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टेक्नॉलजीस

भाग 101

अनुभाग 1 शब्दावली

**Wearable Electronic Devices and
Technologies**

Part 101

Section 1 Terminology

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NATIONAL FOREWORD

This Indian Standard (Part 101/Sec 1) which is identical to IEC 63203-101-1 : 2021 'Wearable electronic devices and technologies Part 101-1 Terminology' issued by the International Electrotechnical Commission (IEC) was adopted by the Bureau of Indian Standards on the recommendation of wearable Electronic Devices and Technologies Sectional Committee and the approval of the Electronics and Information Technology Division Council.

The text of IEC standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are however not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words 'International Standard' appears referring to this standard, they should be read as 'Indian Standard'; and
- b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be same as that of the specified value in this standard

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WEARABLE ELECTRONIC DEVICES AND TECHNOLOGIES

PART 101

SECTION 1 TERMINOLOGY

1 Scope

This document provides terminology frequently used in literature related to wearable electronic devices and technologies in the IEC 63203 series. This list includes wearable electronic devices and technologies, near-body wearable electronics, on-body wearable electronics, in-body wearable electronics, and electronic textiles.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1**wearable electronic device**

electronic device intended to be located near to, on, or in, a human body

3.1.1**near-body wearable electronic device****near-body wearable electronics**

wearable electronic device intended to be located near a human body but which does not make direct contact with its external surface

Note 1 to entry: Equipment that is not wearable (e.g. that operates in close proximity to the human body) is not considered to be near-body wearable electronics.

3.1.2**on-body wearable electronic device****on-body wearable electronics**

wearable electronic device intended to be located on the external surface of a human body and which makes direct contact with it

Note 1 to entry: Portable equipment that is held in hand during use is not considered to be on-body wearable electronics.

3.1.3**in-body wearable electronic device****in-body wearable electronics**

wearable electronic device intended to be located inside a human body

3.2

wearable electronic technology

technology related to the development of wearable electronic devices

Note 1 to entry: Examples: materials, applications, devices, components, systems or network.

3.3

electronic skin

wearable electronic device attached on human skin, the physical behaviour of which is close to that of human skin (i.e. flexible and elastic)

Note 1 to entry: Some electronic skins might mimic certain functionalities of human skin.

3.4

patchable electronics

wearable electronic device or component that can be attached to the human body

3.5

biodegradable electronics

electronic device and component that naturally dissolve after proper functioning

Note 1 to entry: Examples of functions: body monitoring, wound healing, therapy delivery.

3.6

ingestible electronics

in-body electronic device or component that is ingested orally

3.7

conformable wearable electronic device

wearable electronic device able to change form or shape in response to the external environment

3.8

stretchable electronic device

electronic device able to operate under stretched conditions and having an elastic behaviour

3.9

(electric) sensor

device which, when excited by a physical phenomenon, produces an electric signal characterizing the physical phenomenon

Note 1 to entry: Sensors such as touch sensors, temperature sensors, motion sensors, vital-voltage sensors, or electrocardiogram (ECG) sensors are specific types of sensors used in wearable devices.

[SOURCE: IEC 60050-151:2001, 151-13-48, modified – Note 1 to entry has been added.]

3.10

stretchable substrate

stretchable material

substrate or material able to recover original size and shape immediately after the removal of the extending force causing deformation

Note 1 to entry: In this document, the notion of "stretchability" is based on the elasticity of the substrate.

3.11

flexible substrate

flexible material

substrate or material able to be deformed under bending force to a certain point without causing breakage

3.12
electronic textile
e-textile

fibre, yarn, fabric, or textile end product combined with at least one electronic component or device

Note 1 to entry: Electronic devices, components and systems can be made at the levels of fibres, yarns, fabrics and garments.

3.13
smart textile system

textile-based system which exhibits an intended and exploitable response as a reaction either to changes in its surroundings/environment or to an external signal/input

[SOURCE: ISO/TR 23383:2020, 3.8]

3.14
textile electrode

electrode made of conductive fibre, conductive yarn or conductive fabric

3.15
textile capacitor

two-terminal textile material characterized by its capacitance

3.16
conductive fibre

fibre, such as staple or filament, having electrical conductivity

Note 1 to entry: Conductive fibre can be used for signal line, power transmission line, and electromagnetic shield.

Note 2 to entry: The conductive fibres can constitute conductive yarns.

3.17
conductive yarn

yarn having electrical conductivity

Note 1 to entry: Conductive yarn can be used for signal line, power transmission line, and electromagnetic shield.

3.18
conductive fabric

fabric, such as woven fabric, knitted fabric, or nonwoven fabric, having electrical conductivity

Note 1 to entry: Conductive fabric can be used at the level of signal line, power transmission line, and electromagnetic shield.

3.19
insulating material
insulant

material used to prevent electric conduction between conductive elements

Note 1 to entry: In the field of electromagnetism the term "insulant" is also used as a synonym for "insulating medium".

[SOURCE: IEC 60050-151:2001, 151-15-35]

3.20

insulating fibre

fibre, such as staple or filament, used to prevent electric conduction between conductive elements

Note 1 to entry: Fibre may also provide thermal, acoustic, or other types of insulation, but electrical insulation is most relevant to e-textiles.

3.21

insulating yarn

yarn used to prevent electric conduction between conductive elements

Note 1 to entry: Yarn may also provide thermal, acoustic, or other types of insulation, but electrical insulation is most relevant to e-textiles.

3.22

insulating fabric

fabric, such as woven fabric, knitted fabric, or nonwoven fabric, used to prevent electric conduction between conductive elements

Note 1 to entry: Fabric may also provide thermal, acoustic, or other types of insulation, but electrical insulation is most relevant to e-textiles.

3.23

semiconductive fibre

fibre, such as staple or filament, having electrical semiconducting properties which, due to charge carriers of both signs, are normally in the range between the electrical conductivities of conductors and insulating media and in which the volumic numbers of charge carriers can be changed by external means

3.24

semiconductive yarn

yarn having electrical semiconducting properties which, due to charge carriers of both signs, are normally in the range between the electrical conductivities of conductors and insulating media and in which the volumic numbers of charge carriers can be changed by external means

3.25

semiconductive fabric

fabric, such as woven fabric, knitted fabric, or nonwoven fabric, having electrical semiconducting properties which, due to charge carriers of both signs, are normally in the range between the electrical conductivities of conductors and insulating media and in which the volumic numbers of charge carriers can be changed by external means

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IEC 60050-151:2001, *International Electrotechnical Vocabulary (IEV) – Part 151: Electrical and magnetic devices*

ISO/TR 23383:2020, *Textiles and textile products – Smart (Intelligent) textiles – Definitions, categorisation, applications and standardization needs*

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