and disinfection by the methods specified by the manufacturer.

#### 4.2.2 Construction

**4.2.2.1** All parts of the earmuffs shall be rounded, finished smooth and be free from sharp edges.

**4.2.2.2** Earmuffs whose cushions and/or liners are intended by the manufacturer to be replaced by the user shall not require the use of tools for this purpose.

**4.2.2.3** All universal earmuffs that have a mass in excess of 150 g shall be provided with a headstrap.

**4.2.2.4** Earmuffs that are suitable for wearing only in the behind-the-head or under-the-chin modes, and that have a mass in excess of 150 g, shall be provided with a headstrap.

### 4.3 Performance

#### 4.3.1 General

The requirements of 4.3.2 to 4.3.12 shall be satisfied.

Earmuffs shall be conditioned and tested in accordance with EN 13819-1:2002, 4.1.1, 4.1.2 and 4.1.3.

#### 4.3.2 Sizing and adjustability

##### 4.3.2.1 General

Sizing and adjustability shall be tested in accordance with EN 13819-1:2002, 4.2 and the following requirements satisfied, as appropriate.