

**Akustika. Otoloogiliselt normaalsete inimeste
õhujuhteläve olenevus vanusest ja soost**

**Acoustics - Threshold of hearing by air conduction as a
function of age and sex for otologically normal persons**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 27029:1999 sisaldab Euroopa standardi EN 27029:1991 ingliskeelset teksti.	This Estonian standard EVS-EN 27029:1999 consists of the English text of the European standard EN 27029:1991.
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Võtmesõnad: acoustics, audibility, audiometric, auditory threshold, humans,

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EUROPEAN STANDARD

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EUROPAISCHE NORM

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Descriptors : Acoustics, audiometry, audibility, auditory threshold, humans

English version

Acoustics - Threshold of hearing by air conduction
as a function of age and sex otologically persons
(Identical with ISO 7029:1984)

Acoustique - Seuil normal d'audition
par conduction aérienne en fonction de
l'âge et du sexe pour les personnes
otologiquement normales (Identique à
l'ISO 7029:1984)

Akustik - Luftleitungshörschwelle in
Abhängigkeit von Alter und Geschlecht
otologisch normaler Personen (Identisch
mit ISO 7029:1984)

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Foreword

This European Standard has been taken over by CEN/TC 211 "Acoustics" from the work of the International Organization for Standardization (ISO).

This document has been submitted to the formal vote and has been approved.

National Standards identical to this European Standard shall be published at the latest by 92-04-09 and conflicting national standards shall be withdrawn at the latest 92-04-09.

In accordance with the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard : Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

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The text of the International Standard ISO 7029:1984 has been approved by CEN as a European Standard without any modification.

International Standard



7029

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Acoustics — Threshold of hearing by air conduction as a function of age and sex for otologically normal persons

Acoustique — Seuil normal d'audition par conduction aérienne en fonction de l'âge et du sexe pour les personnes otologiquement normales

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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 7029 was prepared by Technical Committee ISO/TC 43, *Acoustics*.

Acoustics — Threshold of hearing by air conduction as a function of age and sex for otologically normal persons

0 Introduction

It is well known that the sensitivity of human hearing to pure tones falls progressively with age and that the loss of hearing is more rapid for high-frequency tones than for low-frequency tones. Moreover, the magnitude of this effect varies considerably between individuals.

In the case of young persons, data have been standardized (see ISO 389) specifying the modal values of the threshold of hearing for the otologically normal (as defined in ISO 389); these data form the basis for calibrating pure tone audiometers. These data do not discriminate between male and female persons and they do not specify the technique of audiometry to which they apply. It is known that these distinctions should, in principle, be made in order to obtain the most accurate value for audiometric zero. In this International Standard the distinction between males and females has been made since the difference is found to be significantly large in the case of older age groups. When an individual, who is more than 18 years old, is being tested with an audiometer, part of any observed hearing loss will most probably be associated with the person's age, and it is, therefore, important to be aware of this when estimating the amount of hearing loss attributable to other causes under investigation. Furthermore, there is a need for generally acceptable data to be standardized for this purpose.

Numerous data on the elevation of hearing threshold levels increasing with age exist in various publications, but there are certain numerical differences between them which may be attributed to the use of different criteria of selection for test populations, different audiometric techniques, etc. However, a thorough examination of the data has enabled a representative set of values to be established. This International Standard is based on these values which refer to screened populations of otologically normal persons as defined herein.

1 Scope and field of application

This International Standard specifies, for the range of audiometric frequencies from 125 to 8 000 Hz and for groups of

otologically normal persons of a given age within the age limits of 18 to 70 years inclusive :

- a) the expected value of the median hearing threshold shift relative to a group of persons 18 years of age;
- b) the expected statistical distribution above and below the median value (see note 2 to 4.1).

The data in this International Standard are applicable as descriptive statistics of the hearing levels of populations of various ages. An example of this application is as a baseline of comparison for estimating the amount of hearing loss caused in a population due to a specific agent, for example, noise, and in this application the data of this International Standard are included as "Data Base A" in ISO 1999. The data may also be used to compare an individual's hearing with the normal distribution of the hearing threshold levels for the person's age group. In the audiological diagnosis of an individual person, it is, however, not possible to determine precisely which changes of the hearing threshold level are attributable to an accumulation of detrimental effects upon the hearing increasing with age and which changes have been caused by other factors such as, for example, noise.

2 References

ISO 389, *Acoustics — Standard reference zero for the calibration of pure tone audiometers.*

ISO 1999, *Acoustics — Determination of occupational noise exposure and estimation of noise-induced hearing impairment.*¹⁾

ISO 6189, *Acoustics — Pure tone air conduction threshold audiometry for hearing conservation purposes.*

ISO 8253, *Acoustics — Pure tone audiometric test methods.*²⁾

IEC Publication 645, *Audiometers.*

1) At present at the stage of draft. (Revision of ISO 1999-1975.)

2) At present at the stage of draft.