



Designation: ~~F629-97~~ Designation: F 629 – 02 (Reapproved 2007)

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.

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: E94 Guide for Radiographic Testing² E142 Method for Controlling Quality of Radiographic Testing²~~
E 94 Guide for Radiographic Examination

~~E 192 Reference Radiographs of Investment Steel Castings for Aerospace Applications² 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 and Test Method E142~~ E 1030.

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.

5.2.3 Multiple radiographic exposures in which the implant is rotated between 5 and 180°, relative to the film, may help reduce grain diffraction. Additionally, multiple radiographic exposures in which the radiographic film is moved relative to the central ray

¹ This practice is under the jurisdiction of ASTM Committee F4F04 on Medical and Surgical Materials and Devices and is the direct responsibility of Subcommittee F04.12 on Metallurgical Materials.

Current edition approved April 10, 1997; Dec. 1, 2007. Published March 1998; January 2008. Originally published as F629-79; approved in 1979. Last previous edition F629-86(1992); approved in 2002 as F 629 – 02.

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 Arlington Ln., Columbus, OH 43228-0518, <http://www.asnt.org>.