



Standard Method for Controlling Quality of Radiographic Testing¹

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

1. Scope

1.1 This method² covers the radiographic testing of materials for internal discontinuities, and also the use of film and other recording media. Requirements expressed in this method are intended to control the reliability or quality of the radiographic images, and are not intended for controlling the acceptability or quality of materials or products.

1.2 The number of areas or parts to be radiographed and the acceptance standard to be applied shall be specified in the contract, purchase order, product specification, or drawings. The quality level required for radiography shall be at least 2 % (2-2T), unless a higher or lower quality is agreed upon by the purchaser and the supplier.

NOTE 1—For additional information, refer to Guide E 94, Test Methods E 1030 and E 1032.

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

1.4 *This standard does not purport to address all of the safety problems, 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.* (For specific safety precautionary information see Section 15.)

2. Referenced Documents

2.1 ASTM Standards:

E 94 Guide for Radiographic Testing³

E 1025 Practice for Design, Manufacture, and Material Grouping Classification of Hole-Type Image Quality Indicators (IQI) Used for Radiology³

E 1030 Test Method for Radiographic Examination of Metallic Castings³

E 1032 Test Method for Radiographic Examination of Weldments³

E 1079 Practice for Calibration of Transmission Densitometers³

¹ This method is under the jurisdiction of ASTM Committee E-7 on Nondestructive Testing and is the direct responsibility of Subcommittee E07.01 on Radiographic Practice and Penetrators.

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² For ASME Boiler and Pressure Vessel Code Applications see Section V, Article 22 of Method SE-142.

³ *Annual Book of ASTM Standards*, Vol 03.03.

E 1316 Terminology for Nondestructive Examinations³

3. Terminology

3.1 *Definitions*— Refer to Terminology E 1316 for other terms used in this method.

4. Direction of Radiation

4.1 When not otherwise specified, the direction of the central beam of radiation shall be perpendicular, wherever possible, to the surface of the film.

5. Penetrators

5.1 The quality of all levels of radiographic testing shall be determined by a penetrator that conforms to the requirements of Practice E 1025.

6. Placement of Penetrators

6.1 Penetrators shall be placed on the source side of the section being examined and should be placed so that the plane of the penetrator is normal to the radiation beam. If this is not practicable, placement of the penetrator on a block is acceptable provided the block is of radiographically similar material, is placed as close as possible to the item being examined, and the resulting radiographic density of the block image is within prescribed penetrator/area of interest density variation tolerances.

6.2 When radiographing welds, the penetrators shall be placed on the source side adjacent to the weld being radiographed. When weld reinforcement or protruding backing ring is not removed, a shim of the same type of metal as the parent metal shall be placed under the penetrator to provide the same thickness of material under the penetrator as the average thickness through the weld. Shims shall exceed the penetrator dimensions such that the outline of at least three sides of the penetrator image shall be visible on the radiograph and the shimmed penetrator shall be placed so as not to overlap the backing strip or ring.

6.3 When examining double-walled parts such as piping or duct with a radiation source outside the pipe, the penetrator shall be placed, where practicable, on the outside of the pipe alongside the weld nearest the source of radiation.

6.3.1 In cases where placement of the penetrator on the source side is impracticable, the penetrator may be placed on the film side if one of the following conditions is met.