

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Flexible display devices –
Part 1-1: Terminology and letter symbols
(standards.iteh.ai)

Dispositifs flexibles d'affichage –
Partie 1-1: Terminologie et symboles littéraux
IEC 62715-1-1:2013
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FLEXIBLE DISPLAY DEVICES –

Part 1-1: Terminology and letter symbols

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International Standard IEC 62715-1-1 has been prepared by IEC technical committee 110: Electronic display devices.

The text of this standard is based on the following documents:

CDV	Report on voting
110/441/CDV	110/480A/RVC

Full information on the voting for the approval of this standard 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.

A list of all the parts in the IEC 62715 series, under the general title *Flexible display devices*, can be found on the IEC website.

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

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FLEXIBLE DISPLAY DEVICES –

Part 1-1: Terminology and letter symbols

1 Scope

This part of IEC 62715 gives the preferred terms, their definitions and symbols for flexible display devices, with the object of using the same terminology when standards are prepared in different countries.

2 Terms and definitions

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

2.1 Classification of terms

Terms for flexible display devices were classified as follows:

- general terms (2.2)
- terms related to physical properties (2.3)
- terms related to constructive elements (2.4)
- terms related to performances and specifications (2.5)
- terms related to the production process (2.6)

2.2 General terms

2.2.1

flexibility

mechanical pliancy to an external mechanical stress

2.2.2

flexible display device

flexible display panel and flexible module that are mechanically bendable in one or more of the steps of substrate handling, manufacturing, storage, use, operation, shipping, and relocation

Note 1 to entry: Preferably, flexible display devices are bendable, compliant to curved surface, rollable, or foldable without creasing.

Note 2 to entry: Flexible display devices are generally rugged under rough handling.

2.2.3

flexible display module

flexible display device that has external drivers, optical films and other input/output interactive films such as touch screen or sensing films

2.2.4

flexible display panel

flexible display device without external drivers

2.2.5

flexible display

product which contains flexible display modules and which is bendable for end users

2.3 Terms related to physical properties

2.3.1

malleability

ability of flexible display devices to deform under compressive stress and to keep the deformed shape after releasing the stress

2.3.2

flexural strength

maximum bending stress that can be applied to flexible display devices without causing any deterioration of image quality, permanent distortion or breakage

2.3.3

flexural modulus

ratio of bending stress to the resulting strain in flexural deformation of flexible display devices

2.3.4

cyclic stress

repetitive application of an external stimulus, such as mechanical force or exposure to temperature, to flexible display devices over time

Note 1 to entry: In case of mechanical cyclic stress, it is typically called "fatigue."

2.4 Terms related to constructive elements

2.4.1

gas barrier layer

type of passivation layer that hinders contaminants in vapour or gaseous forms, from transmitting into the active device area

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Note 1 to entry: The gas barrier layer is typically employed on substrates or directly on the active device to prevent water or oxygen from permeating into the active device area.

2.4.2

flexible substrate

substrate with flexibility where the flexible display device is composed on, such as plastic film, thin glass, metal foil, or paper

2.4.3

buffer layer

type of passivation layer that is inserted between the substrate and electronic elements of the flexible display device to mitigate the defect effect on the display fabrication process and/or the operation performance

Note 1 to entry: The buffer layer is typically employed on a thin glass substrate to hinder breakage when subject to a bending.

2.4.4

insulation layer

type of passivation layer that electrically separates the metal foil substrate from the conductive part of a device

Note 1 to entry: It can be applied to a substrate surface to create a smooth surface.

2.5 Terms related to performances and specifications

2.5.1

bending radius

radius of arc corresponding to the curvature of the central line between innermost and outermost surfaces of a flexible display device during a bending test

2.5.2

critical bending radius

minimum bending radius at which a flexible display device operate without causing any deterioration of image quality, permanent distortion or breakage

2.5.3

strain

ratio of the amount of change in the length of a flexible display device to its original length when an external stimulus is applied to the device

2.5.4

calcium test

Ca test

type of gas permeation test method using calcium

Note 1 to entry: The permeation rate of a substance used for the encapsulation of a display cell or the gas barrier layer of the substrate is measured by monitoring changes in the optical transmission or electrical property of the calcium layer. The calcium layer is degraded due to the permeation of moisture or other gases through the substance.

Note 2 to entry: The time dependence of the calcium change process is inversely proportional to the permeation rate.

2.6 Terms related to the production process

2.6.1

carrier

substance to which a flexible substrate is temporarily attached for handling purposes during display fabrication process

2.6.2

carrier lamination

attachment of flexible substrates to carriers by gluing them with heat and/or pressure

2.6.3

carrier delamination

detachment of the laminated substrates or fabricated flexible display devices from carriers

2.6.4

roll-to-roll process

process of creating an electronic element of the display device on a roll of flexible substrate in a continuous manner

2.6.5

direct writing lithography

lithography for the fabrication of electronic display devices that does not use a developing process to make patterns

3 Letter symbols (quantity symbols/unit symbols)

3.1 Classification

The classification is given in Table 1 and Table 2.

- Symbols related to physical properties (Table 1).
- Symbols related to performances and specifications (Table 2).

3.2 Letter symbols

Table 1 and Table 2 summarise the symbols for flexible displays (to be added in the future).

Table 1 – Symbols related to physical properties

Term	Symbol	Unit
Strain	ϵ	%
Stress	σ	Pa

Table 2 – Symbols related to performances and specifications

Term	Symbol	Unit
Bending radius	r	m

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