SLOVENSKI STANDARD
SIST EN ISO 8253-3:2022

01-julij-2022

Nadomešča:
SIST EN ISO 8253-3:2012

Akustika - Avdiometrijske preskusne metode - 3. del: Govorna avdiometrija (ISO 8253-3:2022)

Acoustics - Audiometric test methods - Part 3: Speech audiometry (ISO 8253-3:2022)

Akustik - Audiometrische Prüfverfahren - Teil 3: Sprachaudiometrie (ISO 8253-3:2022)

Acoustique - Méthodes d'essais audiométriques - Partie 3: Audiométrie vocale (ISO 8253-3:2022)

Ta slovenski standard je istoveten z: EN ISO 8253-3:2022

ICS:

13.140	Vpliv hrupa na ljudi	Noise with respect to human beings
17.140.01	Akustična merjenja in blaženje hrupa na splošno	Acoustic measurements and noise abatement in general

SIST EN ISO 8253-3:2022   **en,fr,de**

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 8253-3

February 2022

ICS 13.140

Supersedes EN ISO 8253-3:2012

English Version

Acoustics - Audiometric test methods - Part 3: Speech audiometry (ISO 8253-3:2022)

Acoustique - Méthodes d'essais audiométriques - Partie 3: Audiométrie vocale (ISO 8253-3:2022)

Akustik - Audiometrische Prüfverfahren - Teil 3: Sprachaudiometrie (ISO 8253-3:2022)

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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

EN ISO 8253-3:2022 (E)

Contents

Page

iTeh STANDARD PREVIEW

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2

European foreword

This document (EN ISO 8253-3:2022) has been prepared by Technical Committee ISO/TC 43 "Acoustics" in collaboration with Technical Committee CEN/TC 211 "Acoustics" 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of an identical text or by endorsement, at the latest by August 2022, and conflicting national standards shall be withdrawn at the latest by August 2022.

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 ISO 8253-3:2012.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

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Endorsement notice

The text of ISO 8253-3:2022 has been approved by CEN as EN ISO 8253-3:2022 without any modification.

3

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INTERNATIONAL STANDARD

ISO
8253-3

Third edition
2022-01

Acoustics — Audiometric test methods —

Part 3:
Speech audiometry

Acoustique — Méthodes d'essais audiométriques —

Partie 3: Audiométrie vocale

Reference number
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Contents

ISO 8253-3:2022(E)

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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).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 43, *Acoustics*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 211, *Acoustics,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 8253-3:2012), which has been technically revised. The main changes compared to the previous edition are as follows:

— The technical requirements for recording of speech material were adapted to recent equipment and technology.

— The determination of reference speech recognition curves was revised. An annex that gives advices on how to determine the minimum number of subjects was introduced.

— The determination of speech recognition threshold levels is described in a more general manner.

— Symbols for the graphical representation of speech audiometry results were introduced.

A list of all the parts in the ISO 8253 series can be found on the ISO website.

ISO 8253-3:2022(E)

Introduction

Speech audiometry is used for the assessment of hearing in connection with diagnostic evaluation and audiological rehabilitation.

The results of speech audiometry depend on the speech material and test method used. This document sets conditions for speech materials in order to ensure minimum requirements of precision and comparability between different tests using different speech materials including materials in different languages. It also specifies procedures to be used when testing speech recognition.

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Acoustics — Audiometric test methods —

Part 3:
Speech audiometry

1 Scope

This document specifies basic methods for speech recognition tests for audiological applications.

NOTE   Examples of speech materials are given in Annex A.

In order to ensure minimum requirements of precision and comparability between different test procedures including speech recognition tests in different languages, this document specifies requirements for the composition, validation and evaluation of speech test materials, and the realization of speech recognition tests. This document does not specify the contents of the speech material because of the variety of languages.

Furthermore, this document also specifies the determination of reference values and requirements for the realization and manner of presentation. In addition, there are features of speech tests described which are important to be specified, but which are not understood as a requirement.

This document specifies procedures and requirements for speech audiometry with the recorded test material being presented by an audiometer through a transducer, e.g., an earphone, bone vibrator, or loudspeaker arrangement for sound field audiometry. Methods for using noise either for masking the non-test ear or as a competing sound are described.

Some test subjects, for example children, can require modified test procedures not specified in this document.

Specialized tests, such as those used for evaluating directional hearing and dichotic hearing, are outside the scope of this document.

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 8253-1, *Acoustics — Audiometric test methods — Part 1: Pure-tone air and bone conduction audiometry*

ISO 8253-2, *Acoustics — Audiometric test methods — Part 2: Sound field audiometry with pure-tone and narrow-band test signals*

ISO/IEC Guide 98-3, *Uncertainty of measurement — Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)*

IEC 60645-1:2017, *Electroacoustics — Audiometric equipment — Part 1: Equipment for pure-tone and speech audiometry*

IEC 61672-1, *Electroacoustics — Sound level meters — Part 1: Specifications*

ISO 8253-3:2022(E)

3   Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 8253-1 and ISO 8253-2 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
speech signal
acoustic signal which carries information in a given language

Note 1 to entry: A speech signal can be a voice signal or an acoustic signal simulating a voice signal.

3.2
test item
particular monosyllabic or polysyllabic word, or *logatom* (3.12), or spondee, or sentence, or time-limited segment of connected speech, used in accordance with defined rules of presentation and scoring in a speech audiometric procedure

Note 1 to entry: Scoring may be based on a complete test item or parts thereof being correctly recognized.

3.3
test list
number of selected *test items* (3.2), presented and scored as a single unit

3.4
set of test items
selected number of *test items* (3.2) from a test list

3.5
speech material
entire *set of test items* (3.4) which is used for speech recognition tests

Note 1 to entry: Usually the speech material is subdivided into several test lists.

3.6
open-set test
test in which the number of alternative responses to each *test item* (3.2) is unlimited

3.7
closed-set test
test in which the number of alternative responses to each *test item* (3.2) is limited

3.8
phoneme
the smallest phonetic unit that distinguishes one word from another in a particular language

3.9
phoneme class
subdivision of phonemes that show characteristic similarities in vocal production mode as well as in acoustical signal properties

3.10
phoneme distribution
relative distribution of the various phonemes within a given *speech material* (3.5)

3.11
syllable
segment of speech consisting of an (optional) onset, a nucleus, and an (optional) coda, where the nucleus most often consists of a vowel sound and the onset and coda most often consist of one or more consonant sounds

3.12
logatom
syllabic unit that has no verbal meaning to the listener

Note 1 to entry: A logatom is sometimes called a "nonsense syllable".

3.13
carrier phrase
sentence or phrase in which a *test item* (3.2) is embedded such that the correct recognition of the *test item* (3.2) is not dependent upon the context or meaning of the sentence or phrase

3.14
connected speech
continuous speech with natural intonation, consisting of consecutive sentences with logical connections

3.15
reference recording
master recording
well-defined recording that represents the *speech material* (3.5) and that is used for validation and application of the *speech material* (3.5)

3.16
speech level
sound pressure level of a specified *speech material* (3.5) as measured in an appropriate acoustic coupler, ear simulator or in a sound field, with a specified frequency and time weighting

Note 1 to entry: The frequency and the time weighting should be according to IEC 61672-1.

3.17
speech detection threshold level
for a given test subject, for a specified *speech material* (3.5) and a specified manner of signal presentation, the speech level at which it is detected as sound (not necessarily understood) in 50 % of the trials

Note 1 to entry: Is synonymous with the expression "speech awareness threshold".

3.18
speech recognition score
for a given test subject, for a specified *speech material* (3.5), a specified manner of signal presentation and at a specified speech level, the percentage of correctly recognized *test items* (3.2) or scorable items if the scoring method is not based on whole *test items* (3.2)

3.19
speech audiogram
graphical representation of the results of speech audiometry, where the speech recognition score is plotted as percentage along the ordinate and speech level, in dB, or hearing level for speech, in dB, or speech-to-noise level difference, in dB, along the abscissa

3.20
maximum speech recognition score
for a given test subject, for a specified *speech material* (3.5) and a specified manner of signal presentation, the maximum speech recognition score obtained regardless of the speech level