



Standard Guide for Dosimetry In Radiation Processing of Fluidized Beds and Fluid Streams¹

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1. Scope

1.1 This guide describes several dosimetry systems and methods suitable for the documentation of the irradiation of product transported as fluid or in a fluidized bed.

1.2 The sources of penetrating ionizing radiation included in this guide are electron beams, X-rays (bremsstrahlung) and gamma rays.

1.3 Absorbed doses from 10 to 100,000 gray are considered, including applications such as disinfestation, disinfection, bioburden reduction, sterilization, crosslinking and graft modification of products, particularly powders and aggregates.

1.4 *This guide does not purport to address the safety concerns, if any, associated with the use of fluidized beds and streams incorporating sources of ionizing radiation. It is the responsibility of the user of this guide to establish appropriate safety and health practices and to determine compliance with regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

E170 Terminology Relating to Radiation Measurements and Dosimetry

E666 Practice for Calculating Absorbed Dose From Gamma or X Radiation

E1026 Practice for Using the Fricke Dosimetry System

E2232 Guide for Selection and Use of Mathematical Methods for Calculating Absorbed Dose in Radiation Processing Applications

F1355 Guide for Irradiation of Fresh Agricultural Produce as a Phytosanitary Treatment

F1885 Guide for Irradiation of Dried Spices, Herbs, and Vegetable Seasonings to Control Pathogens and Other Microorganisms

2.2 ISO/ASTM Standards:

51204 Standard Practice for Dosimetry in Gamma Irradiation Facilities for Food Processing

51261 Guide for Selection and Calibration of Dosimetry Systems for Radiation Processing

51275 Practice for Use of a Radiochromic Film Dosimetry System

51310 Practice for the Use of a Radiochromic Optical Waveguide Dosimetry Systems

51400 Practice for Characterization and Performance of a High-Dose Radiation Dosimetry Calibration Laboratory

51431 Practice for Dosimetry in Electron and X-Ray (Bremsstrahlung) Irradiation Facilities for Food Processing

51538 Practice for Use of the Ethanol-Chlorobenzene Dosimetry System

51540 Practice for Use of a Radiochromic Liquid Dosimetry System

51607 Practice for Use of the Alanine-EPR Dosimetry System

51608 Practice for Dosimetry in an X-Ray (Bremsstrahlung) Facility for Radiation Processing

51649 Practice for Dosimetry in an Electron Beam Facility for Radiation Processing at Energies between 300 keV and 25 MeV

51702 Practice for Dosimetry in a Gamma Irradiation Facility for Radiation Processing

51707 Guide for Estimating Uncertainties in Dosimetry for Radiation Processing

51818 Practice for Dosimetry in an Electron Beam Facility for Radiation Processing at Energies Between 80 and 300 keV

51956 Practice for Application of Thermoluminescence Dosimetry (TLD) Systems for Radiation Processing

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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.