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Printed electronics –
Part 202-7: Materials – Printed film – Measurement of peel strength for printed layer on flexible substrate by the 90° peel method

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CONTENTS

FOREWORD 3
INTRODUCTION 5
1 Scope 6
2 Normative references 6
3 Terms and definitions 6
4 Standard atmospheric conditions 7
5 Test sample 7
5.1 General 7
5.2 Size of test sample 7
5.3 Applicability of the method 7
6 Testing method and test apparatus 8
6.1 General 8
6.2 Test apparatus 8
6.3 Test procedure 9
7 Data analysis 10
7.1 Peel strength calculation 10
7.2 Report of the results 10
Bibliography 12

Figure 1 – Schematic of peel test of the printed layer on a flexible substrate 8
Figure 2 – Apparatus for peel test of the printed layer on a flexible substrate 9
Figure 3 – Typical peeling curve measured during the peel test 10

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

Draft	Report on voting
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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/standardsdev/publications.

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

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- amended.

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INTRODUCTION

A printed layer on a flexible substrate is widely employed as an electrode or interconnection for flexible devices. An integral component of this conductive body of the devices is conductive composite material and is commercialized as conductive ink.

A simple tape test method has been widely used for qualitative adhesion measurement, but it cannot be used to measure strong adhesion between the printed layer and the flexible substrate.

A conventional peel test method is widely used in the printed circuits industry to evaluate the adhesion between a thin printed layer with dense microstructure and the flexible substrate.

Peel strength value can be measured after an additional metal electroplating process on a thin printed layer to increase the printed layer thickness to provide a stable grip in an adhesion testing machine. However, it is not suitable for testing a printed layer which has a porous structure susceptible to contamination of the interface between the printed layer and flexible substrate during the electroplating process.

Therefore, a quantitative and reliable adhesion test method is used to measure and understand interfacial adhesion of the printed layer to the flexible substrate and its long-term reliability.

In this document, a new standard test method to measure the peel strength of a printed layer on a flexible substrate is proposed. This method calls for peeling the flexible substrate instead of an additional metal electroplating on the printed layer. It is useful to monitor and compare the thickness dependence of the peel strength of a layer on the same flexible substrate.

PRINTED ELECTRONICS –

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1 Scope

This part of IEC 62899 provides a test method to measure the peel strength of a printed layer on a flexible substrate. This method calls for peeling the flexible substrate instead of an additional metal electroplating on the printed layer. The method described in this document can be used to compare the peel strengths of the printed layers on the same flexible substrate and thickness conditions. It can be used when the adhesion between the printed layer and flexible substrate is weaker than any other interface between the printed layer and the adhesive, the adhesive and the panel.

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 62899-202:2016, *Printed electronics – Part 202: Materials – Conductive ink*