



Standard Test Method for Electrical Resistance of Conductive and Static Dissipative Resilient Flooring¹

This standard is issued under the fixed designation F 150; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This test method covers the determination of electrical conductance or resistance of resilient flooring either in tile or sheet form, for applications such as hospitals, computer rooms, clean rooms, access flooring, munition plants, or any other environment concerning personnel-generated static electricity.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

D 2240 Test Method for Rubber Property—Durometer Hardness²

E 177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods³

E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method³

2.2 Other Standards:

EOS/ESD-SD7.1 Flooring Materials—Resistive Characterization of Materials⁴

NFPA 99-1990 Health Care Facilities⁵

Federal Test Method Std. No. 501a, Method 8311—Electrical Conductance⁶

Mono #11 Conductive Flooring for Hospital Operating Rooms⁷

3. Terminology

3.1 Definitions:

3.1.1 *conductive flooring*—resilient tile or sheet which, when tested in accordance with 8.1.1 or 8.2.1 shall have an average resistance greater than $25\,000\ \Omega$ ($2.5 \times 10^4\ \Omega$) and less than $1\,000\,000\ \Omega$ ($1.0 \times 10^6\ \Omega$). When tested in accordance with 8.2.2 the average value shall be no less than $25\,000\ \Omega$ ($2.5 \times 10^4\ \Omega$) with no individual measurement's value less than $10\,000\ \Omega$.

3.1.2 *static dissipative flooring*—resilient tile or sheet which, when tested in accordance with 8.1.2 or 8.2.2 shall have an average resistance greater than $1\,000\,000\ \Omega$ ($1.0 \times 10^6\ \Omega$) and less than or equal to $1\,000\,000\,000\ \Omega$ ($1.0 \times 10^9\ \Omega$). When tested in accordance with 8.2.2 the average value shall be no less than $1\,000\,000\ \Omega$ ($1.0 \times 10^6\ \Omega$) and less than or equal to $1\,000\,000\,000\ \Omega$ ($1.0 \times 10^9\ \Omega$).

4. Significance and Use

4.1 Conductive and static dissipative floors (static control flooring) serve as a convenient means of electrically connecting persons and objects together to prevent the accumulation of electrostatic charges. A static control floor is specified on the basis of controlled resistance values. The surface of the floor provides a path of moderate electrical conductivity between all persons and equipment making contact with the floor to prevent the accumulation of dangerous electrostatic charges. Static control footwear will need to be used in conjunction with the floor for the floor to perform effectively with personnel.

4.2 The resistance of some flooring materials change with age. Floors of such materials should have an initial resistance low enough or high enough to permit increase or decrease in resistance with age without exceeding the limits prescribed in the product specifications (see Federal Test Method No. 501a, Method 8311).

5. Apparatus

5.1 *Self-Contained Resistance Meter* (such as a megohm meter) or power supplies and current meters in the appropriate configuration for resistance measurement with $\pm 10\%$ accuracy. For safety all power supplies used herein should be current limited, usually below 5.0 mA. This apparatus shall be

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² *Annual Book of ASTM Standards*, Vol 09.01.

³ *Annual Book of ASTM Standards*, Vol 14.02.

⁴ Available from the Electrical Overstress/Electrostatic Discharge Association, Inc., Rome, NY.

⁵ Available from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

⁶ Available from Standardization Documents Order Desk, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

⁷ Available from National Bureau of Standards, Dept. of Commerce, Washington, DC, March 1960.