



# SLOVENSKI STANDARD

## SIST EN 352-3:2021

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**Varovala sluha - Splošne zahteve - 3. del: Naušniki, pritrjeni na varovalno opremo za zaščito glave in/ali obraza**

Hearing protectors - General requirements - Part 3: Earmuffs attached to head protection and/or face protection devices

Gehörschützer - Allgemeine Anforderungen - Teil 3: An Kopfschutz und/oder Gesichtsschutzgeräten befestigte Kapselgehörschützer

Protecteurs individuels contre le bruit - Exigences générales - Partie 3 : Serre-tête montés sur dispositifs de protection de la tête et/ou du visage

**Ta slovenski standard je istoveten z: EN 352-3:2020**

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**ICS:**

13.340.20 Varovalna oprema za glavo Head protective equipment

**SIST EN 352-3:2021**

**en,fr,de**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 352-3**

November 2020

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Supersedes EN 352-3:2002

English Version

**Hearing protectors - General requirements - Part 3:  
Earmuffs attached to head protection and/or face  
protection devices**

Protecteurs individuels contre le bruit - Exigences  
générales - Partie 3 : Serre-tête montés sur dispositifs  
de protection de la tête et/ou du visage

Gehörschützer - Allgemeine Anforderungen - Teil 3: An  
Kopfschutz und/oder Gesichtsschutzgeräten befestigte  
Kapselgehörschützer

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.

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

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

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

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## European foreword

This document (EN 352-3:2020) 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 November 2023.

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 352-3:2002.

The technical changes between this document and the previous edition of this European Standard are listed in Annex A.

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 Regulation(s).

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

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.

**EN 352-3:2020 (E)****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 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 can be undertaken according to established practice.

EN 352-3 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 352-4 to -10, in addition to that of parts 1, 2 or 3, as appropriate.

The requirements of this document are concerned primarily with the physical and acoustic performance of earmuffs attached to head protection and/or face protection devices (mounted earmuffs).

The sizing requirements enable the majority of the user population to be fitted satisfactorily by “medium size range” mounted earmuffs. Individuals with other sizes can be accommodated by “small size range” or “large size range” mounted 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 provided by the mounted earmuffs (measured in accordance with EN ISO 4869-1) in order to assist users in selecting the most appropriate model of mounted 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 method to determine the sound attenuation values which requires the mounted 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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## EN 352-3:2020 (E)

## 1 Scope

This document specifies requirements for construction, design, performance, marking and user information for earmuffs attached to head protection and/or face protection devices, hereinafter referred to as 'mounted earmuffs'.

In particular, it specifies requirements regarding the sound attenuation of mounted earmuffs, measured in accordance with EN ISO 4869-1:2018.

The document does not apply to earmuffs outside the size range of headsizes as defined in this standard.

Because one model of earmuffs designed to be attached to head protection and/or face protection devices can be fitted to a number of other models and sizes of the carrier, this part of the standard sets out a series of physical and acoustic requirements for earmuffs when fitted to the specified model(s) or size(s) of head protection and/or face protection device.

All requirements apply to earmuffs fitted to one of the specified models or sizes of head protection and/or face protection device (the basic combination). An abbreviated set of requirements applies to the same model of earmuffs when fitted to the other specified models or sizes of head protection and/or face protection device (the supplementary combinations).

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 13819-1:2020, *Hearing protectors — Testing — Part 1: Physical test methods*

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

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)*

## 3 Terms, definitions, symbols and abbreviations

### 3.1 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>

#### 3.1.1

##### **passive hearing protection**

hearing protection that provides attenuation of external sounds not by means of electronics

Note 1 to entry: All hearing protectors have the characteristics of reducing noise by their design and type of material used. Devices that have only this function are called passive hearing protection.

[SOURCE: EN 352-1:2020, 3.1.1]

**3.1.2****cup**

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

[SOURCE: EN 352-1:2020, 3.1.2]

**3.1.3****cup supporting arm**

arm, usually of metal or plastics, attached to the head protection and/or face protection device shell and designed to enable the earmuffs' cup to fit securely around the ear by exerting force against the cup and pressure through the cushion

Note 1 to entry: It includes the means of attachment to the head protection and/or face protection device.

**3.1.4****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

[SOURCE: EN 352-1:2020, 3.1.3]

**3.1.5****liner**

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

[SOURCE: EN 352-1:2020, 3.1.4]

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**3.1.6****earmuff**

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

[SOURCE: EN 352-1:2020, 3.1.6]

**3.1.7****equivalent headband**

part of the mounted earmuffs which supports the cups and is designed to enable the earmuffs to fit securely around the ears by exerting force against the cups and pressure through the cushions

Note 1 to entry: It comprises the head protection and/or face protection device (carrier) and the cup supporting arms and is intended to be functionally equivalent to the headband of headband earmuffs.

**3.1.8****carrier**

head protection and/or face protection device, primarily intended to protect the upper part of the user's head and/or face

Note 1 to entry: Examples of suitable PPE carriers are industrial safety helmets, rigid head tops of powered and supplied air respirator systems, climbing and rescue helmets, face shields, visors.

**EN 352-3:2020 (E)****3.1.9****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 “mean”, “in a specified sound field under specified conditions” and “with other conditions identical” have been added.]

**3.1.10****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 4869-1:2018 for a panel of test subjects.

[SOURCE: EN ISO 4869-1:2018, 3.8, modified — The words “for a given test signal” have been moved to beginning of definition, the words “mean”, “in decibels” have been added, the words “for a test subject” have been deleted and Note 1 to entry has been added.]

**3.1.11****parking position**

position of the earmuffs in which the cups are located above the level of the lower edge of the carrier shell

Note 1 to entry: See also 3.1.12.

**3.1.12****stand-by position**

position of the earmuffs in which the cups are located below the level of the lower edge of the carrier shell and in which the cushions are held away from the side of the head or pinna

Note 1 to entry: See also 3.1.11.

**3.1.13****basic combination**

mounted earmuffs which include the first or only model or size of carrier to which a given model of earmuffs is fitted, and which will undergo all the tests in the standard

Note 1 to entry: See also 3.1.14.

**3.1.14****supplementary combination**

mounted earmuffs which include a model or size of carrier, other than the carrier of the basic combination, to which is fitted the same model of mounted earmuffs as for the basic combination, and which will undergo an abbreviated set of tests

Note 1 to entry: See also 3.1.13.

Note 2 to entry: The first tested combination of a model of earmuffs and a carrier is the basic combination. The next combination of a new carrier and the same model of earmuffs is tested as a supplementary combination, regardless when the basic combination was tested and regardless of the difference of model and size of the carrier. This applies even if the carrier of the basic combination is not manufactured anymore.

**3.1.15****hygiene cover**

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

[SOURCE: EN 352-1:2020, 3.1.10]

**3.2 Symbols and abbreviations**

For the purposes of this document, the following symbols and abbreviations apply.

H	High-frequency attenuation value
M	Medium-frequency attenuation value
L	Low-frequency attenuation value
APV <sub>f98</sub>	Assumed Protection Value for frequency f and a protection performance of 98 %
SNR	Single Number Rating
PPE	Personal Protective Equipment

**4 Requirements****4.1 Sizing**

Mounted earmuffs shall be classified into three size ranges:

- 'medium size range' if their adjustability complies with 4.3.2.2;
- 'small size range' if their adjustability complies with 4.3.2.3;
- 'large size range' if their adjustability complies with 4.3.2.4.

'Small size range' and 'large size range' mounted earmuffs shall be accompanied by the information specified in Clause 6 m).

NOTE A model of mounted earmuffs can fall into one or more size ranges.

**4.2 Materials and construction****4.2.1 Materials**

**4.2.1.1** Those parts of the mounted earmuffs that come into contact with the skin shall be non-staining, soft and pliable.

**4.2.1.2** Those parts of the mounted earmuffs that come into contact with the skin shall not be likely to cause skin irritation, allergic reaction or have any other adverse effect on health.

NOTE A written statement confirming this requirement can be provided to the test house by the manufacturer.

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