



Standard Practice for Radiologic Examination of Semiconductors and Electronic Components¹

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

1. Scope

1.1 This practice provides the minimum requirements for nondestructive radiologic examination of semiconductor devices, microelectronic devices, electromagnetic devices, electronic and electrical devices, and the materials used for construction of these items.

1.2 This practice covers the radiologic examination of these items to detect possible defective conditions within the sealed case, especially those resulting from sealing the lid to the case, and internal defects such as extraneous material (foreign objects), improper interconnecting wires, voids in the die attach material or in the glass (when sealing glass is used) or physical damage.

1.3 The values stated in inch-pound units are to be regarded as standard. No other units of measurement are included in this practice.

1.4 *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:²

E94 Guide for Radiographic Examination

E431 Guide to Interpretation of Radiographs of Semiconductors and Related Devices

E543 Specification for Agencies Performing Nondestructive Testing

¹ This practice is under the jurisdiction of ASTM Committee E07 on Nondestructive Testing and is the direct responsibility of Subcommittee E07.01 on Radiology (X and Gamma) Method.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

E801 Practice for Controlling Quality of Radiological Examination of Electronic Devices

E666 Practice for Calculating Absorbed Dose From Gamma or X Radiation

E999 Guide for Controlling the Quality of Industrial Radiographic Film Processing

E1000 Guide for Radioscopy

E1079 Practice for Calibration of Transmission Densitometers

E1254 Guide for Storage of Radiographs and Unexposed Industrial Radiographic Films

E1255 Practice for Radioscopy

E1316 Terminology for Nondestructive Examinations

E1390 Specification for Illuminators Used for Viewing Industrial Radiographs

E1411 Practice for Qualification of Radioscopic Systems

E1453 Guide for Storage of Magnetic Tape Media that Contains Analog or Digital Radioscopic Data

E1475 Guide for Data Fields for Computerized Transfer of Digital Radiological Examination Data

E1742 Practice for Radiographic Examination

E1815 Test Method for Classification of Film Systems for Industrial Radiography

E1817 Practice for Controlling Quality of Radiological Examination by Using Representative Quality Indicators (RQIs)

E2339 Practice for Digital Imaging and Communication in Nondestructive Evaluation (DICONDE)

E2597 Practice for Manufacturing Characterization of Digital Detector Arrays

2.2 ANSI Standards:³

ANSI/ESD S20.20 ESD Association Standard for the Development of an Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices)

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.