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Standard Practice for Radiography of Cast Metallic Surgical Implants¹

This standard is issued under the fixed designation F 629; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

^{ε1} NOTE—Subsections 4.1, 5.1, and 5.3 were editorially corrected in March 2008.

1. Scope

1.1 This practice covers the procedure for radiographic testing of cast metallic surgical implants and related weldments.

1.2 *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

E 94 ~~Guide for Radiographic Testing~~

E142 ~~Method for Controlling Quality of Radiographic Testing~~² Guide for Radiographic Examination

E 192 ~~Reference Radiographs of Investment Steel Castings for Aerospace Applications~~² Reference Radiographs of Investment Steel Castings for Aerospace Applications

E 1030 Test Method for Radiographic Examination of Metallic Castings

2.2 *ASNT Standard:*

SNT-TC-1A ~~Personnel Qualification and Certification in Nondestructive Testing~~ Recommended Practice for Personnel Qualification and Certification in Nondestructive Testing³

3. Terminology

3.1 For definitions used in this practice, refer to the terms in ~~Guide E94, Test Method E142~~ E 1030; and Reference Radiographs E 192.

4. Significance and Use

4.1 The requirements expressed in this practice are intended to control the quality of the radiographic image of cast metallic surgical implants and related weldments.

5. Radiographic Methods

5.1 The radiographic method shall be agreed upon between the purchaser and supplier but should be in accordance with ~~Guide E94~~ Test Method E 1030 and ~~Method E142~~ Guide E 94.

5.1.1 Acceptance criteria should be derived from the reference radiographs presented in Reference Radiographs E 192.

5.2 Radiography of cobalt- or iron-base surgical implant castings may create film images resulting from grain diffraction. Radiographic techniques shall be utilized to ensure differentiation between these images and actual indications.

5.2.1 Generally, cobalt- or iron-base surgical implant castings require radiation intensities higher than normal, facilitating reduced exposure times.

5.2.1.1 Energies between 250 and 400 kV may be required to radiograph surgical implants with a 1/2-in. (12.7-mm) material thickness.

5.2.2 In some instances, filters, at the tube head, and relatively thick lead intensifying screens may reduce grain diffraction while sustaining adequate radiographic sensitivity.

¹ This practice is under the jurisdiction of ASTM Committee F-4F04 on Medical and Surgical Materials and Devices and is the direct responsibility of Subcommittee F04.12 on Metallurgical Materials.

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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*, Vol 03.03, volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from American Society for Non-Destructive Testing, 3200 Riverside Drive, Columbus, OH 43221.

³ Available from American Society for Nondestructive Testing (ASNT), P.O. Box 28518, 1711 Arlingate Ln., Columbus, OH 43228-0518, <http://www.asnt.org>.