SLOVENSKI STANDARD
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Ergonomija - Dostopno načrtovanje - Indikatorji svetil za proizvode (ISO/DIS 24550:2019)

Ergonomics - Accessible design - Indicator lights on consumer products (ISO/DIS 24550:2019)

Ergonomie - Zugängliche Gestaltung - Kontrollleuchten an Konsumgütern (ISO/DIS 24550:2019)

Ergonomie - Conception accessible - Voyants lumineux sur les produits de consommation (ISO/DIS 24550:2019)

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Foreword

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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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This document was prepared by Technical Committee ISO/TC 159, *Ergonomics*, Subcommittee SC 4, *Ergonomics of human-system interaction*.

Introduction

Indicator lights of consumer products provide important information to use products properly. Although their importance is recognized widely, many difficulties exist in relation to indicator lights such as insufficient on/off visibility, unclear implications of lighting modes, and discomforting glare are being claimed by users, particularly by older persons or persons with visual disabilities. These claims results from the lack of a relevant standard related to indicator lights design. This standard is intended to provide design guidelines for adequate brightness, colour, and use of blinking lights of indicator lights considering the needs of older persons and persons with visual disabilities.

This international standard adopts the concepts of accessibility given in ISO/IEC Guide 71:2014 and in ISO/TR 22411:2008.

Ergonomics — Accessible design — Indicator lights on consumer products

1 Scope

This International Standard specifies design guidelines for indicator lights, mainly LED sourced, on consumer products for use by older people and people with visual disabilities. It does not consider the needs of persons who are blind.

Indicator lights include those that inform users visually about the conditions, changes in functional status and settings, and malfunction of products. They convey information by light on/off, time-modulated intensity, blinking, colour, luminance level, and layout.

This document addresses household and home appliances. It excludes electronic displays presenting characters and graphics, machinery, and appliances in special use for professional, technical, and industrial applications.

2 Normative references

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

ISO 17049:2013, *Accessible design — Application of braille on signage, equipment and appliances*

ISO 9241-391, *Ergonomics of human-system interaction — Part 391: Requirements, analysis and compliance test methods for the reduction of photosensitive seizures*

CIE 017/E: 2011, *ILV: International Lighting Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC Guide 71 and CIE 017/E:2011 and the following apply.

3.1
consumer product
product that is intended to be acquired and used by an individual for personal rather than professional use

[SOURCE: ISO/TS 20282-2:2013(en), 4.3]

3.2
indicator light
light which is associated with and indicative of the operation of a product

Note 1 to entry: Indicator light informs users about the conditions, changes in functional statuses and settings, or malfunction of products.

Note 2 to entry: Indicator light conveys information by light on/off, time-modulated intensity, blinking, colour, luminance level, and layout.

Note 3 to entry: Indicator light may have different shapes, e.g. circular, rectangular, triangular, or arrow shape.

Note 4 to entry: Indicator light includes lights with a light conductor or cover. It may be located on a control panel, labelled with text or an icon, or be an integral part of a control element.

3.3
small indicator light
indicator light emitting area that is smaller than 20' in diameter of the visual angle

Note 1 to entry: Visual angle of 20' corresponds to 3 mm size viewed at the 50 cm distance.

Note 2 to entry: Visual appearance of small indicator light smaller than 20' of visual angle changes in brightness and colour. According to the spatial summation of vision, brightness of a light smaller than 20' of visual angle changes proportionally with its size. Brightness of a light larger than 20' of visual angle is determined by luminance only. Colour for a smaller visual field than 20' also changes its appearance described small-field tritanopia, a kind of colour defect.

3.4
alarm light
light information and the optical source to announce emergencies and danger

3.5
low vision
a person with low vision is one who has impairment of visual functioning even after treatment and/or standard refractive correction, and has a visual acuity of less than 6/18 to light perception, or a visual field less than 10 degrees from the point of fixation, but who uses, or is potentially able to use, vision for the planning and/or execution of a task for which vision is essential

[SOURCE: Low Vision Services or Care, WHO]

3.6
fundamental colour
set of basic colours perceived by people with normal colour vision, which are red, orange (yellow-red), yellow, green-yellow, green, blue-green, blue, purple-blue, purple, red-purple, black, grey, and white

Note 1 to entry: Black and grey are not applicable for luminous mode, such as indicator lights.

3.7
luminance
the intensity of light emitted from a surface per unit area and per unit solid angle in a given direction

Note 1 to entry: quantitative definition is in CIE 017/E: 2011.

3.8
Photopic vision
vision by the normal eye in which cones are the principle active photoreceptors

Note 1 to entry: photopic vision normally occurs when the eye is adapted to levels of luminance of at least 5 cd/m^2.

Note 2 to entry: Colour perception is typical of photopic vision.

[SOURCE: CIE 017/E: 2011]

3.9
mesopic vision
vision by the normal eye intermediate between photopic and scotopic vision

Note 1 to entry: in mesopic vision, both the cones and the rods are active.

[SOURCE: CIE 017/E: 2011]