

# TECHNICAL SPECIFICATION

Electric toasters for household and similar use – Methods and measurements  
for improving accessibility

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IEC TS 62835:2015

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# TECHNICAL SPECIFICATION

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INTERNATIONAL  
ELECTROTECHNICAL  
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**ELECTRIC TOASTERS FOR HOUSEHOLD AND SIMILAR USE –  
METHODS AND MEASUREMENTS FOR IMPROVING ACCESSIBILITY**

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Technical Specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC TS 62835, which is a Technical Specification, has been prepared by IEC technical committee 59: Performance of household and similar electrical appliances.

The text of this Technical Specification is based on the following documents:

Enquiry draft	Report on voting
59/618/DTS	59/631/RVC

Full information on the voting for the approval of this Technical Specification can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

In this Technical Specification, the following type is used:

– *compliance statements: in italic type.*

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

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## INTRODUCTION

Ever greater demands are now being placed on the accessibility of products, but despite this, there has been no easily available data for assessing and evaluating products from an accessibility perspective. An effective way to conduct product development is to work on the basis of adequate testing methods for assessing various properties, as accessibility recommendations can be formulated more clearly and be given greater emphasis during the development of appliances. Accessibility properties must be prioritised alongside functional, technical and production-related properties.

For this purpose, an inventory of sources with a product-accessibility focus has been drawn up, which has given useful basic information and data for setting recommendations for the design of products. This Technical Specification on toasters is a result of this work, and provides information in the form of accessibility facts and an understanding of the interaction of user and appliance.

This Technical Specification is being issued in the Technical Specification series of publications (according to the ISO/IEC Directives, Part 1, 3.1.1.1) as a “prospective standard for provisional application” in the field of accessibility of household appliances because there is an urgent need for guidance on how standards in this field should be used to meet an identified need.

This Technical Specification provides recommendations and measurements for product characteristics of household toasters, which contribute to their accessibility and underlying ergonomic principles. These recommendations originate from scientific knowledge and the theory of ergonomics, physiology, product design and other relevant disciplines. This Technical Specification applies ISO/IEC Guide 71 and ISO/TR 22411 to toasters. Data is drawn from ISO/TR 22411 and, if not specified there, from other sources.

The purpose of designing and evaluating toasters with regard to accessibility is to maximize the number of people who can readily use the products. Accessible products can be designed by incorporating product characteristics that are beneficial for the user. This Technical Specification explains the characteristics, which meet the needs and abilities of an intended user.

However, the characteristics that a product needs for accessibility are dependent on the type of user and task. This Technical Specification therefore includes objective criteria regarding accessibility for product characteristics of the toaster.



## ELECTRIC TOASTERS FOR HOUSEHOLD AND SIMILAR USE – METHODS AND MEASUREMENTS FOR IMPROVING ACCESSIBILITY

### 1 Scope

This Technical Specification contains accessibility recommendations to enable the use of toasters by older persons and persons with disabilities. It provides guidance to achieve more accessible toasters.

This Technical Specification provides test methods and data that support accessible design.

This Technical Specification gives guidance to apply ISO/TR 22411 and ISO/IEC Guide 71 to the design of toasters and to IEC 60442. It does not deal with safety issues nor cover toasters for professional use.

### 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.

IEC 60335-1, *Household and similar electrical appliances – Safety – Part 1: General requirements*

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IEC 60335-2-9, *Household and similar electrical appliances – Safety – Part 2-9: Particular requirements for grills, toasters and similar portable cooking appliances*

IEC 60417, *Graphical symbols for use on equipment* (available at: <http://www.graphical-symbols.info/equipment>)

IEC 60442:1998, *Electric toasters for household and similar purposes – Methods for measuring the performance*

IEC 60442:1998/AMD1:2003<sup>1</sup>

IEC TR 61592, *Household electrical appliances – Guidelines for consumer panel testing*

IEC 82079-1:2012, *Preparation of instructions for use – Structuring, content and presentation – Part 1: General principles and detailed requirements*

ISO/IEC Guide 37, *Instructions for use of products by consumers*

ISO/IEC Guide 71:2014, *Guide for addressing accessibility in standards*

ISO 2813, *Paints and varnishes – Determination of gloss value at 20 degrees, 60 degrees and 85 degrees*

ISO/TR 22411:2008, *Ergonomics data and guidelines for the application of ISO/IEC Guide 71 to products and services to address the needs of older persons and persons with disabilities*

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<sup>1</sup> There exists a consolidated edition 2.1 including IEC 60442:1998 and its Amendment 1:2003.

ISO 7000, *Graphical symbols for use on equipment – Registered symbols* (available at: <http://www.graphical-symbols.info/equipment>)

EN 12464-1, *Light and lighting – Lighting of work places – Part 1: Indoor work places*

EN 13300, *Paints and varnishes – Water-borne coating materials and coating systems for interior walls and ceilings. Classification*

### 3 Terms and definitions

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

#### 3.1 accessibility

extent to which products, systems, services, environments and facilities can be used by people from a population with the widest range of characteristics and capabilities to achieve a specified goal in a specified context of use

Note 1 to entry: Context of use includes direct use or use supported by assistive technologies.

Note 2 to entry: Adapted from ISO/TR 22411:2008, definition 3.6.

[SOURCE: ISO 26800:2011, 2.1]

#### 3.2 accessible design

design focused on diverse users to maximize the number of potential users who can readily use a system in diverse contexts

Note 1 to entry: This aim can be achieved by (1) designing systems that are readily usable by most users without any modification, (2) making systems adaptable to different users (by providing adaptable user interfaces) and (3) having standardized interfaces to be compatible with assistive products and assistive technology.

Note 2 to entry: Terms such as universal design, accessible design, design for all, barrier-free design, inclusive design and transgenerational design are often used interchangeably with the same meaning.

[SOURCE: ISO/IEC Guide 71:2014, 2.19]

#### 3.3 assistive product

any product (including devices, equipment, instruments and software), especially produced or generally available, used by or for persons with disability for participation, to protect, support, train, measure or substitute for body functions/structures and activities, or to prevent impairments, activity limitations or participation restrictions

[SOURCE: ISO/IEC Guide 71:2014, 2.15]

#### 3.4 assistive technology

equipment, product system, hardware, software or service that is used to increase, maintain or improve capabilities of individuals

Note 1 to entry: Assistive technology is an umbrella term that is broader than assistive products.

Note 2 to entry: Assistive technology can include assistive services, and professional services needed for assessment, recommendation and provision.

[SOURCE: ISO/IEC Guide 71:2014, 2.16]

**3.5****bread carriage**

part of the toaster that supports the bread and releases it at the end of the toasting process

[SOURCE: IEC 60442:1998, 3.5]

**3.6****browning control range**

certain setting on a scale that can be marked with numbers, symbols or shades of colour

[SOURCE: IEC 60442:1998, 3.6]

**3.7****impairments**

problems in body function or structure related to a significant deviation or loss

Note 1 to entry: Impairments can be temporary or permanent; progressive, regressive or static; intermittent or continuous.

[SOURCE: ISO/IEC Guide 71:2014, 2.5]

**3.8****lever**

device used to operate the bread carriage which may start, stop and abort the toasting process

Note 1 to entry: There may be other kinds of levers, e.g. to raise a warming rack.

**3.9****mechanical selection wheel**

partially exposed wheel that can be turned by moving the exposed edge and also used as a button by pressing on it to activate a function or select a setting

**3.10****touch control**

control actuated by contact with or proximity of a finger with little or no movement of the contact surface

**3.11****user**

person who accesses or interacts with the toaster

[SOURCE: ISO/IEC Guide 71:2014, 2.2, modified]

**4 Source of accessibility recommendations****4.1 General**

Recommendations and values used in this Technical Specification have been taken from documents listed under Clause 2 and the Bibliography where possible.

**4.2 Users' characteristics**

Detail about human abilities and the consequences of impairment are described in ISO/IEC Guide 71:2014, Clause 7.

Abilities and characteristics of people change during their life and vary substantially among individuals within the same age group.

Impairments can be temporary or permanent and generally increase with age. Sensory, physical and cognitive limitations vary from comparatively minor (such as mild seeing impairment) to significant limitations (such as deafness).

Although some impairments are minor in nature, combinations of impairments can impose significant limitations, as is often the case in ageing.

For ergonomic data see ISO/TR 22411:2008, Clause 9.

For principles of accessible design see ISO/TR 22411:2008, Annex A.

### 4.3 Body measurements

For details of body measurements applicable to toasters, for example hand and finger sizes, see Annex A.

## 5 Assessment of accessibility

### 5.1 General

It is intended that following this Technical Specification will result in a more accessible toaster that will meet the needs of most users.

To assess the accessibility of a toaster, a wide range of abilities needs to be considered.

### 5.2 Tasks the user has to carry out

When a toaster is used by a disabled person it is useful to analyse the tasks involved in five steps:

- 1) **Perceive**: to find the product or its parts required to perform the task
- 2) **Recognize**: to identify and understand the parts required to perform the task
- 3) **Reach**: physical access to the parts required to perform the task
- 4) **Operate**: to perform the task
- 5) **Monitor**: to receive feedback of the operation

Table 1 lists the tasks usually involved in using a toaster. For each task and step there are implications for people with different impairments and these are also specified.

Details about human abilities and the consequences of impairment are described in ISO/IEC Guide 71:2014, Clause 7 and briefly summarized below. The following impairments are considered:

<b>Partial sight</b>	<b>PS</b>
Seeing images indistinctly, reduced field of vision, inability to distinguish colours	
<b>Blindness</b>	<b>B</b>
No useful vision and dependent on tactile and auditory input	
<b>Deafness</b>	<b>D</b>
Inability to hear sound and dependent on visual and tactile input	
<b>Hearing impairment</b>	<b>H</b>
Reduced ability to sense the presence of sounds and to discriminate and comprehend sound	
<b>Touch impairment</b>	<b>T</b>
Reduced ability to sense surfaces and their texture or quality	
<b>Dexterity impairment</b>	<b>DI</b>
Restricted use of hand and arm for handling objects	
<b>Manipulation impairment</b>	<b>MA</b>
Restricted use of hands, arms, feet or legs to reach, carry, move and manipulate objects	