
**Respiratory protective devices —
Human factors —**

**Part 7:
Hearing and speech**

*Appareils de protection respiratoire — Facteurs humains —
Partie 7: Discours et audition*





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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 94, *Personal safety — Personal protective equipment*, Subcommittee SC 15, *Respiratory protective devices*.

This first edition of ISO 16976-7 cancels and replaces the second edition (ISO/TS 16976-7:2019), which has been technically revised.

The main changes as follows:

- requirements more specified.

A list of all parts in the ISO 16976 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

For an appropriate design, selection and use of respiratory protective devices, basic physiological demands of the user should be considered. The function of a respiratory protective device, the way it is designed and used, and the properties of its material can affect communications: either speech or hearing or both.

This document belongs to a series of documents providing basic physiological and anthropometric data on humans. It contains information about hearing and speech associated with wearing respiratory protective devices.

Respiratory protective devices — Human factors —

Part 7: Hearing and speech

1 Scope

This document contains information related to the interaction between respiratory protective devices and the human body functions of hearing and speech.

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.

ISO 1999, *Acoustics — Estimation of noise-induced hearing loss*

ISO 16972, *Respiratory protective devices — Vocabulary and graphical symbols*

IEC 61672, *Electroacoustics — Sound Level Meters*

3 Terms and definitions, and abbreviated terms

For the purposes of this document, the terms and definitions given in ISO 1999, ISO 16972 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1 Terms and definitions

3.1.1

hearing

manner in which the brain and central nervous system recognizes and interprets *sounds* (3.1.5)

3.1.2

ototoxicity

damage to *hearing* (3.1.1) from overexposure to drugs or toxic substances

3.1.3

noise

unwanted *sound* (3.1.5)

3.1.4

presbycusis

gradual sensorineural *hearing* (3.1.1) loss due to natural ageing

3.1.5

sound

form of energy that moves through media in waves of pressure