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Part 201-4: Electronic textile - Test method for determining sheet resistance of conductive fabrics after abrasion

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.

IEC 63203-201-4 edition 1.1 contains the first edition (2024-12) [documents 124/290/FDIS and 124/301/RVD] and its amendment 1 (2025-12) [documents 124/321A/CDV and 124/355/RVC].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

IEC 63203-201-4 has been prepared by IEC technical committee 124: Wearable electronic devices and technologies. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
124/290/FDIS	124/301/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 63203 series, published under the general title *Wearable electronic devices and technologies*, can be found on the IEC website.

The committee has decided that the contents of this document and its amendment will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

– reconfirmed,

– withdrawn, or

– revised.

INTRODUCTION

Electrical properties can be changed by surface wear of conductive fabric, so abrasion resistance is a critical property for conductive fabric.

The failure modes of conductive fabric are specimen breakdown, appearance change and damage of coated layer in the case of coated fabric, etc. These physical failure modes result in changes in electrical properties.

This document specifies the test method and evaluation criteria for abrasion resistance of conductive fabrics.

1 Scope

This part of IEC 63203-201 specifies a test procedure to measure the sheet resistance of conductive fabrics after abrasion treatment using the Martindale abrasion machine.

This document is applicable to fully conductive fabrics such as woven, knitted conductive fabrics, conductive nonwovens~~,~~ and coated conductive fabrics~~, and embroidery fabrics using conductive yarns~~.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 62899-202:2023, *Printed electronics – Part 202: Materials – Conductive ink*

ISO 139, *Textiles – Standard atmospheres for conditioning and testing*

ISO 12947-1:1998, *Textiles – Determination of the abrasion resistance of fabrics by the Martindale method – Part 1: Martindale abrasion testing apparatus*

ISO 12947-2:2016, *Textiles – Determination of the abrasion resistance of fabrics by the Martindale method – Part 2: Determination of specimen breakdown*

Bibliography

[1] IEC 62899-101:2019, *Printed electronics – Part 101: Terminology – Vocabulary*

[2] ISO 3572:1976, *Textiles – Weaves – Definitions of general terms and basic weaves*

[3] ISO 8388:1998, *Knitted fabrics – Types – Vocabulary*

[4] ISO 23388:2018, *Protective gloves against mechanical risks*

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