

**Volume 12.02, September 2007**  
**Nuclear (II), Solar, and Geothermal Energy**

**Standards and Related Materials Contained in this Volume:**

- [E170-05 Standard Terminology Relating to Radiation Measurements and Dosimetry - \(View Full Text\)](#)
- [E181-98\(2003\) Standard Test Methods for Detector Calibration and Analysis of Radionuclides - \(View Full Text\)](#)
- [E185-02 Standard Practice for Design of Surveillance Programs for Light-Water Moderated Nuclear Power Reactor Vessels - \(View Full Text\)](#)
- [E261-03 Standard Practice for Determining Neutron Fluence, Fluence Rate, and Spectra by Radioactivation Techniques - \(View Full Text\)](#)
- [E262-03 Standard Method for Determining Thermal Neutron Reaction and Fluence Rates by Radioactivation Techniques - \(View Full Text\)](#)
- [E263-05 Standard Test Method for Measuring Fast-Neutron Reaction Rates by Radioactivation of Iron - \(View Full Text\)](#)
- [E264-02 Standard Test Method for Measuring Fast-Neutron Reaction Rates by Radioactivation of Nickel - \(View Full Text\)](#)
- [E265-07 Standard Test Method for Measuring Reaction Rates and Fast-Neutron Fluences by Radioactivation of Sulfur-32 - \(View Full Text\)](#)
- [E266-07 Standard Test Method for Measuring Fast-Neutron Reaction Rates by Radioactivation of Aluminum - \(View Full Text\)](#)
- [E385-07 Standard Test Method for Oxygen Content Using a 14-MeV Neutron Activation and Direct-Counting Technique - \(View Full Text\)](#)
- [E393-96\(2002\) Standard Test Method for Measuring Reaction Rates by Analysis of Barium-140 From Fission Dosimeters - \(View Full Text\)](#)
- [E424-71\(2007\) Standard Test Methods for Solar Energy Transmittance and Reflectance \(Terrestrial\) of Sheet Materials - \(View Full Text\)](#)
- [E453-79\(2001\) Standard Practice for Examination of Fuel Element Cladding Including the Determination of the Mechanical Properties - \(View Full Text\)](#)
- [E481-03 Standard Test Method for Measuring Neutron Fluence Rate by Radioactivation of Cobalt and Silver - \(View Full Text\)](#)
- [E482-07 Standard Guide for Application of Neutron Transport Methods for Reactor Vessel Surveillance, E706 \(IID\) - \(View Full Text\)](#)
- [E496-02 Standard Test Method for Measuring Neutron Fluence and Average Energy from  \$^3\text{H}\(d,n\)^4\text{He}\$  Neutron Generators by Radioactivation Techniques <sup>1</sup> - \(View Full Text\)](#)
- [E509-03 Standard Guide for In-Service Annealing of Light-Water Cooled Nuclear Reactor Vessels - \(View Full Text\)](#)
- [E521-96\(2003\) Standard Practice for Neutron Radiation Damage Simulation by Charged-Particle Irradiation - \(View Full Text\)](#)
- [E523-07 Standard Test Method for Measuring Fast-Neutron Reaction Rates by Radioactivation of Copper - \(View Full Text\)](#)
- [E526-97\(2002\) Standard Test Method for Measuring Fast-Neutron Reaction Rates by Radioactivation of Titanium - \(View Full Text\)](#)
- [E531-76\(2007\) Standard Practice for Surveillance Testing of High-Temperature Nuclear Component Materials - \(View Full Text\)](#)
- [E560-01 Standard Practice for Extrapolating Reactor Vessel Surveillance Dosimetry Results, E706\(IC\) - \(View Full Text\)](#)

[E636-02 Standard Guide for Conducting Supplemental Surveillance Tests for Nuclear Power Reactor Vessels, E 706 \(IH\) - \(View Full Text\)](#)

[E666-03 Standard Practice for Calculating Absorbed Dose From Gamma or X Radiation - \(View Full Text\)](#)

[E668-05 Standard Practice for Application of Thermoluminescence-Dosimetry \(TLD\) Systems for Determining Absorbed Dose in Radiation-Hardness Testing of Electronic Devices - \(View Full Text\)](#)

[E683-91\(2007\) Standard Practice for Installation and Service of Solar Space Heating Systems for One- and Two-Family Dwellings - \(View Full Text\)](#)

[E692-00 Standard Test Method for Determining the Content of Cesium-137 in Irradiated Nuclear Fuels by High-Resolution Gamma-Ray Spectral Analysis - \(View Full Text\)](#)

[E693-01\(2007\) Standard Practice for Characterizing Neutron Exposures in Iron and Low Alloy Steels in Terms of Displacements Per Atom \(DPA\), E 706\(ID\) - \(View Full Text\)](#)

[E704-96\(2002\) Standard Test Method for Measuring Reaction Rates by Radioactivation of Uranium-238 - \(View Full Text\)](#)

[E705-96\(2002\) Standard Test Method for Measuring Reaction Rates by Radioactivation of Neptunium-237 - \(View Full Text\)](#)

[E706-02 Standard Master Matrix for Light-Water Reactor Pressure Vessel Surveillance Standards, E706\(0\) - \(View Full Text\)](#)

[E712-80\(2003\) Standard Practice for Laboratory Screening of Metallic Containment Materials for Use With Liquids in Solar Heating and Cooling Systems - \(View Full Text\)](#)

[E720-04e1 Standard Guide for Selection and Use of Neutron Sensors for Determining Neutron Spectra Employed in Radiation-Hardness Testing of Electronics - \(View Full Text\)](#)

[E721-07 Standard Guide for Determining Neutron Energy Spectra from Neutron Sensors for Radiation-Hardness Testing of Electronics - \(View Full Text\)](#)

[E722-04e2 Standard Practice for Characterizing Neutron Energy Fluence Spectra in Terms of an Equivalent Monoenergetic Neutron Fluence for Radiation-Hardness Testing of Electronics - \(View Full Text\)](#)

[E745-80\(2003\) Standard Practices for Simulated Service Testing for Corrosion of Metallic Containment Materials for Use With Heat-Transfer Fluids in Solar Heating and Cooling Systems - \(View Full Text\)](#)

[E772-05 Standard Terminology Relating to Solar Energy Conversion - \(View Full Text\)](#)

[E781-86\(2003\) Standard Practice for Evaluating Absorptive Solar Receiver Materials When Exposed to Conditions Simulating Stagnation in Solar Collectors With Cover Plates - \(View Full Text\)](#)

[E782-95\(2007\) Standard Practice for Exposure of Cover Materials for Solar Collectors to Natural Weathering Under Conditions Simulating Operational Mode - \(View Full Text\)](#)

[E798-96\(2003\) Standard Practice for Conducting Irradiations at Accelerator-Based Neutron Sources - \(View Full Text\)](#)

[E821-96\(2003\) Standard Practice for Measurement of Mechanical Properties During Charged-Particle Irradiation - \(View Full Text\)](#)

[E822-92\(2003\) Standard Practice for Determining Resistance of Solar Collector Covers to Hail by Impact With Propelled Ice Balls - \(View Full Text\)](#)

[E823-81\(2001\) Standard Practice for Nonoperational Exposure and Inspection of a Solar Collector - \(View Full Text\)](#)

[E844-03 Standard Guide for Sensor Set Design and Irradiation for Reactor Surveillance, E 706\(IIC\) - \(View Full Text\)](#)

[E853-01 Standard Practice for Analysis and Interpretation of Light-Water Reactor Surveillance Results, E706\(IA\) - \(View Full Text\)](#)

[E854-03 Standard Test Method for Application and Analysis of Solid State Track Recorder \(SSTR\) Monitors for Reactor Surveillance, E706\(IIIB\) - \(View Full Text\)](#)

[E861-94\(2007\) Standard Practice for Evaluating Thermal Insulation Materials for Use in Solar Collectors - \(View Full Text\)](#)

[E881-92\(2003\) Standard Practice for Exposure of Solar Collector Cover Materials to Natural Weathering Under Conditions Simulating Stagnation Mode - \(View Full Text\)](#)

[E900-02 Standard Guide for Predicting Radiation-Induced Transition Temperature Shift in Reactor Vessel Materials, E706 \(IIF\) - \(View Full Text\)](#)

[E904-87\(2007\) Standard Practice for Generating All-Day Thermal Performance Data for Solar Collectors - \(View Full Text\)](#)

[E905-87\(2007\) Standard Test Method for Determining Thermal Performance of Tracking Concentrating Solar Collectors - \(View Full Text\)](#)

[E910-07 Standard Test Method for Application and Analysis of Helium Accumulation Fluence Monitors for Reactor Vessel Surveillance, E706 \(IIIC\) - \(View Full Text\)](#)

[E927-05 Standard Specification for Solar Simulation for Terrestrial Photovoltaic Testing - \(View Full Text\)](#)

[E942-96\(2003\) Standard Guide for Simulation of Helium Effects in Irradiated Metals - \(View Full Text\)](#)

[E944-02 Standard Guide for Application of Neutron Spectrum Adjustment Methods in Reactor Surveillance, E706 \(IIA\) - \(View Full Text\)](#)

[E947-83\(2002\) Standard Specification for Sampling Single-Phase Geothermal Liquid or Steam for Purposes of Chemical Analysis - \(View Full Text\)](#)

[E948-05a Standard Test Method for Electrical Performance of Photovoltaic Cells Using Reference Cells Under Simulated Sunlight - \(View Full Text\)](#)

[E957-03 Standard Terminology Relating to Geothermal Energy - \(View Full Text\)](#)

[E971-88\(2003\) Standard Practice for Calculation of Photometric Transmittance and Reflectance of Materials to Solar Radiation - \(View Full Text\)](#)

[E972-96\(2007\) Standard Test Method for Solar Photometric Transmittance of Sheet Materials Using Sunlight - \(View Full Text\)](#)

[E973-05a Standard Test Method for Determination of the Spectral Mismatch Parameter Between a Photovoltaic Device and a Photovoltaic Reference Cell - \(View Full Text\)](#)

[E974-00\(2006\) Standard Guide for Specifying Thermal Performance of Geothermal Power Systems - \(View Full Text\)](#)

[E1005-03e1 Standard Test Method for Application and Analysis of Radiometric Monitors for Reactor Vessel Surveillance, E 706\(IIIA\) - \(View Full Text\)](#)

[E1006-02 Standard Practice for Analysis and Interpretation of Physics Dosimetry Results for Test Reactors, E 706\(II\) - \(View Full Text\)](#)

[E1008-03 Standard Practice for Installation, Inspection, and Maintenance of Valve-body Pressure-relief Methods for Geothermal and Other High-Temperature Liquid Applications - \(View Full Text\)](#)

[E1018-01 Standard Guide for Application of ASTM Evaluated Cross Section Data File, Matrix E 706 \(IIB\) - \(View Full Text\)](#)

[E1021-06 Standard Test Method for Spectral Responsivity Measurements of Photovoltaic Devices - \(View Full Text\)](#)

[E1026-04e1 Standard Practice for Using the Fricke Reference-Standard Dosimetry System - \(View Full Text\)](#)

[E1034-95\(2001\) Standard Specification for Nuclear Facility Transient Worker Records - \(View Full Text\)](#)

[E1035-02 Standard Practice for Determining Neutron Exposures for Nuclear Reactor Vessel Support Structures - \(View Full Text\)](#)

[E1036-02 Standard Test Methods for Electrical Performance of Nonconcentrator Terrestrial Photovoltaic Modules and Arrays Using Reference Cells - \(View Full Text\)](#)

[E1038-05 Standard Test Method for Determining Resistance of Photovoltaic Modules to Hail by Impact with Propelled Ice Balls - \(View Full Text\)](#)

[E1040-05 Standard Specification for Physical Characteristics of Nonconcentrator Terrestrial Photovoltaic Reference Cells - \(View Full Text\)](#)

[E1056-85\(2007\) Standard Practice for Installation and Service of Solar Domestic Water Heating Systems for One- and Two-Family Dwellings - \(View Full Text\)](#)

[E1068-85\(2003\) Standard Test Method for Testing Nonmetallic Seal Materials by Immersion in a Simulated Geothermal Test Fluid - \(View Full Text\)](#)

[E1069-85\(2003\) Standard Test Method for Testing Polymeric Seal Materials for Geothermal and/or High Temperature Service Under Sealing Stress - \(View Full Text\)](#)

[E1084-86\(2003\) Standard Test Method for Solar Transmittance \(Terrestrial\) of Sheet Materials Using Sunlight - \(View Full Text\)](#)

[E1089-86\(2007\) Standard Test Method for Water Penetration of Flat Plate Solar Collectors by Uniform Static Air Pressure Difference - \(View Full Text\)](#)

[E1125-05 Standard Test Method for Calibration of Primary Non-Concentrator Terrestrial Photovoltaic Reference Cells Using a Tabular Spectrum - \(View Full Text\)](#)

[E1143-05 Standard Test Method for Determining the Linearity of a Photovoltaic Device Parameter with Respect To a Test Parameter - \(View Full Text\)](#)

[E1160-87\(2007\) Standard Guide for On-Site Inspection and Verification of Operation of Solar Domestic Hot Water Systems - \(View Full Text\)](#)

[E1167-87\(2002\) Standard Guide for Radiation Protection Program for Decommissioning Operations - \(View Full Text\)](#)

[E1168-95\(2001\) Standard Guide for Radiological Protection Training for Nuclear Facility Workers - \(View Full Text\)](#)

[E1171-04 Standard Test Methods for Photovoltaic Modules in Cyclic Temperature and Humidity Environments - \(View Full Text\)](#)

[E1175-87\(2003\) Standard Test Method for Determining Solar or Photopic Reflectance, Transmittance, and Absorptance of Materials Using a Large Diameter Integrating Sphere - \(View Full Text\)](#)

[E1214-06 Standard Guide for Use of Melt Wire Temperature Monitors for Reactor Vessel Surveillance, E 706 \(IIIE\) - \(View Full Text\)](#)

[E1249-00\(2005\) Standard Practice for Minimizing Dosimetry Errors in Radiation Hardness Testing of Silicon Electronic Devices Using Co-60 Sources - \(View Full Text\)](#)

[E1250-88\(2005\) Standard Test Method for Application of Ionization Chambers to Assess the Low Energy Gamma Component of Cobalt-60 Irradiators Used in Radiation-Hardness Testing of Silicon Electronic Devices - \(View Full Text\)](#)

[E1253-07 Standard Guide for Reconstitution of Irradiated Charpy-Sized Specimens - \(View Full Text\)](#)

[E1281-89\(2005\) Standard Guide for Nuclear Facility Decommissioning Plans - \(View Full Text\)](#)

[E1297-02 Standard Test Method for Measuring Fast-Neutron Reaction Rates by Radioactivation of Niobium - \(View Full Text\)](#)

[E1328-05 Standard Terminology Relating to Photovoltaic Solar Energy Conversion - \(View Full Text\)](#)

[E1362-05 Standard Test Method for Calibration of Non-Concentrator Photovoltaic Secondary Reference Cells - \(View Full Text\)](#)

[E1462-00\(2006\) Standard Test Methods for Insulation Integrity and Ground Path Continuity of Photovoltaic Modules - \(View Full Text\)](#)

[E1596-99 Standard Test Methods for Solar Radiation Weathering of Photovoltaic Modules - \(View Full Text\)](#)

[E1597-05 Standard Test Method for Saltwater Pressure Immersion and Temperature Testing of Photovoltaic Modules for Marine Environments - \(View Full Text\)](#)

[E1675-04e1 Standard Practice for Sampling Two-Phase Geothermal Fluid for Purposes of Chemical Analysis - \(View Full Text\)](#)

[E1760-96\(2003\)e1 Standard Guide for Unrestricted Disposition of Bulk Materials Containing Residual Amounts of Radioactivity - \(View Full Text\)](#)

[E1799-02 Standard Practice for Visual Inspections of Photovoltaic Modules - \(View Full Text\)](#)

[E1802-07 Standard Test Methods for Wet Insulation Integrity Testing of Photovoltaic Modules - \(View Full Text\)](#)

[E1819-96\(2005\) Standard Guide for Environmental Monitoring Plans for Decommissioning of Nuclear Facilities - \(View Full Text\)](#)

[E1830-04 Standard Test Methods for Determining Mechanical Integrity of Photovoltaic Modules - \(View Full Text\)](#)

[E1854-07 Standard Practice for Ensuring Test Consistency in Neutron-Induced Displacement Damage of Electronic Parts - \(View Full Text\)](#)

[E1855-05e1 Standard Test Method for Use of 2N2222A Silicon Bipolar Transistors as Neutron Spectrum Sensors and Displacement Damage Monitors - \(View Full Text\)](#)

[E1892-97\(2003\) Standard Guide for Preparing Characterization Plans for Decommissioning Nuclear Facilities - \(View Full Text\)](#)

[E1893-97\(2003\) Standard Guide for Selection and Use of Portable Radiological Survey Instruments for Performing In Situ Radiological Assessments in Support of Decommissioning - \(View Full Text\)](#)

[E1894-97\(2002\) Standard Guide for Selecting Dosimetry Systems for Application in Pulsed X-Ray Sources - \(View Full Text\)](#)

[E2005-05e1 Standard Guide for Benchmark Testing of Reactor Dosimetry in Standard and Reference Neutron Fields - \(View Full Text\)](#)

[E2006-05 Standard Guide for Benchmark Testing of Light Water Reactor Calculations - \(View Full Text\)](#)

[E2047-05 Standard Test Method for Wet Insulation Integrity Testing of Photovoltaic Arrays - \(View Full Text\)](#)

[E2059-06 Standard Practice for Application and Analysis of Nuclear Research Emulsions for Fast Neutron Dosimetry - \(View Full Text\)](#)

[E2215-02 Standard Practice for Evaluation of Surveillance Capsules from Light-Water Moderated Nuclear Power Reactor Vessels - \(View Full Text\)](#)

[E2216-02 Standard Guide for Evaluating Disposal Options for Concrete from Nuclear Facility Decommissioning - \(View Full Text\)](#)

[E2232-02 Standard Guide for Selection and Use of Mathematical Methods for Calculating Absorbed Dose in Radiation Processing Applications - \(View Full Text\)](#)

[E2236-05a Standard Test Methods for Measurement of Electrical Performance and Spectral Response of Nonconcentrator Multijunction Photovoltaic Cells and Modules - \(View Full Text\)](#)

[E2303-03 Standard Guide for Absorbed-Dose Mapping in Radiation Processing Facilities - \(View Full Text\)](#)

[E2304-03 Standard Practice for Use of a Lif Photo-Fluorescent Film Dosimetry System - \(View Full Text\)](#)

[E2381-04 Standard Guide for Dosimetry In Radiation Processing of Fluidized Beds and Fluid Streams - \(View Full Text\)](#)

[E2420-05 Standard Guide for Post-Deactivation Surveillance and Maintenance of Radiologically Contaminated Facilities - \(View Full Text\)](#)

[E2421-05 Standard Guide for Preparing Waste Management Plans for Decommissioning Nuclear Facilities - \(View Full Text\)](#)

[E2449-05 Standard Guide for Irradiation of Pre-packaged Processed Meat and Poultry Products to Control Pathogens and Other Microorganisms - \(View Full Text\)](#)

[E2450-06 Standard Practice for Application of CaF<sub>2</sub>\(Mn\) Thermoluminescence Dosimeters in Mixed Neutron-Photon Environments - \(View Full Text\)](#)

[E2481-06 Standard Test Method for Hot Spot Protection Testing of Photovoltaic Modules - \(View Full Text\)](#)

[E2527-06 Standard Test Method for Rating Electrical Performance of Concentrator Terrestrial Photovoltaic Modules and Systems Under Natural Sunlight - \(View Full Text\)](#)

[F1355-06 Standard Guide for Irradiation of Fresh Agricultural Produce as a Phytosanitary Treatment - \(View Full Text\)](#)

[F1356-99 Standard Guide for the Irradiation of Fresh and Frozen Red Meat and Poultry to Control Pathogens and Other Microorganisms - \(View Full Text\)](#)

[F1640-03 Standard Guide for Packaging Materials for Foods to Be Irradiated - \(View Full Text\)](#)

[F1736-03 Standard Guide for Irradiation of Finfish and Aquatic Invertebrates Used as Food to Control Pathogens and Spoilage Microorganisms - \(View Full Text\)](#)

[F1885-04 Standard Guide for Irradiation of Dried Spices, Herbs, and Vegetable Seasonings to Control Pathogens and Other Microorganisms - \(View Full Text\)](#)

[ISO/ASTM51204-04 Standard Practice for Dosimetry in Gamma Irradiation Facilities for Food Processing - \(View Full Text\)](#)

[ISO/ASTM51205-02 Standard Practice for Use of a Ceric-Cerous Sulfate Dosimetry System - \(View Full Text\)](#)

[ISO/ASTM51261-02 Standard Guide for Selection and Calibration of Dosimetry Systems for Radiation Processing - \(View Full Text\)](#)

[ISO/ASTM51275-04 Standard Practice for Use of a Radiochromic Film Dosimetry System - \(View Full Text\)](#)

[ISO/ASTM51276-02 Standard Practice for Use of a Polymethylmethacrylate Dosimetry System - \(View Full Text\)](#)

[ISO/ASTM51310-04 Standard Practice for Use of a Radiochromic Optical Waveguide Dosimetry System - \(View Full Text\)](#)

[ISO/ASTM51400-03 Standard Practice for Characterization and Performance of a High-Dose Radiation Dosimetry Calibration Laboratory - \(View Full Text\)](#)

[ISO/ASTM51401-03 Standard Practice for Use of a Dichromate Dosimetry System - \(View Full Text\)](#)

[ISO/ASTM51431-05 Standard Practice for Dosimetry in Electron Beam and X-Ray \(Bremsstrahlung\) Irradiation Facilities for Food Processing - \(View Full Text\)](#)

[ISO/ASTM51538-02 Standard Practice for Use of the Ethanol-Chlorobenzene Dosimetry System - \(View Full Text\)](#)

[ISO/ASTM51539-05 Standard Guide for Use of Radiation-Sensitive Indicators - \(View Full Text\)](#)

[ISO/ASTM51540-04 Standard Practice for Use of a Radiochromic Liquid Dosimetry](#)

[System - \(View Full Text\)](#)  
[ISO/ASTM51607-04 Standard Practice for Use of the Alanine-EPR Dosimetry System - \(View Full Text\)](#)  
[ISO/ASTM51608-05 Standard Practice for Dosimetry in an X-Ray \(Bremsstrahlung\) Facility for Radiation Processing - \(View Full Text\)](#)  
[ISO/ASTM51631-03 Standard Practice for Use of Calorimetric Dosimetry Systems for Electron Beam Dose Measurements and Routine Dosimeter Calibration - \(View Full Text\)](#)  
[ISO/ASTM51649-05 Standard Practice for Dosimetry in an Electron Beam Facility for Radiation Processing at Energies Between 300 keV and 25 MeV - \(View Full Text\)](#)  
[ISO/ASTM51650-05 Standard Practice for Use of Cellulose Acetate Dosimetry Systems - \(View Full Text\)](#)  
[ISO/ASTM51702-04 Standard Practice for Dosimetry in a Gamma Irradiation Facility for Radiation Processing - \(View Full Text\)](#)  
[ISO/ASTM51707-05 Standard Guide for Estimating Uncertainties in Dosimetry for Radiation Processing - \(View Full Text\)](#)  
[ISO/ASTM51818-02 Standard Practice for Dosimetry in an Electron Beam Facility for Radiation Processing at Energies Between 80 and 300 keV - \(View Full Text\)](#)  
[ISO/ASTM51900-02 Standard Guide for Dosimetry in Radiation Research on Food and Agricultural Products - \(View Full Text\)](#)  
[ISO/ASTM51939-05 Standard Practice for Blood Irradiation Dosimetry - \(View Full Text\)](#)  
[ISO/ASTM51940-04 Standard Guide for Irradiation of Insects for Sterile Release Programs - \(View Full Text\)](#)  
[ISO/ASTM51956-05 Standard Practice for Use of Thermoluminescence-Dosimetry \(TLD\) Systems for Radiation Processing - \(View Full Text\)](#)  
[ISO/ASTM52116-02 Standard Practice for Dosimetry for a Self-Contained Dry-Storage Gamma-Ray Irradiator - \(View Full Text\)](#)

[SI Quick Reference Guide: International System of Units \(SI\) - \*The Modern Metric System\* - \(View Full Text\)](#)

### **Withdrawn Standards**

E744 Standard Practice for Evaluating Solar Absorptive Materials for Thermal Applications (Withdrawn 2005) No Replacement  
E903 Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres (Withdrawn 2005) No Replacement  
E1278 Standard Guide for Radioactive Pathway Methodology for Release of Sites Following Decommissioning (Withdrawn 2005) No Replacement