



SLOVENSKI STANDARD
oSIST prEN IEC 63203-301-1:2023
01-april-2023

Nosljive elektronske naprave in tehnologije - 301-1. del: Preskusna metoda elektrokromnih plasti za nosljivo opremo

Wearable electronic devices and technologies - Part 301-1: Test method of electrochromic films for wearable equipments

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ICS:

59.080.80 Inteligentne tekstilije Smart textiles

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124/212/CDV

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IEC TC 124 : WEARABLE ELECTRONIC DEVICES AND TECHNOLOGIES	
SECRETARIAT: Korea, Republic of	SECRETARY: Mr Jae Yeong Park
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: <input type="checkbox"/> Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: <input type="checkbox"/> EMC <input type="checkbox"/> ENVIRONMENT <input type="checkbox"/> QUALITY ASSURANCE <input type="checkbox"/> SAFETY	
<input checked="" type="checkbox"/> SUBMITTED FOR CENELEC PARALLEL VOTING Attention IEC-CENELEC parallel voting The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting. The CENELEC members are invited to vote through the CENELEC online voting system.	<input type="checkbox"/> NOT SUBMITTED FOR CENELEC PARALLEL VOTING

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TITLE:

Wearable electronic devices and technologies - Part 301-1: Test method of electrochromic films for wearable equipments

PROPOSED STABILITY DATE: 2027

NOTE FROM TC/SC OFFICERS:

WG3 agreed the project proceeds to the CDV and it was agreed in IEC TC124 plenary meeting held in San Francisco on 2022-11-03.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

WEARABLE ELECTRONIC DEVICES AND TECHNOLOGIES

PART 301-1: Test method of electrochromic films for wearable equipment

FOREWORD

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This document was prepared by Technical Committee IEC/TC124, Wearable electronic devices and technologies.

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

FDIS	Report on voting
124/XX/FDIS	124/XX/RVD

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.

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

- 79 • reconfirmed,
- 80 • withdrawn,
- 81 • replaced by a revised edition, or
- 82 • amended.

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WEARABLE ELECTRONIC DEVICES AND TECHNOLOGIES

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PART 301-1: Test method of electrochromic films for wearable equipment

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1 Scope

139 This part of IEC 63203-301-1 specifies procedures and definitions for the test method of
140 electrochromic films for wearable equipment. This standard deals with the colour changing
141 range in visible light and the electrochromic properties of transmittance, response time and
142 evaluation method of long term stability. This document excludes applications of electrochromic
143 films to displays.

144

2 Normative references

146 The following documents, in whole or in part, are normatively referenced in this document and
147 are indispensable for its application. For dated references, only the edition cited applies. For
148 undated references, the latest edition of the referenced document (including any amendments)
149 applies.

150 IEC60068-1:2013 Environmental testing - Part 1: General and guidance

3 Terms and definitions

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

153

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

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

3.1

transmittance

160 the ratio of transmitted power to incident power for given conditions of spectral composition,
161 polarization and geometrical distribution

162 Note – In optics, frequently expressed as transmittance density or as a percentage. In communication applications,
163 generally expressed in decibels.

164 [SOURCE: IEC 60050:1991, 731-03-31]

165

3.2

response time

168 the time from a sudden change of a control quantity until the corresponding change of an
169 output quantity has reached a specified fraction of its final value

170

171 [SOURCE: IEC 60050:1980, 431-02-12]

172

3.3

darkening time

175 the time from a sudden change of a control quantity until the corresponding change of an output
176 quantity has reached a dark stage of its final value

177 **3.4**
 178 **bleaching time**
 179 the time from a sudden change of a control quantity until the corresponding change of an output
 180 quantity has reached a bright stage of its final value

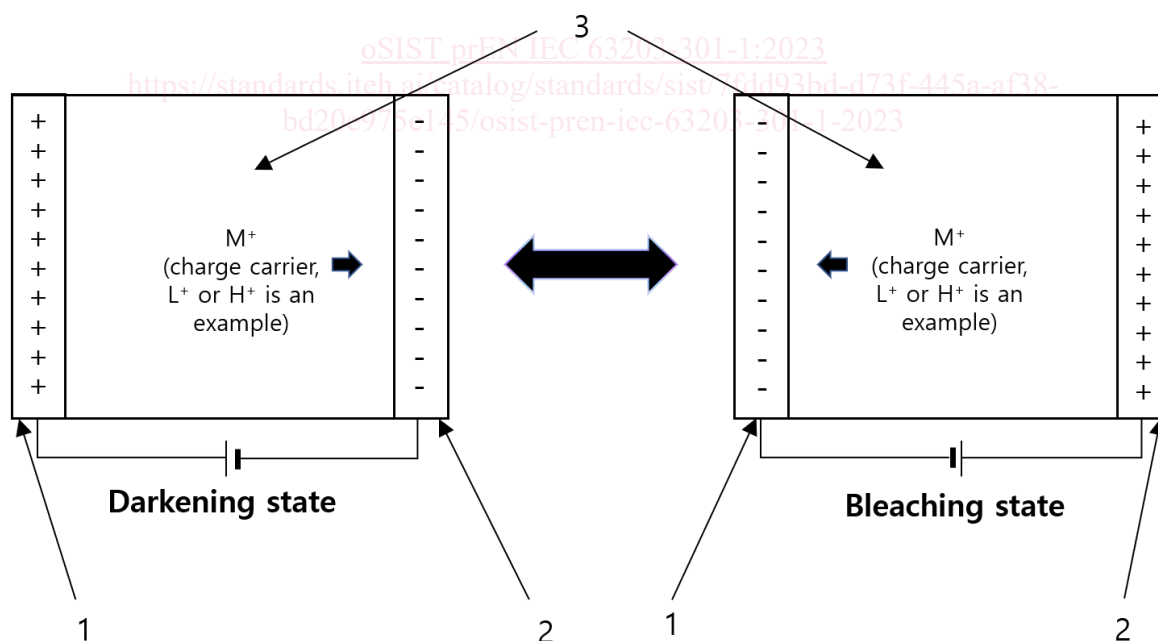
181 **3.5**
 182 **long term stability**
 183 property of the electrochromic system which implies that for a sufficiently small initial
 184 displacement from the rest position or for a sufficiently small disturbance the state variables
 185 remain within a sufficiently small neighbourhood of the rest position in long term
 186
 187

188 4 Test method of electrochromic films for wearable equipment

189 4.1 Overview

190 The electrochromic films are a material having a characteristic in which the colour of a material
 191 changes as ions of H^+ or Li^+ (H^+ or Li^+ is a kind of example) are injected or released by
 192 application of an electric field. Figure 1 show the two status of electrochromic film. The
 193 electrochromic film has consisted of two transparent electrodes which can be applied external
 194 electric field. The electrochromic materials have been coated on the transparent electrodes.
 195 The electrolyte is between the two electrodes. As the external electric field applied on the
 196 electrodes, the internal electrical potential of electrochromic materials has been changed. The
 197 changed potential affected the transmittance of the electrochromic layers.

198 In order to use the electrochromic films, the transmittance change and the response time for
 199 color changing of the devices shall be measured. The test procedure of the properties has been
 200 described in 4.3.



201

202

203 Key:

204 1 working electrode

205 2 counter electrode

206 3 electrolyte

207

Figure 1 – Colour changing status of bleached and darkening