ESD Association Standard Test Method

ANSI/ESD STM11.31-2012

**ANSI/ESD STM11.31-2012**
*Reaffirmation of ANSI/ESD STM11.31-2006*

# *For Evaluating the Performance of Electrostatic Discharge Shielding Materials –*

# *Bags*

***Electrostatic Discharge Association***
***7900 Turin Road, Bldg. 3***
***Rome, NY 13440***

*An American National Standard*
*Approved July 25, 2012*

# *ESD Association Standard Test Method for Evaluating the Performance of Electrostatic Discharge Shielding Materials –*

# *Bags*

Approved February 12, 2012
ESD Association

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## FOREWORD

It is the intent of this standard to provide industry with a common, repeatable method for testing and determining the shielding abilities of electrostatic shielding bags.

This test method improved upon the existing industry test method for static shielding by controlling some of the variables that were not previously addressed such as:

- discharge waveform characteristics

- capacitive probe capacitance

- bag size

This test method also has made a significant change by discontinuing the use of two (2) voltage probes and incorporating a single current probe for measurement purposes. This was done to eliminate the problems that were encountered with attempting to balance the voltage probes which resulted in measurement errors.

This standard test method[1] was originally approved on June 23, 1994 and was designated ESD S11.31-1994. ANSI/ESD STM11.31-2001 was a reaffirmation, re-designation of ESD S11.31-1994 and approved on February 4, 2001. ANSI/ESD STM11.31-2006 was a reaffirmation of ANSI/ESD STM11.31-2001 and approved on September 10, 2006. ANSI/ESD STM11.31-2012 is a reaffirmation of ANSI/ESD STM11.31-2006 and was approved on February 12, 2012. Four editorial changes were made from the 2006 version: removing definitions that are in the ESD Association glossary; adding a personnel safety section; updated referenced publications; and changed the term “environmental test chamber” to “controlled test environment”.

At the time ANSI/ESD STM11.31-2012 was prepared, the 11.0 Packaging Subcommittee had the following members:

Brent Beamer, Chair
3M

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|---|---|---|
| Kevin Duncan, TAS Rep<br>Seagate Technology | Kurt Edwards<br>Lubrizol | Gene Felder<br>Desco Industries, Inc. |
| Dale Parkin<br>Seagate Technology | Tim Prass<br>Raytheon | Jeff Salisbury<br>Flextronics |
| Jose Sancho<br>NASA/Honeywell/TSI | David E. Swenson<br>Affinity Static Control Consulting, LLC | Julius Turangan<br>Ovation, Inc. |
| Robert Vermillion<br>RMV Technology Group, LLC | Stanley Weitz<br>Electro-Tech Systems, Inc. | Craig Zander<br>Prostat Corporation |

[1] **ESD Association Standard Test Method (STM):** A definitive procedure for the identification, measurement and evaluation of one or more qualities, characteristics, or properties of a material, product, system, or process that yield a **reproducible test** results.

At the time the ESD S11.31-1994 version was prepared, the 11.0 Packaging Subcommittee had the following members:

Ron Gibson, Chair
Celestica, Inc.

Ben Baumgartner
Lockheed Missiles and Space Company

Brent Beamer
Static Control Components

Rich Draskinas
Web Technologies, Inc

Mary Fouts
Seco Industries

Steve Fowler
ESD Flooring Systems

John T. Kinnear Jr., TAC
IBM

Steve Koehn
3M

Bob Renninger
AT&T Bell Labs

Barry Shaiman
Simco Company Inc.

Stan Weitz
ETS

The following individuals made significant contributions to ESD S11.31-1994:

Steve Halperin
Steve Halperin & Associates

David E. Swenson
3M

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## 1.0 SCOPE AND PURPOSE

### 1.1 Scope

This test method evaluates the performance of electrostatic discharge shielding bags. The design voltage for the test apparatus is 1000 volts.

### 1.2 Purpose

The purpose of this standard is to ensure that testing labs, using this test method to evaluate a given packaging material, will obtain similar results.

## 2.0 REFERENCED PUBLICATIONS

ANSI/ESDA/JEDEC JS-001, ESDA/JEDEC Joint Standard for Electrostatic Discharge Sensitivity Testing - Human Body Model (HBM) - Component Level[2]

ASTM D 257, Standard Test Methods for DC Resistance or Conductance of Insulating Materials[3]

## 3.0 DEFINITIONS

The terms used in the body of this document are in accordance with the definitions found in ESD ADV1.0, ESD Association's Glossary of Terms available for complimentary download at http://www.esda.org/keydownloads.html.

## 4.0 PERSONNEL SAFETY

The procedures and equipment described in this document may expose personnel to hazardous electrical conditions. Users of this document are responsible for selecting equipment that complies with applicable laws, regulatory codes, and both external and internal policy. Users are cautioned that this document cannot replace or supersede any requirements for personnel safety.

Ground fault circuit interrupters (GFCI) and other safety protection should be considered wherever personnel might come into contact with electrical sources.

Electrical hazard reduction practices should be exercised and proper grounding instructions for equipment should be followed.

The resistance measurements obtained through the use of this test method shall not be used to determine the relative safety of personnel exposed to high AC or DC voltages.

## 5.0 REQUIRED EQUIPMENT

### 5.1 ESD Simulator

A basic ESD simulator is shown in Figure 1. This simulator and the resulting waveforms were taken from ANSI/ESDA/JEDEC JS-001. The equivalent circuit for the simulator consists of a 100 pF capacitor in series with a 1,500 ohm resistor.

[2] ESD Association, 7900 Turin Road, Bldg. 3, Rome, NY 13440, 315-339-6937
[3] American Society for Testing and Materials (ASTM) 1916 Race Street, Philadelphia, PA 19103-1187, 215-299-5400