



**SLOVENSKI STANDARD**  
**SIST EN 352-6:2003**

01-april-2003

---

JUfcj UUGi \ U!JUfbcgfbYnU Hfj Y]b'dfYg\_i yUbY!\* "XY. BU yb\_]n'j\ cXbja  
YY\_f] b]a `nj c b]a `g][ bUca

Hearing protectors - Safety requirements and testing - Part 6: Ear-muffs with electrical audio input

Gehörschützer - Sicherheitstechnische Anforderungen und Prüfungen - Teil 6:  
Kapselgehörschützer mit Kommunikationseinrichtungen

Protecteurs individuels contre le bruit - Exigences de sécurité et essais - Partie 6: Serre-  
tete avec entrée audio-électrique

[SIST EN 352-6:2003](https://standards.iteh.ai/catalog/standards/sist/143d0ba7-2ac1-438c-b886-f5b5ae74dc56/sist-en-352-6-2003)

[https://standards.iteh.ai/catalog/standards/sist/143d0ba7-2ac1-438c-b886-](https://standards.iteh.ai/catalog/standards/sist/143d0ba7-2ac1-438c-b886-f5b5ae74dc56/sist-en-352-6-2003)

[f5b5ae74dc56/sist-en-352-6-2003](https://standards.iteh.ai/catalog/standards/sist/143d0ba7-2ac1-438c-b886-f5b5ae74dc56/sist-en-352-6-2003)

**Ta slovenski standard je istoveten z: EN 352-6:2002**

---

**ICS:**

13.340.20 Varovalna oprema za glavo Head protective equipment

**SIST EN 352-6:2003**

**en**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 352-6:2003

<https://standards.iteh.ai/catalog/standards/sist/143d0ba7-2ac1-438c-b886-f5b5ae74dc56/sist-en-352-6-2003>

ICS 13.340.20

English version

## Hearing protectors - Safety requirements and testing - Part 6: Ear-muffs with electrical audio input

Protecteurs individuels contre le bruit - Exigences de  
sécurité et essais - Partie 6: Serre-tête avec entrée audio-  
électrique

Gehörschützer - Sicherheitstechnische Anforderungen und  
Prüfungen - Teil 6: Kapselgehörschützer mit  
Kommunikationseinrichtungen

This European Standard was approved by CEN on 16 October 2002.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

[SIST EN 352-6:2003](https://standards.iteh.ai/catalog/standards/sist/143d0ba7-2ac1-438c-b886-f5b5ae74dc56/sist-en-352-6-2003)

<https://standards.iteh.ai/catalog/standards/sist/143d0ba7-2ac1-438c-b886-f5b5ae74dc56/sist-en-352-6-2003>



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

## Contents

	page
Foreword.....	3
Introduction.....	4
1 Scope.....	4
2 Normative references.....	4
3 Terms and definitions.....	5
4 Requirements.....	5
5 Testing.....	5
6 Information supplied by the manufacturer.....	6
7 Marking.....	7
Annex A (informative) Uncertainty of measurement and interpretation of test results.....	8
Annex B (informative) Determination of sound output levels for ear-muffs fitted with electrical audio input.....	10
Annex ZA (informative) Clauses of this European standard addressing essential requirements or other provisions of EU Directive.....	11
Bibliography.....	12

SIST EN 352-6:2003  
<https://standards.iteh.ai/catalog/standards/sist/143d0ba7-2ac1-438c-b886-f5b5ae74dc56/sist-en-352-6-2003>

## Foreword

This document (EN 352-6:2002) has been prepared by Technical Committee CEN/TC 159, "Hearing protectors", the secretariat of which is held by SIS.

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 June 2003, and conflicting national standards shall be withdrawn at the latest by June 2003.

This document has been prepared under a mandate 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 Directives, see informative Annex ZA, which is an integral part of this standard.

In this standard the annexes A and B are informative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 352-6:2003](#)

<https://standards.iteh.ai/catalog/standards/sist/143d0ba7-2ac1-438c-b886-f5b5ae74dc56/sist-en-352-6-2003>

## Introduction

This standard for "Hearing Protectors – safety requirements and testing – Part 6: Ear-muffs with electrical audio input", specifies procedures for the testing of personal hearing protection devices in relation to Directive 89/686/EEC - Personal Protective Equipment.

EN 352-1 deals with requirements for ear-muffs, EN 352-2 with ear-plugs, EN 352-3 with ear-muffs attached to industrial safety helmets. EN 13819-1 and EN 13819-2 deal with testing plans common to all types of hearing protectors covered by this series of ENs.

Additional safety requirements and the associated test procedures for level-dependent ear-muffs are contained in EN 352-4, for ear-muffs with active noise reduction in EN 352-5 and for level-dependent ear-plugs in EN 352-7. An associated standard EN 458, covers selection, use, care and maintenance of hearing protection.

The particular requirement for hearing protectors in relation to their ability to reduce noise to below daily limit levels set by Directive 86/188/EEC - "on the protection of workers from the risks related to exposure to noise at work" is addressed in the standard by means of a requirement to report the output sound levels of the electrical audio circuit.

An additional acoustic performance test method to that described in EN 24869-1 and applied in EN 352-1, EN 352-2 and EN 352-3 is required for ear-muffs with electrical audio input. Until such time as this work is completed, the test method described in Annex B of this standard is recommended for ear-muffs with electrical audio input, in addition to the EN 24869-1 test required within EN 352-1.

Ear-muffs with electrical audio input are designed to provide speech information and warning signals, while providing attenuation of sounds in excess of limit levels. They may be selected for use in a number of different working environments, in air traffic communication, in the police forces, in the broadcasting and entertainment industries, in intermittent or impulsive noise environments when speech information needs to be received and where other warning signals are required to be heard.

This part of the standard is a specification intended for type approval purposes, for which four sets of specimen ear-muffs are tested, (further samples may be required for testing under EN 351, or EN 352-3, as appropriate).

The requirements and tests of the standard are concerned primarily with the electrical audio input performance of the ear-muffs. The standard may be applied to ear-muffs for fitting to industrial safety helmets.

## 1 Scope

This European Standard is concerned with ear-muffs whose passive acoustic performance may be supplemented by an electrical audio input facility or circuit for essential safety-related purposes. It specifies additional constructional, design and performance requirements, methods of test, marking requirements and user information relating to the incorporation of the electrical audio input facility.

The requirements of this standard are intended to take account of the ergonomic interaction between the wearer, the device and, where possible, the working environment in which the device is likely to be used (see Annex ZA of this standard and EN 458)

## 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 352-1:2002, *Hearing protectors - General requirements - Part 1: Ear-muffs*

EN 352-3:2002, *Hearing protectors – General requirements – Part 3: Ear-muffs attached to an industrial safety helmet*

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

### 3 Terms and definitions

For the purposes of this European Standard the terms and definitions given in EN 352-1:2002 (or EN 352-3:2002, as appropriate) and the following definition apply:

#### 3.1

##### sound output level

A-weighted diffuse-field related sound pressure level produced by the electrical audio input facility of an ear-muff for a given input level.

### 4 Requirements

#### 4.1 General

Ear-muffs with electrical audio input shall meet the requirements of EN 352-1 (or EN 352-3, as appropriate). Additional requirements are listed below in 4.2 to 4.4.

#### 4.2 Materials and construction

The electrical circuit of the ear-muff shall meet the electrical safety and EMC requirements appropriate to this class of equipment.

#### 4.3 Performance

[SIST EN 352-6:2003](https://standards.iteh.ai/catalog/standards/sist/143d0ba7-2ac1-438c-b886-f5b5ae74dc56/sist-en-352-6-2003)

##### 4.3.1 General

<https://standards.iteh.ai/catalog/standards/sist/143d0ba7-2ac1-438c-b886-f5b5ae74dc56/sist-en-352-6-2003>

Ear-muffs with electrical audio input shall meet all the performance requirements of EN 352-1 (or EN 352-3, as appropriate), including the minimum attenuation requirement in their passive mode. Additionally, the requirements specified below in 4.3 shall be satisfied.

Specimens of ear-muffs shall be conditioned and tested as specified in 5.1.1 and 5.1.2. The scheme of testing shall be as specified in 5.1.3.

##### 4.3.2 Sound output levels

The sound output levels of the four test samples shall be measured in accordance with 5.2 and reported in wearer information (6.1).

### 5 Testing

#### 5.1 Specimens, conditioning and scheme of testing

This scheme of testing is additional to that described in EN 13819-1. It shall be carried out on additional samples.

##### 5.1.1 Specimens

Four pairs of ear-muffs shall be submitted for testing. The individual ear-muff cups shall be numbered 1 to 8 (or in the case that electrical audio inputs are not fitted to both cups of the ear-muffs, 1 to 4).

### 5.1.2 Conditioning and testing atmosphere

All specimens shall be conditioned and tested in an atmosphere having a temperature of  $22\text{ °C} \pm 5\text{ °C}$  and a relative humidity of not more than 85 %, as required in EN 13819-1.

### 5.1.3 Scheme of testing

The eight ear-muff cups (or four if electrical audio inputs are not fitted to both cups) shall be tested for output levels as described in 5.2.

## 5.2 Sound output levels

The acoustic measurements of sound output levels for ear-muffs with electrical audio input are under consideration.

For the time being and because of the urgent need, such measurements may be carried out in accordance with test procedures described in Annex B.

## 6 Information supplied by the manufacturer

### 6.1 Wearer information

The following information for the wearer (in addition to that required by EN 352-1) shall be supplied with the ear-muffs:

- STANDARD PREVIEW**  
**(standards.iteh.ai)**
- <https://standards.iteh.ai/catalog/standards/sist/143d0ba7-2ac1-438c-b886-5b5ae74dc56/sist-en-352-6-2003>
- [SIST EN 352-6:2003](#)
- a) the number of this standard, EN 352-6;
  - b) an indication as to whether the hearing protector provides electrical audio input;
  - c) the values of the sound output levels as determined by the procedures described in the Annex B;
  - d) recommended storage conditions before and after use;
  - e) electrical safety information relating to the audio input facility or ear-muffs with electrical audio input, the statements:
    - 1) "This ear-muff is provided with electrical audio input. The wearer should check correct operation before use. If distortion or failure is detected, the wearer should refer to the manufacturers advice. "
    - 2) "Warning - The output of the electrical audio circuit of this hearing protector may exceed the daily limit sound level."
  - f) the address from which additional information can be obtained.

Information according with 6.1 shall be provided at least in the official language(s) of the European state of destination.

### 6.2 Additional information

The following information shall be available from the manufacturer on request:

- a) results of tests performed in accordance with this standard;



b) the name and country of the test laboratory which performed the tests specified and the date of the tests.

Information according with 6.2 shall be provided at least in the official language(s) of the European state of destination.

## 7 Marking

The requirements for marking given in EN 352-1 shall be used. The generic mark “EN 352” as specified in EN 352-1 is used, since a product may meet EN 352-1 and EN 352-6 simultaneously.

# iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 352-6:2003](https://standards.iteh.ai/catalog/standards/sist/143d0ba7-2ac1-438c-b886-f5b5ae74dc56/sist-en-352-6-2003)

<https://standards.iteh.ai/catalog/standards/sist/143d0ba7-2ac1-438c-b886-f5b5ae74dc56/sist-en-352-6-2003>