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| STN | **Ergonómia. Dostupný návrh. Hladiny akustického tlaku hovorených informácií pre produkty a verejné rozhlasy (ISO 24504: 2014).** | **STN EN ISO 24504**<br><br>83 3544 |
|---|---|---|

Ergonomics - Accessible design - Sound pressure levels of spoken announcements for products and public address systems (ISO 24504:2014)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 10/16

Obsahuje: EN ISO 24504:2016, ISO 24504:2014

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# EUROPEAN STANDARD
# NORME EUROPÉENNE
# EUROPÄISCHE NORM

**EN ISO 24504**

June 2016

ICS 13.180

English Version

# Ergonomics - Accessible design - Sound pressure levels of spoken announcements for products and public address systems (ISO 24504:2014)

Ergonomie - Conception accessible - Niveaux de pression acoustique des annonces vocales pour les produits et systèmes de sonorisation (ISO 24504:2014)

Ergonomie - Barrierefreie Gestaltung - Schalldruckpegel von gesprochenen Ansagen für Produkte und öffentliche Lautsprecheranlagen (ISO 24504:2014)

This European Standard was approved by CEN on 27 May 2016.

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**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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# European foreword

The text of ISO 24504:2014 has been prepared by Technical Committee ISO/TC 159 “Ergonomics” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 24504:2016 by Technical Committee CEN/TC 122 “Ergonomics” 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of an identical text or by endorsement, at the latest by December 2016, and conflicting national standards shall be withdrawn at the latest by December 2016.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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## Endorsement notice

The text of ISO 24504:2014 has been approved by CEN as EN ISO 24504:2016 without any modification.

INTERNATIONAL STANDARD

**ISO 24504**

First edition
2014-08-01

# Ergonomics — Accessible design — Sound pressure levels of spoken announcements for products and public address systems

*Ergonomie — Conception accessible — Niveaux de pression acoustique des annonces vocales pour les produits et systèmes de sonorisation*

Reference number
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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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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 159, *Ergonomics*, Subcommittee SC 5, *Ergonomics of the physical environment.*

# Introduction

Today, people conduct their daily lives along with spoken announcements from various products such as home electrical appliances, information and telecommunication products, office-automation equipment, heating equipment, toys, sanitary equipment, and health care products. Some products use spoken announcements to provide instructions in indoor and outdoor public areas such as ticket vending machines, elevators, and escalators. Public address systems are often installed to provide spoken announcements. Such announcements can be indistinct to listeners because of hearing loss that can occur with ageing or because of ambient noise in the surroundings.

This International Standard specifies methods for determining an appropriate sound level range of spoken announcements so that all listeners, including people with age-related hearing loss, can hear them properly against ambient noises. This sound level range specification was determined based on results of experiments in which people of different ages participated. Spoken announcements for which sound pressure levels are within the range specified in this International Standard are expected to be audible and comfortably loud for most users in the presence of ambient noise.

This International Standard is intended to be applied as necessary to products depending on the product type and its conditions of use. It does not apply to spoken announcements used for evacuation or emergency purposes.

ISO 9921 specifies recommended levels of speech-communication quality necessary for conveying comprehensive messages in different applications. Therefore, ISO 9921 differs from this International Standard.

This International Standard adopts the principles of accessible design from ISO/IEC Guide 71, which are amplified in ISO/TR 22411.

**INTERNATIONAL STANDARD** **ISO 24504:2014(E)**

# Ergonomics — Accessible design — Sound pressure levels of spoken announcements for products and public address systems

## 1 Scope

This International Standard specifies methods to determine an appropriate sound pressure level range for spoken announcements in environments where ambient noise is less than 80 dB. The specified methods follow the concepts of ISO/IEC Guide 71 and includes consideration of older persons with decreased hearing ability to determine sound pressure levels of spoken announcements. The spoken speech levels that are specified in this International Standard are for products and public-address systems. To improve the accessibility and usability of products, spoken announcements must not only be audible but also presented at comfortable speech levels.

The target products that present spoken announcements are consumer products such as electronic home appliances, information and communication technology services, and products providing services for general users in public facilities indoors and outdoors such as train stations, airports, meeting rooms, amusement parks, and fairs.

This International Standard is not applicable to products providing private information such as automated teller machines in public spaces.

This International Standard is applicable when a loudspeaker producing a spoken announcement is located a short distance from the user in an environment where the sound pressure level with a standard frequency weighting A of ambient noise does not exceed 80 dB. This International Standard is applicable to spoken announcements that are audible to persons with normal hearing for their age when presented by a target product under quiet and anechoic conditions. This International Standard is applicable for both recorded voice and synthetic speech announcements.

This International Standard does not specify sound pressure levels of spoken announcements for systems with automatic sound pressure level control to compensate for fluctuating ambient noise levels. This International Standard is not applicable to spoken announcements heard through headphones or earphones, or to spoken announcements heard with the ear close to the speech sound source, such as in ear speakers specified in IEC 60268-7. This International Standard considers only the audibility of speech and not the process of speech understanding.

This International Standard does not specify the sound pressure levels of spoken announcements presented in emergency situations such as signals for fire alarms, gas leakage, and crime prevention; those are covered in ISO 7240-16 and ISO 7240-19. This International Standard does not specify the sound pressure levels of spoken announcements in automobiles; those are covered in ISO 15006.

NOTE 1 A spoken announcement presented in a repetitive manner from a product such as electronic home appliance is presumed to be heard as an auditory sign but not as a message and is therefore usable with a lower sound pressure level of the spoken announcement than this International Standard specifies.

NOTE 2 It is known that the word recognition performance of native speakers of the language of the announcement is better than that of non-native speakers.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

 

ISO 389-1, *Acoustics — Reference zero for the calibration of audiometric equipment — Part 1: Reference equivalent threshold sound pressure levels for pure tones and supra-aural earphones*

ISO 1996-1, *Acoustics — Description, measurement and assessment of environmental noise — Part 1: Basic quantities and assessment procedures*

ISO 3382-2:2008, *Acoustics — Measurement of room acoustic parameters — Part 2: Reverberation time in ordinary rooms*

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

IEC 60050-801, *International Electrotechnical Vocabulary — Chapter 801: Acoustics and electroacoustics*

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

IEC 61260, *Electroacoustics — Octave-band and fractional-octave-band filters*

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