



Standard Test Method for Radiographic Examination of Metallic Castings¹

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1. Scope

1.1 This test method² provides a uniform procedure for radiographic examination of metallic castings using radiographic film as the recording medium.

1.2 Due to the many complex geometries and part configurations inherent with cast products, it is necessary to recognize potential limitations associated with obtaining complete radiographic coverage on castings. Radiography of areas where geometry or part configuration does not allow achievement of complete coverage with practical radiographic methods shall be subject to mutual agreements between purchaser and supplier. The use of alternative nondestructive methods for areas that are not conducive to practical radiography shall also be specifically agreed upon between purchaser and supplier.

1.3 The radiographic method is highly sensitive to volumetric discontinuities that displace a detectable volume of cast material. Discontinuities that do not displace an appreciable volume of material, however, such as cracks or other planar-type indications, may not be detected with radiography unless the radiation beam is coincidentally aligned with the planar orientation of the discontinuity. In view of this limitation, it may be considered appropriate to use the radiographic method in conjunction with additional nondestructive methods that maintain reliable detection capabilities for these types of discontinuities. The use of additional methods shall be specifically agreed upon between the purchaser and supplier.

1.4 The radiographic techniques stated herein provide adequate assurance for defect detectability; however, it is recognized that, for special applications, specific techniques using more or less stringent requirements may be required than those specified. In these cases, the use of alternate radiographic techniques shall be as agreed upon between purchaser and supplier (also see Section 5).

1.5 The values stated in inch-pound units are to be regarded as standard.

1.6 *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:³

E 94 Guide for Radiographic Examination

E 155 Reference Radiographs for Inspection of Aluminum and Magnesium Castings

E 186 Reference Radiographs for Heavy-Walled (2 to 412-in. [51 to 114-mm]) Steel Castings

E 192 Reference Radiographs of Investment Steel Castings for Aerospace Applications

E 272 Reference Radiographs for High-Strength Copper-Base and Nickel-Copper Alloy Castings

E 280 Reference Radiographs for Heavy-Walled (412 to 12-in. [114 to 305-mm]) Steel Castings

E 310 Reference Radiographs for Tin Bronze Castings

E 446 Reference Radiographs for Steel Castings Up to 2 in. [51 mm] in Thickness

E 505 Reference Radiographs for Inspection of Aluminum and Magnesium Die Castings

E 543 Practice for Agencies Performing Nondestructive Testing

E 689 Reference Radiographs for Ductile Iron Castings

E 747 Practice for Design, Manufacture and Material Grouping Classification of Wire Image Quality Indicators (IQI) Used for Radiology

E 802 Reference Radiographs for Gray Iron Castings Up to 412 in. [114 mm] in Thickness

E 999 Guide for Controlling the Quality of Industrial Radiographic Film Processing

E 1025 Practice for Design, Manufacture, and Material Grouping Classification of Hole-Type Image Quality Indicators (IQI) Used for Radiology

E 1079 Practice for Calibration of Transmission Densitometers

E 1254 Guide for Storage of Radiographs and Unexposed Industrial Radiographic Films

¹ This test method 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 ASME Boiler and Pressure Vessel Code applications see related Test Method SE-1030 in Section II of that Code.

³ 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.