SLOVENSKI STANDARD
SIST EN 458:2005

01-april-2005

Nadomeǵ a:
SIST EN 458:1996

Varovala sluha - Priporoį ila za izbiro, uporabo, nego in vzdrǵevanje - Navodilo

Hearing protectors - Recommendations for selection, use, care and maintenance - Guidance document

Gehörschützer - Empfehlungen für Auswahl, Einsatz, Pflege und Instandhaltung - Leitfaden

Protecteurs individuels contre le bruit - Recommandations relatives a la sélection, a l'utilisation, aux précautions d'emploi et a l'entretien - Document guide

Ta slovenski standard je istoveten z: **EN 458:2004**

ICS:

13.340.20 Varovalna oprema za glavo Head protective equipment

SIST EN 458:2005 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 458

November 2004

ICS 13.340.20

Supersedes EN 458:1993

English version

Hearing protectors - Recommendations for selection, use, care and maintenance - Guidance document

Protecteurs individuels contre le bruit - Recommandations relatives à la sélection, à l'utilisation, aux précautions d'emploi et à l'entretien - Document guide

Gehörschützer - Empfehlungen für Auswahl, Einsatz, Pflege und Instandhaltung - Leitfaden

This European Standard was approved by CEN on 24 June 2004.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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

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

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

Ref. No. EN 458:2004: E

Contents

page

Foreword

This document (EN 458:2004) has been prepared by Technical Committee CEN/TC 159 “Hearing Protection”, the secretariat of which is held by SIS.

This document supersedesEN 458:1993.

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 2005, and conflicting national standards shall be withdrawn at the latest by May 2005.

This European Standard has been prepared under a mandate given to CEN and the European Free Trade Association by the European Commission to support Essential Requirements of EU Directive 89/686/EEC.

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

According to the CEN/CENELEC Internal Regulations, the national implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

Hearing protection devices are items of personal protective equipment (PPE) which, as a result of their attenuating properties, reduce the harmful effects of noise on hearing in order to prevent hearing damage. This document has been prepared to give guidance to all persons who have to supply, purchase or wear hearing protectors. This document is intended to provide guidance on the correct selection, use, care and maintenance of hearing protectors.

National bodies may produce their own interpretation of this document for additional national regulations, custom and practice.

In order that the protection offered by hearing protectors be effectively realised, hearing protectors should be worn at all times when the user is in a potentially hazardous noise environment. In the selection of hearing protectors, therefore, attention is drawn to the importance of considering factors which may influence comfort and acceptance.

In hearing conservation programmes, noise hazard areas are identified and the personal noise exposure assessed. Priority should be given to reducing noise at source before a suitable hearing protector is considered, as shown in Figure 1.

1 Scope

This document gives recommendations for the selection, use, care and maintenance of hearing protectors.

2 Normative references

The following referenced documents are indispensable for the application 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, *Hearing protectors — General requirements — Part 1: Ear-muffs.*

EN 352-2, *Hearing protectors — General requirements — Part 2: Ear-plugs.*

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

EN ISO 4869-2:1995*, Acoustics — Hearing protectors — Part 2: Estimation of effective A-weighted sound pressure levels when hearing protectors are worn (ISO 4869-2:1994).*

EN ISO 9921, *Ergonomics — Assessment of speech communication (ISO 9921:2003)*

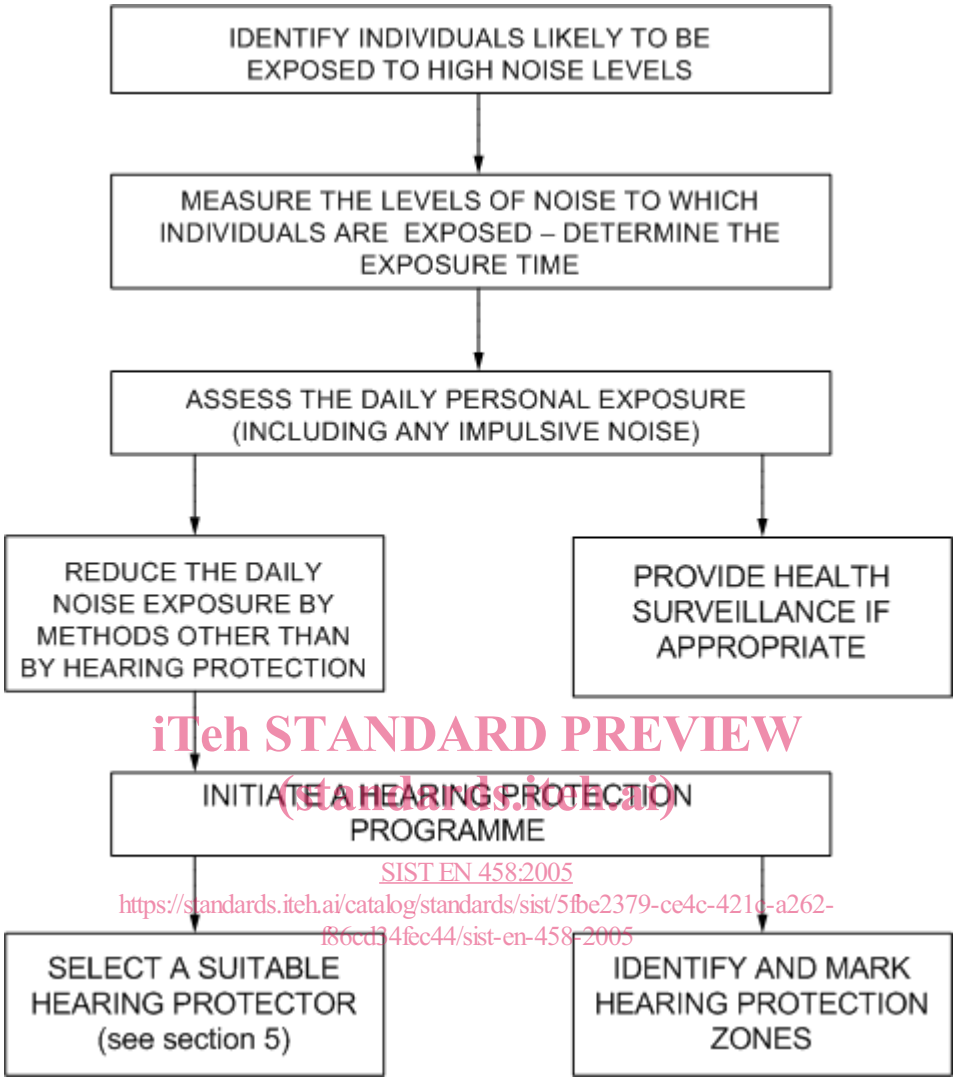

Figure 1 — Actions to be taken to reduce an individual's risk of noise induced hearing loss

3 Terms and definitions

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

3.1
national action level (L_{act})
daily noise exposure level (LEX,8h) above which hearing protectors are worn

NOTE: National laws or regulations will stipulate the level of noise exposure above which hearing protectors must be worn

3.2
national peak action level ($L_{act,pk}$)
peak pressure level above which hearing protectors are worn

NOTE: National laws or regulations will stipulate the level of peak noise exposure above which hearing protectors must be worn

3.3
care
day-to-day attention given to the protector by the wearer

3.4
effective attenuation
effective attenuation is the measure of protection afforded by the hearing protector

3.5
maintenance
regular inspection and repair of the protector, for example the replacement of defective ear-muff cushions

3.6
over-protection
selection and wearing of a hearing protector with too high an attenuation. This may lead to a sense of isolation and difficulties with perception of sounds

3.7
selection
process of choosing the most suitable protector

3.8
use
day-to-day wearing of a hearing protector by the person to be protected

3.9
Personal Protective Equipment (PPE)
all equipment (including clothing affording protection against the weather) which is worn or held by a person at work and which protects them against one or more risks to his health and safety, and any addition or accessory designed to meet that objective

3.10
impulse noise
sudden change of pressure that can consist of a unique single event or form either a series of impulses with pauses between

3.11
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 for the test subject

4 Types of hearing protector

4.1 General

Hearing protectors are available in many forms and the main types are described in the following paragraphs. This list is not exhaustive.

4.2 Passive hearing protectors

4.2.1 Ear-muffs

Ear-muffs consist of cups which fit over the ears and are sealed to the head with soft cushions, usually filled with plastic foam or liquid. The cups are usually lined with sound absorptive material. They are connected by a tensioning band (headband), usually made of metal or plastic. A flexible headstrap is sometimes fitted to each cup or to the headband close to the cups. This strap is used to support the cups when the headband is worn behind the head or under the chin. Some ear-muffs have one cup intended only for the left ear and another only for the right ear. Ear-muffs may be available in 'normal' and 'restricted size range' types. ‘Medium’ size ear-muffs are intended to fit the majority of head sizes found in the working population in Europe. 'Restricted size range' ear-muffs are designed to fit particular head sizes; 'small size range' and 'large size range' ear-muffs may be available.

Ear-muffs are available with headbands, neckbands, chinbands and universal bands. Ear-muffs with neckbands and chinbands permit the simultaneous wearing of a safety helmet. Universal bands can be worn over the head, behind the head or under the chin. Universal bands, neckbands and chinbands may be complemented by headstraps to ensure a reliable fit of the muff.

4.2.2 Helmet mounted ear-muffs

These consist of individual cups attached to arms that are fixed to an industrial safety helmet. The arms are adjustable so that the cups can be positioned over the ears.

4.2.3 Acoustic helmets

Acoustic helmets cover a large part of the head as well as the outer ear. They can provide additional reduction of the transmission of air-borne sound to the skull thereby reducing bone conduction of the sound to the inner ear.

4.2.4 Ear-plugs

Ear-plugs are hearing protectors which are inserted and worn in or which cover the ear canal, in order to seal its entrance. They are sometimes provided with an interconnecting cord or headband. Ear-plugs can be either disposable (intended for one fitting only) or reusable (intended for more than one fitting).

4.2.5 Preshaped ear-plugs

Preshaped ear-plugs can readily be inserted into the ear canal without prior shaping. Preshaped ear-plugs are usually made of glass down, silicone, rubber or plastics. They may be available in a range of sizes.

4.2.6 Individual custom moulded ear-plugs

Custom moulded ear-plugs are individually moulded to fit the shape of the users ear canals.

4.2.7 User formable ear-plugs

User formable ear-plugs are made from compressible materials that the wearer forms before inserting them into the ear canal. After insertion, these ear-plugs expand and form a seal within the ear canal.

4.2.8 Banded ear-plugs

These are preshaped or user formable ear-plugs attached to a band which presses them into the ear-canal or against the entrance to the ear-canal (semi-aural or semi-insert).

4.3 Function modes

4.3.1 General

It should be noted that some devices may have more than one function mode.

4.3.2 Passive

These devices may be either ear-muffs or ear-plugs that have the singular function or characteristic of reducing noise by their design and type of material used, to absorb and/or reflect sound. Passive devices have no added mechanisms.

4.3.3 Non passive

These devices can be either ear-muffs or ear-plugs. Non passive devices are passive hearing protectors with additional functions. They may incorporate mechanical or electronic components.

4.3.4 Level-dependent hearing protectors

4.3.4.1 General

These devices can be either ear-muffs or ear-plugs. Level-dependent hearing protectors are designed to provide different attenuation as the sound level changes. Their main purpose is to protect against impulsive or intermittent hazardous noise whilst allowing communication during quiet periods.

4.3.4.2 Sound restoration level-dependent hearing protectors

These devices can be either ear-muffs or ear-plugs. Sound restoration level-dependent hearing protectors incorporate an electronic sound reproduction system. At low noise levels the sound detected by an external microphone is relayed and amplified to a loudspeaker inside the muff cup, or plug. As the external sound level increases, the electronics gradually reduce transmission of sound to the inside of the hearing protector.

4.3.4.3 Passive level-dependent hearing protectors

These devices can be either ear-muffs or ear-plugs. They normally incorporate an acoustic filter which allows the transmission of low sound pressure levels but offers more attenuation to high sound pressure levels. These types of hearing protector are designed to be effective against very high single impulse noises, such as firearms, rather than the continuous noise or repetitive impulses found in most industrial situations.

4.3.5 Flat frequency response hearing protectors

These devices can be either ear-muffs or ear-plugs that, by their design, give a similar sound attenuation across a wide frequency range thus assisting effective communications.