

ANSI/ESD SP15.1-2011

ESD Association Standard Practice

ANSI/ESD SP15.1-2011
Reaffirmation of ANSI/ESD SP15.1-2005

*For the Protection of Electrostatic
Discharge Susceptible Items*

*In-Use Resistance Testing of
Gloves and Finger Cots*



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

*An American National Standard
Approved June 15, 2011*

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***ESD Association Standard Practice for
the Protection of Electrostatic Discharge
Susceptible Items -***

***In-Use Resistance Testing of
Gloves and Finger Cots***

Approved February 11, 2011
ESD Association



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FOREWORD

This standard practice¹ is intended to provide test procedures for measuring the intrinsic electrical resistance of gloves and finger cots; as well as the electrical resistance of gloves or finger cots and personnel together as a system. This standard practice applies to all gloves and finger cots used to control Electrostatic Discharge (ESD). This standard practice provides data that are relevant in the user's specific environment and application.

The test uses ANSI/ESD STM11.11, Surface Resistance Measurement of Static Dissipative Planar Materials, ANSI/ESD STM 11.12, Volume Resistance Measurement of Static Dissipative Planar Materials, ANSI/ESD STM 11.13, Two-Point Resistance Measurement of Dissipative and Insulative Materials and a Constant Area and Force Electrode (CAFE) specifically designed for resistance measurements at the thumb and finger-tips. A further advantage of the CAFE is that it can be used to test finger cots as well as gloves using an identical procedure.

The user of the CAFE test method should note that the in-use resistance of the glove or finger cot can be much lower than its intrinsic resistance as measured by ANSI/ESD STM11.11, STM11.12, or STM11.13. In addition, once a glove or finger cot is worn it can be measured only once because the glove or finger cot may be contaminated by a person's skin emissions. This contamination could affect the accuracy and reproducibility of further measurements on a particular glove or finger cot. It is suggested, for the best reproducibility for a test group, that gloves or finger cots be selected from the same lot. In the case of testing for lot-to-lot product auditing, compliance verification or variation, gloves or finger cots should be selected from multiple lots.

Electrical resistance is one property that can be used to evaluate the electrostatic characteristics of gloves. However, resistance does not fully characterize these materials. An additional property to be considered in the selection and use of gloves and finger cots includes charge accumulation. Suggested test methods for personnel and glove and finger cot charging will be forthcoming.

A common source of electrostatic charge in a work environment is the separation of gloves from the items being picked-up or released, resulting in the generation of electrostatic charge that can accumulate on personnel, gloves or finger cots and induced into items. The effect of this generation and accumulation of electrostatic charge can be minimized with appropriate selection of glove or finger cots. To effectively control electrostatic discharge on personnel and equipment, gloves and finger cots must be used in combination with other grounding devices.

A glove material, which is conductive enough to discharge a person or an object, may also pose a safety hazard. The work performed on an ESD susceptible item often entails the use of tools and test instruments that operate at voltages high enough to cause electrical shock. The presence of a material tested using the methods described in this document will not guarantee personnel safety. This document includes test methods that may be applicable for measurement of gloves and fingers cots that reside in the conductive range, however, effects due to skin resistance and electrode resistance may create significant errors. Test voltage may also be an issue for conductive materials.

Beneficial comments (recommendations, additions, deletions and pertinent data), which may be of use in improving future versions of this document, should be addressed to ESD Association, Chairperson Subcommittee Workgroup – Gloves, 7900 Turin Rd., Bldg. 3, Rome, NY 13440.

¹ ESD Association Standard Practice (SP): A procedure for performing one or more operations or functions that may or may not yield a test result. Note, if a test result is obtained it may not be reproducible.