ANSI/ESD S1.1-2013
Revision of ANSI/ESD S1.1-2006

For the Protection of Electrostatic Discharge Susceptible Items

Wrist Straps

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

An American National Standard
Approved July 29, 2013
ESD Association Standard
for the Protection of Electrostatic Discharge
Susceptible Items -

Wrist Straps

Approved July 27, 2011
ESD Association
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FOREWORD

This standard has been developed to establish test methods for evaluating the electrical and mechanical attributes of wrist straps used in an electrostatic discharge control program. Wrist straps are intended to connect the user to ESD ground reference, thus preventing electrostatic charge on a user’s body from attaining a level that may damage ESD susceptible devices or assemblies.

Test methods and performance limits for evaluation, acceptance, and system test are provided. Application and construction guidance is included in the annexes. This document is reformatted from EOS/ESD S1-1987 using improved test methods.

This document was originally designated ESD S1.1-1998 and approved on October 4, 1998. ESD S1.1-1998 was reaffirmed, redesignated ANSI/ESD S1.1-2006, and was approved on February 26, 2006. ANSI/ESD S1.1-2013 is a revision of ANSI/ESD S1.1-2006 and was approved on July 27, 2011.

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1 ESD Association Standard (S): A precise statement of a set of requirements to be satisfied by a material, product, system or process that also specifies the procedures for determining whether each of the requirements is satisfied.
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– Wrist Straps

1.0 PURPOSE AND SCOPE

1.1 Purpose
This standard provides electrical and mechanical test methods and performance limits for product qualification, acceptance testing, and system testing of wrist straps.

1.2 Scope
This standard is intended for testing wrist straps and wrist strap systems used for the grounding of personnel engaged in working with ESD sensitive assemblies and devices. It does not address monitoring systems or garments.

2.0 REFERENCED DOCUMENTS
ESD ADV1.0, ESD Association’s Glossary of Terms
ESD TR53, Compliance Verification of ESD Protective Equipment and Materials

3.0 DEFINITION OF TERMS
The following definitions shall apply for the purposes of this standard in addition to those specified in the ESD Association Glossary of Terms, available for complimentary download at www.esda.org:

**Breakaway force.** The force required to disconnect the ground cord from the wristband.

**Ground cord.** The portion of the wrist strap that provides flexibility of movement while completing the electrical circuit between the wristband and ground.

**Strain relief.** A construction feature designed to protect the connections and the cord from premature failure.

**Wristband.** The portion of the wrist strap worn on the wrist. The wristband maintains electrical contact with a person’s skin.

**Wrist strap.** An assembled device consisting of a wristband and ground cord that provides electrical connection of a person’s skin to ground.

**Wrist strap system.** A wrist strap when properly worn by a person, where the electrical path includes the person, the wristband, and the ground cord.

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.