

Ergonomics - Assessment of speech communication

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 9921:2004 sisaldab Euroopa standardi EN ISO 9921:2003 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 20.02.2004 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 9921:2004 consists of the English text of the European standard EN ISO 9921:2003.</p> <p>This document is endorsed on 20.02.2004 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala:</p> <p>This International Standard specifies the requirements for the performance of speech communication for verbal alert and danger signals, information messages, and speech communication in general.</p>	<p>Scope:</p> <p>This International Standard specifies the requirements for the performance of speech communication for verbal alert and danger signals, information messages, and speech communication in general.</p>
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Võtmesõnad:

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English version

Ergonomics

Assessment of speech communication

(ISO 9921 : 1995)

Ergonomie – Evaluation de la communication parlée (ISO 9921 : 2003)

Ergonomie – Beurteilung der Sprachkommunikation (ISO 9921 : 2003)

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CEN

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

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Foreword

International Standard

ISO 9921 : 2003 Ergonomics – Assessment of speech communication, which was prepared by ISO/TC 159 'Ergonomics' of the International Organization for Standardization, has been adopted by Technical Committee CEN/TC 122 'Ergonomics', the Secretariat of which is held by DIN, as a European Standard.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, and conflicting national standards withdrawn, by April 2004 at the latest.

In accordance with the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard:

Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, the Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland, and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 9921 : 2003 was approved by CEN as a European Standard without any modification.

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Introduction

The aim of standardization in the field of the ergonomic assessment of speech-communication is to recommend the levels of speech-communication quality required for conveying comprehensive messages in different applications. The quality of speech communication is assessed for the following cases:

- warning of hazard;
- warning of danger;
- information messages for work places, public areas, meeting rooms, and auditoria.

For some applications, direct communication between humans is considered while, in others, the use of electro-acoustic systems (e.g. PA systems) or personal communication equipment (e.g. telephone, intercom) will be the most convenient means of informing and instructing or exchanging information.

The use of auditory warning symbols other than speech is not included in this International Standard but is covered by ISO 7731.

Acoustical danger and warning signals are in general omni-directional and therefore may be universal in many situations. Auditory warnings are of great benefit in situations where smoke, darkness or other obstructions interfere with visual warnings.

It is essential that, in the case of verbal messages, a sufficient level of intelligibility is achieved, in the coverage area. If this cannot be achieved, non-voice warning signals (see ISO 7731, IEC 60849 and [4] in the Bibliography) or visual warning signals (see ISO 11429) may be preferable.

If acoustical signals are too loud, hearing damage or environmental problems may occur (e.g. noise nuisance to dwellings near railway platforms, road traffic, airports, etc.). Good design can minimize these negative aspects. In addition, prediction methods with sufficient accuracy are useful for consultants, suppliers and end-users and may thus reduce costs of necessary adjustments after installation of a system.

The communications might be directly between humans, through public address or intercom systems or by pre-recorded messages. In general, text-to-speech systems are not recommended because of the low intelligibility of these systems.

It is recognized that, in a general-purpose document, simple to apply and easily available tools for prediction and assessment should be described, as well as more sophisticated advanced technological methodologies.

1 Scope

This International Standard specifies the requirements for the performance of speech communication for verbal alert and danger signals, information messages, and speech communication in general. Methods to predict and to assess the subjective and objective performance in practical applications are described and examples are given.

In order to obtain optimal performance in a specific application, three stages can be considered:

- a) specification of the application and definition of the corresponding performance criteria;
- b) design of a communication system and prediction of the performance;
- c) assessment of the performance for *in situ* conditions.

The use of auditory warning signals other than speech is not included in this International Standard but is covered by ISO 7731.

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.

ISO/TR 4870:1991, *Acoustics — The construction and calibration of speech intelligibility tests*

IEC 60268-16:1998, *Sound system equipment — Part 16: Objective rating of speech intelligibility by speech transmission index*

3 Terms and definitions

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

- 3.1
alarm**
warning of existing or approaching danger
- 3.2
danger**
risk of harm or damage
- 3.3
effective signal-to-noise ratio**
measure to express the (combined) effect of various types of distortions on the intelligibility of a speech signal in terms of the effect of a masking noise resulting in a speech signal having the same intelligibility
- 3.4
emergency**
imminent risk or serious threat to persons or property