INTERNATIONAL STANDARD

**ISO 19029**

First edition
2016-02-01

# Accessible design — Auditory guiding signals in public facilities

*Produits assistive pour des personnes avec l'incapacité — Conception accessible — Signaux de guidage auditifs dans les équipements publics*

Reference number
ISO 19029:2016(E)

© ISO 2016



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2016, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

# Contents

Page

**Foreword** ..... **iv**
**Introduction** ..... **v**
**1 Scope** ..... **1**
**2 Terms and definitions** ..... **1**
**3 Requirements and recommendations** ..... **2**
3.1 Sound characteristics ..... 2
3.1.1 Envelope ..... 2
3.1.2 Frequency component ..... 2
3.2 Equipment ..... 3
3.2.1 Sound signal generator ..... 3
3.2.2 Loudspeaker ..... 4
3.2.3 Arrangement of loudspeakers ..... 4
3.3 Ambient sound environment ..... 5
3.3.1 Signal-to-noise ratio ..... 5
3.3.2 Auditory guiding signals for different goals ..... 5
3.3.3 Sound reflection and reverberation ..... 5
3.3.4 Operation of auditory guiding signals ..... 5
**Bibliography** ..... **6**

© ISO 2016 – All rights reserved

# 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).

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 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 173, *Assistive products for persons with disability*, Subcommittee SC 7, *Accessible design*.


© ISO 2016 – All rights reserved

# Introduction

When the persons with seeing impairment and blindness walk and travel independently, the auditory guiding signals in public facilities for mobility assistance are very beneficial for them to know the location (i.e. direction and distance).

This International Standard provides the guidelines of sound characteristics and specifications of sound equipment of the auditory guiding signals in public facilities for mobility assistance of mainly the persons with seeing impairment and blindness. The provided sound characteristics and specifications of sound equipment enable the user to detect the sound location correctly even in the noisy environment.

This International Standard is useful for the sound designers who design the auditory guiding signals in public facilities, and the designers who plan the public facilities.

© ISO 2016 – All rights reserved

# Accessible design — Auditory guiding signals in public facilities

## 1 Scope

This International Standard specifies the sound characteristics of auditory guiding signals for persons with seeing impairment and blindness to provide the location and direction information of particular public facilities. The public facilities include facilities such as railway stations, airports, ports, bus terminals, government offices, libraries, community centres, parks, schools, hospitals, theatres, large supermarkets, and its toilets, stairs, etc.

EXAMPLE As an auditory guiding signal, a chime sound is emitted from the ticket gate of a railway station. Pedestrians, including persons with seeing impairment and blindness, are able to know the location of the ticket gate by detecting the location of the chime sound.

NOTE 1 The auditory guiding signals are also helpful for sighted persons.

This International Standard also specifies the design or usage of the equipment that provides auditory guiding signals.

This International Standard does not specify the characteristics of the alerts, such as alarm sounds or emergency signals.

NOTE 2 The auditory danger signals are covered by ISO 7731.

This International Standard does not specify the characteristics of auditory guiding signals coming from the personal mobile equipment that is worn by persons with seeing impairment and blindness.

## 2 Terms and definitions

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

**2.1**
**auditory guiding signal**
sound signal that provides the location and direction information of particular public facilities

**2.2**
**harmonic tone**
sound that consists of the fundamental frequency component and its multiple frequency components

EXAMPLE Sounds that have a periodical waveform such as musical tone, triangle wave sound, rectangle wave sound, and saw-teeth wave sound.

**2.3**
**sound signal generator**
equipment that generates the electric analogue signal to be provided to the loudspeaker

**2.4**
**goal**
point that *auditory guiding signal* (2.1) intends to guide

EXAMPLE Entrance of the facility, ticket gate of the railway station, restroom, beginning point of stairs, etc.

**2.5**
**emission angle**
angle in where sound attenuation is less than 10 dB from that of emission axis

© ISO 2016 – All rights reserved