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BSI Standards Publication

Electrostatics

Part 5-5: Protection of electronic devices from electrostatic phenomena
— Packaging systems used in electronic manufacturing

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National foreword

This Published Document is the UK implementation of IEC TR 61340-5-5:2018.

The UK participation in its preparation was entrusted to Technical Committee GEL/101, Electrostatics.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Electrostatics –
Part 5-5: Protection of electronic devices from electrostatic phenomena – Packaging systems used in electronic manufacturing

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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Part 5-5: Protection of electronic devices from electrostatic phenomena – Packaging systems used in electronic manufacturing

FOREWORD

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IEC TR 61340-5-5, which is a Technical Report, has been prepared by IEC technical committee 101: Electrostatics and IEC technical committee 40: Capacitors and resistors for electronic equipment.

The text of this Technical Report is based on the following documents:

Draft TR	Report on voting
101/564/DTR	101/575/RVDTR

Full information on the voting for the approval of this Technical Report 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 61340 series, published under the general title *Electrostatics*, 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- withdrawn,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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

Packaging materials used within an electrostatic discharge (ESD) control programme often are defined by an electrical resistance measurement. Packaging material manufacturers rely on industry standardized test methods to ensure that the materials they supply meet industry defined specifications. However, other attributes provided by a packaging material often are difficult to quantify, leading to confusion between packaging material manufacturers and the end users.

Increased use of automated handling equipment for the manufacture of electronic products has resulted in changes in the design and form of packaging materials that contain electronic parts and components. In particular, very small profile parts such as surface mount resistors and capacitors are contained within pocket tape reels that are unloaded by automatic equipment. Small dimension parts require small dimension packaging materials. Small dimension packaging materials cannot be evaluated for electrical properties by the existing industry accepted test methods.

Several types of packaging are used within the electronics industries that do not have the basic properties generally associated with electrostatic control, such as paper tape. Industry best practices involving these standard packaging material forms are discussed. Other forms of packaging for non-ESDS (electrostatic discharge sensitive items) that are brought into the ESD protected area (EPA) and considerations for handling such packaging forms are described. This document has been prepared by a joint working group so that the considerations of electrostatics and the application of protective measures are compatible with the concerns of those who provide or use small dimension electronic components.

ELECTROSTATICS –

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1 Scope

This part of IEC 61340 discusses packaging material requirements for electrostatic discharge sensitive items (ESDS) as well as non–ESDS which can apply to packaging materials such as embossed carrier tape, trays, tubes (stick magazines), rails and others used in back end line processing and parts handling where test methods described in other standards are, for the most part, inadequate. Issues related to electrostatic charge generation, electrostatic attraction and repulsion are included. The recommendations and discussions within this document can also be applicable to other types of packaging that cannot be evaluated by other means.

This document discusses the issues related to

1) technical considerations for packaging material selection and packaging system design,
2) packaging material specifications for electrostatic control,
3) existing test methods and their limitations for packaging materials,
4) suggestions for the evaluation of small dimension packaging materials, and
5) industry common practices.

2 Normative references

There are no normative references in this document.

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

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

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

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1.1
electrostatic protective packaging
containers and other enclosures that have properties and functionality to limit electrostatic charge generation, dissipate electrostatic charge, or limit interior electrostatic fields

3.1.2
intimate packaging
materials that come into direct contact with ESD sensitive items

3.1.3
proximity packaging
materials or items that cover or surround intimate packaging materials