



INTERNATIONAL STANDARD



**Printed electronics –
Part 501-1: Quality assessment – Failure modes and mechanical testing –
Flexible or bendable primary or secondary cells**

INTERNATIONAL
ELECTROTECHNICAL
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CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
1 Scope.....	6
2 Normative references	6
3 Terms and definitions	6
4 Characteristics	8
4.1 Geometrical cell properties	8
4.1.1 General specifications for measurement	8
4.1.2 Measuring method for cell thickness determination	8
4.1.3 Measuring method for cell volume and cell volume change calculation	9
4.2 Mechanical characteristics	9
4.2.1 General remarks.....	9
4.2.2 Mechanical stability (of battery package and contacts)	9
4.2.3 Bending test	10
4.2.4 Torsion properties	13
5 Failure criteria	14
5.1 Mechanical package damage and heat generation	14
5.2 Failure states.....	14
6 Storage conditions.....	14
Bibliography.....	15
Figure 1 – Schematic description of battery thickness measurement.....	8
Figure 2 – Test points for testing the mechanical strength of cell or battery package with a steel ball tip.....	10
Figure 3 – Measurement setup for mechanical testing of flexible cells or batteries.....	11
Figure 4 – Flexible substrate carrier for cell or battery packages with small and non-clampable lamination frame	12
Figure 5 – Possible cell or battery designs with bending axes (dashed)	12

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FOREWORD

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International Standard IEC 62899-501-1 has been prepared by IEC technical committee 119: Printed Electronics.

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

FDIS	Report on voting
119/241/FDIS	119/245/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 62899 series, published under the general title *Printed electronics*, can be found on the IEC website.

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

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INTRODUCTION

Due to the trend towards a globalised, technological and connected society there is a rising demand for a new breed of technologies enabling low-priced, flexible and new-concept products. Some conventional technologies (including silicon-based microelectronics) have reached their limits due to their high fabrication costs and environmental impact. Armed with new printing technologies (e.g., ink jet) and innovative materials, printed electronics have recently emerged as a promising, environmentally friendly route toward producing electronic, display or energy storage articles at low cost, enabling new creative technologies such as flexible electronics. Currently, this technology is beginning to be applied for the industrial production of items such as photovoltaic devices, signage, RFID, batteries, lighting devices, some parts of display devices, where cost, flexibility and recycling are very critical issues. For successful industrialization of this technology, reliability and repeatability in equipment and process should be provided under global standardization.

In the interests of improving communication, printed electronics terminology should be identical to, or analogous with, standardised terminology approved by technical committees in the following areas (since one or more of these will be commonly used concurrently with printed electronics):

- TC 21: Secondary cells and batteries
- SC 21A: Secondary cells and batteries containing alkaline or other non-acid electrolytes
- TC 35: Primary cells and batteries
- TC 113: Nanotechnology for electrotechnical products and systems

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1 Scope

This part of IEC 62899 specifies failure modes and mechanical stress test methods for the determination of reliability characteristics of bendable or flexible printed primary cells and secondary cells and batteries as defined in IEC 60050-482:2004, 482-01-01, IEC 60050-482:2004, 482-01-02, IEC 60050-482:2004, 482-01-03, IEC 60050-482:2004, 482-01-04 and IEC 60050-482:2004, 482-01-05, respectively.

Important parameters and specifications for primary cells are mentioned in IEC 60086-1 and IEC 60086-2. IEC 61960-3, as well as IEC 61951-1 and IEC 61951-2 define performance tests, designations, markings, dimensions and other requirements for secondary single cells and batteries. IEC 62133-1 and IEC 62133-2 address general safety requirements of secondary cells and batteries.

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 60050-482, *International Electrotechnical Vocabulary (IEV) – Part 482: Primary and secondary cells and batteries* (available at www.electropedia.org)

ISO/IEC 10373-1, *Identification cards – Test methods – Part 1: General characteristics*