
**Accessible design — Application of
braille on signage, equipment and
appliances**

Conception accessible — Méthodes d'affichage des signes en braille

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO 17049:2013](https://standards.iteh.ai/catalog/standards/sist/324db3ce-3b08-420c-af93-d12684a2e98c/iso-17049-2013)

<https://standards.iteh.ai/catalog/standards/sist/324db3ce-3b08-420c-af93-d12684a2e98c/iso-17049-2013>



iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO 17049:2013

<https://standards.iteh.ai/catalog/standards/sist/324db3ce-3b08-420c-af93-d12684a2e98c/iso-17049-2013>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2013

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
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

	Page
Foreword	iv
1 Scope	1
2 Terms and definitions	1
3 Specifications for braille	2
3.1 Braille character, word and line.....	2
3.2 Configuration and spacing of braille dot and cell.....	2
3.3 Exclusion zone.....	3
3.4 Dimensions and shape of braille dot.....	4
3.5 Correlation among dimensional parameters of braille.....	4
4 Application of braille on signage, equipment and appliances	4
4.1 General.....	4
4.2 Braille on signage.....	5
4.3 Braille for the controls of equipment and appliances.....	6
Bibliography	8

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO 17049:2013](https://standards.iteh.ai/catalog/standards/sist/324db3ce-3b08-420c-af93-d12684a2e98c/iso-17049-2013)

<https://standards.iteh.ai/catalog/standards/sist/324db3ce-3b08-420c-af93-d12684a2e98c/iso-17049-2013>

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. 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. 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 17049:2013](https://standards.iteh.ai/catalog/standards/sist/324db3ce-3b08-420c-af93-d12684a2e98c/iso-17049-2013)

<https://standards.iteh.ai/catalog/standards/sist/324db3ce-3b08-420c-af93-d12684a2e98c/iso-17049-2013>

Accessible design — Application of braille on signage, equipment and appliances

1 Scope

This International Standard specifies the fundamental requirements for braille used on signage, equipment and appliances, including the dimensional parameters of braille and the characteristics of materials used, and the guidelines for practical implementation.

2 Terms and definitions

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

2.1

signage

means of conveying information about name, direction, location, usage, safety or a form of action

2.2

equipment

permanent device or machine used in daily life in a house, an office or publicly accessible places

EXAMPLE Such devices or machines include kitchen equipment, a copying or printing machine, an automatic teller machine, a ticket kiosk or a lift.

Note 1 to entry: In ISO 9999:2011, 6.3, and 183003, the term “elevator” is used for lift.

2.3

appliance

movable device or machine used in daily life, such as an electric appliance for household or office use

2.4

tactile reading

recognizing braille and other tactile information by touch

2.5

tactile readability

ease of reading braille and other tactile information by touch

2.6

braille cell

space for the braille pattern, comprising up to six predefined dots set out in two columns of three

2.7

braille pattern

combination of raised dots within a braille cell

2.8

exclusion zone

area where nothing is placed around a braille cell or cells

2.9

button

operative device, such as pressure sensitive button, pressure sensitive surface, touch sensitive button, and touch sensitive surface

2.10

dial

control which persons physically rotate in order to operate a function

3 Specifications for braille

3.1 Braille character, word and line

The braille character is composed of single braille patterns or a combination of braille patterns; the braille word is composed of one or more braille characters.

Braille patterns are all placed within the braille cell and they require the space of the braille cell. A braille cell requires the space of all six nominal dots. Vacant dots shall not be neglected because they are a part of the braille pattern.

Where a braille character or word appears in isolation, there shall be an exclusion zone around such a character or word.

Codes and format of braille characters, which are commonly used and recognized in each country, shall be adopted.

Braille shall be arranged to allow tactile reading to be performed consistent with the braille reading order in the language in which it is presented, e.g. left to right.

3.2 Configuration and spacing of braille dot and cell

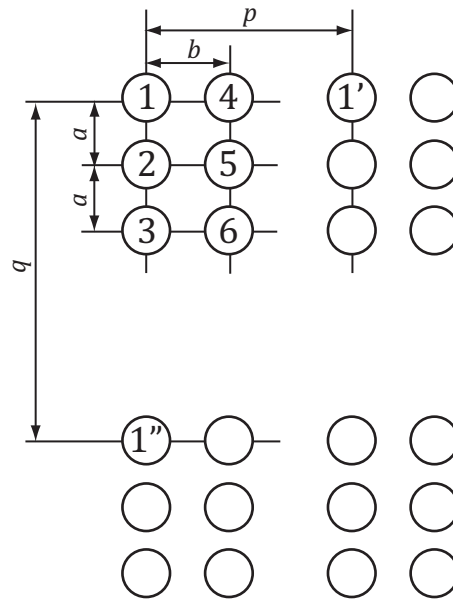
The configuration of braille dots and cells shall be in accordance with [Figure 1](#); the spacing shown as *a*, *b*, *p* and *q* shall be in the range shown in [Table 1](#).

Specifications should be in line with national or regional standards, if applicable.

Table 1 — Spacing between braille dots and cells

Dimensions in millimetres

Parameters	Description	Distance between dot centres
<i>a</i>	Vertical dot spacing (spacing between dot 1 and dot 2)	2,2 to 2,8
<i>b</i>	Horizontal dot spacing (spacing between dot 1 and dot 4)	2,0 to 2,8
<i>p</i>	Cell spacing (spacing between dot 1 and dot 1')	5,1 to 6,8
<i>q</i>	Line spacing (spacing between dot 1 and dot 1'')	10,0 to 15,0



Key

- a vertical dot spacing (spacing between dot 1 and dot 2)
- b horizontal dot spacing (spacing between dot 1 and dot 4)
- p cell spacing (spacing between dot 1 and dot 1')
- q line spacing (spacing between dot 1 and dot 1'')

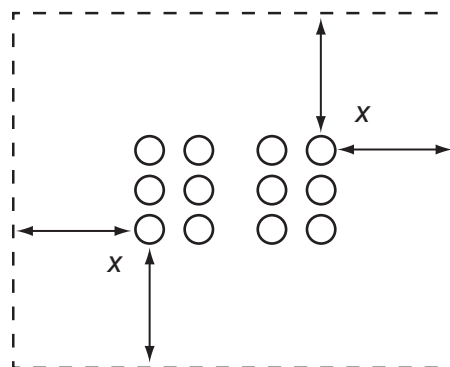
(standards.iteh.ai)
Figure 1 — Configuration and spacing of braille dots and cells

ISO 17049:2013

<https://standards.iteh.ai/catalog/standards/sist/324db3ce-3b08-420c-af93-d12684a2e98c/iso-17049-2013>

3.3 Exclusion zone

An exclusion zone, x , of at least 6 mm shall be placed around all sides of the isolated braille cell or cells (see [Figure 2](#)).



Key

- x exclusion zone

Figure 2 — Exclusion zone around isolated cells

The exclusion zone shall be used to prevent a protrusion from disturbing the movement of fingers in reading braille (see [Figure 3](#)).

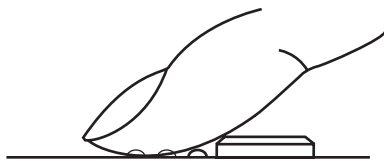
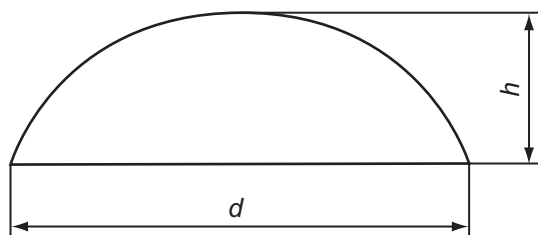


Figure 3 — Example of a protrusion hindering a finger from reading braille

3.4 Dimensions and shape of braille dot

The cross-section of the braille dot shall be in accordance with Figure 4 and Table 2.

The profile of the braille dot shall be rounded. It shall not be flat or pointed.



Key

d diameter of the base

h perpendicular height of braille dot centre

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Figure 4 — Cross-section of a braille dot

ISO 17049:2013

<https://standards.iteh.ai/catalog/standards/sist/324db3ce-3b08-420c-af93-8822c8e8202a>

Table 2 — Dimensions of cross-section of a braille dot

Dimensions in millimetres

Parameter	Size
<i>d</i>	1,0 to 1,7
<i>h</i>	0,3 to 0,7

The perpendicular height of braille dot centre, *h*, should be greater than 0,5 mm when used in outdoor arrangement and on or in vehicles of means of transport.

3.5 Correlation among dimensional parameters of braille

Dimensional parameters of braille shall reflect the technical correlations between the individual parameters. For example if the smallest dot diameter and dot spacing are chosen, all other dimensions shall be proportional.

4 Application of braille on signage, equipment and appliances

4.1 General

Materials used for braille shall

- attain good tactile readability,
- have a surface and edge that will not cause harm when touched,
- be durable,

- not be damaged in normal use, and
- not be adversely affected by the external thermal environment, moisture or liquid.

Where braille and print are both used, the readability of one format shall not impair the readability of the other.

Braille shall be located on a place that is safe to touch, e.g. away from a source of heat or a sharp edge.

Where the information displayed in braille is revised, braille information shall be immediately corrected accordingly.

4.2 Braille on signage

4.2.1 General

Signage with braille shall be located in appropriate positions for easy access.

The number of cells in a single line shall be as follows:

- a) if there is only one column in one line, the number of cells shall not exceed 40;
- b) if there are multiple columns in one line, the number of cells in one column shall not exceed 40 and the total number of cells shall not exceed 80 in a single line;
- c) an exclusion zone of three or more cells shall be placed between each column in a single line.

4.2.2 Handrail

One application, among others, is on a handrail (see [Figure 5](#)).

Braille shall be displayed parallel to the longitudinal direction of a handrail.

Braille shall be displayed on the area where it can be most easily read, and which allows safe reading by touch when a hand holds the handrail. Such an area should be chosen by considering the shape, thickness, surroundings and the method by which the handrail is fixed.

For a handrail on stairs, braille should be displayed at the end of the handrail, which is an extension of tactile walking surface indicators (TWSI) (see ISO 23599), if any, on the floor in front of the stairs.

Handrails with braille should have extensions, preferably of at least 300 mm in length on both ends of the staircase; this is to allow for safe reading of braille.