



BSI Standards Publication

Electrostatics

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

National foreword

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

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TECHNICAL REPORT



**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

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	8
2 Normative references	8
3 Terms, definitions and abbreviated terms	8
3.1 Terms and definitions.....	8
3.2 Abbreviated terms.....	9
4 Role of electrostatic protective packaging.....	10
4.1 Analysis of electrostatic risks (what can cause problems to ESDS).....	11
4.2 Charge generation (separation)	10
4.3 Reduction of electrostatic charging items in the environment	13
4.4 Electrostatic attraction and repulsion issues	13
4.5 Dissipation of electrostatic charge.....	14
4.6 Barrier to ESD current.....	14
4.7 Protection against electrostatic fields.....	14
4.8 Chemical and outgassing issues	14
4.9 Moisture barrier	15
4.10 Environmental conditions affecting packaging materials.....	15
4.11 Packaging material principles.....	15
4.11.1 General	15
4.11.2 Low charging	15
4.11.3 Electrostatic charge dissipation	15
4.11.4 Conductive materials	16
4.11.5 Electrostatic field shielding	16
4.11.6 Electrostatic discharge shielding.....	16
5 Types of material.....	16
5.1 Filled polymers	16
5.2 Intrinsically conductive or dissipative	17
5.3 Surface coated.....	17
5.4 Antistat treated	17
5.5 Anodized materials (e.g. boats used inside automated handlers, metal tubes).....	17
5.6 Material processing.....	17
5.6.1 Vacuum forming.....	17
5.6.2 Injection moulding	17
5.6.3 Embossing.....	18
5.6.4 Vacuum vapour deposition.....	18
5.6.5 Surface coating	18
5.6.6 Lamination.....	18
6 Existing standards for packaging materials	18
6.1 IEC 61340-5-3	18
6.2 ANSI/ESD S541	18
6.3 Military standards and other documents related to packaging	19
6.3.1 General	19
6.3.2 MIL PRF 81705 (E) (Film).....	19
6.3.3 MIL STD 3010	19

6.3.4	MIL PRF 131	19
7	Existing test methods for packaging materials	19
7.1	IEC 61340-2-1 – Ability of materials and products to dissipate static electric charge	19
7.2	IEC TR 61340-2-2 – Measurement of chargeability	20
7.3	IEC 61340-2-3 – Resistance and resistivity	20
7.4	IEC 61340-4-8 – Discharge shielding – Bags	20
8	Choosing a packaging technology	21
8.1	Determining packaging material attributes	21
8.2	Inside an EPA	21
8.3	Outside an EPA or between EPAs	21
8.4	Evaluation of packaging system attributes	21
8.5	Charge dissipation test methods	21
8.6	Resistance measurement methods	21
8.7	Shielding test	22
9	Does the packaging system meet the intended purpose?	22
10	New test method concepts and development plans	22
10.1	General	22
10.2	Single point probe	23
10.3	Parallel plates	23
10.4	Pin-point probe	24
10.5	Shielding related test methods	24
10.6	Charge generation – Triboelectrification test methods	24
10.7	Triboelectric charging of cover tape	26
10.8	Discharge evaluation method	27
10.9	Other resistance test methods	27
Annex A	(informative) Packaging forms and types	28
A.1	Packaging materials for electronic devices	28
A.2	Embossed tape	28
A.3	Cover tape	28
A.4	Reel types and materials	29
A.5	Injection moulded trays	30
A.6	Tubes and coils and other configurations of packaging materials	31
A.7	Clam shell and test socket	32
A.8	Bag	32
A.9	Tool boxes and other rigid containers	33
Bibliography	34
Figure 1	– Induction charging process – Grounding a conductor in the presence of an electrical field	11
Figure 2	– Second part of induction charging process	12
Figure 3	– First discharge pulse that occurs as shown in Figure 1b	12
Figure 4	– Second discharge pulse that occurs as shown in Figure 2	12
Figure 5	– Single point probe test method set-up	23
Figure 6	– Single point probe on embossed (pocket) tape	23
Figure 7	– Parallel plate test method set-up	24
Figure 8	– Set-up of isolated tape reels	25

Figure 9 – Resistance measurements – Reel to reel	25
Figure 10 – Charge drain test – Reel to reel.....	26
Figure 11 – Cover tape evaluation concepts	26
Figure 12 – Discharge evaluation method	27
Figure A.1 – Examples of embossed (pocket) tape.....	28
Figure A.2 – Cover tape	29
Figure A.3 – Cover tape	29
Figure A.4 – Cover tape	29
Figure A.5 – Cover tape	29
Figure A.6 – Cover tape	29
Figure A.7 – Cover tape	29
Figure A.8 – Cover tape	29
Figure A.9 – Reels	30
Figure A.10 – Reels	30
Figure A.11 – Reels	30
Figure A.12 – Reels	30
Figure A.13 – Trays	30
Figure A.14 – Trays	30
Figure A.15 –Trays	30
Figure A.16 – Trays	31
Figure A.17– Trays	31
Figure A.18 –Trays	31
Figure A.19 – Trays	31
Figure A.20 – Trays	31
Figure A.21 – Trays	31
Figure A.22 –Trays	31
Figure A.23 – Trays	31
Figure A.24 – Tubes	32
Figure A.25 – Tubes	32
Figure A.26 Tubes	32
Figure A.27 –Clam shells	32
Figure A.28 – Static discharge shielding bag	33
Figure A.29 Moisture barrier – Metal foil bags.....	33
Figure A.30 – Moisture barrier – Metal vapour deposition	33
Figure A.31 – Box.....	33
Figure A.32 – Rigid container.....	33
Table 1 – Test methods for electrostatic protective packaging	22

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROSTATICS –

**Part 5-5: Protection of electronic devices from electrostatic phenomena –
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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.

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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 –

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

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