



Designation: F601 – 18

# Standard Practice for Fluorescent Penetrant Inspection of Metallic Surgical Implants<sup>1</sup>

This standard is issued under the fixed designation F601; 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 is intended as a guide for fluorescent penetrant inspection of metallic surgical implants.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.3 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

D95 Test Method for Water in Petroleum Products and Bituminous Materials by Distillation

E165/E165M Practice for Liquid Penetrant Examination for General Industry

E1135 Test Method for Comparing the Brightness of Fluorescent Penetrants

E1417/E1417M Practice for Liquid Penetrant Testing

### 2.2 ASNT Documents:<sup>3</sup>

Recommended Practice No. SNT-TC-1A

CP-189 Standard for Qualification and Certification of Non-destructive Testing Personnel

### 2.3 SAE Standard:<sup>4</sup>

AMS 2644 Inspection Material, Penetrant

### 2.4 ISO Document:<sup>5</sup>

ISO 9712 Non-destructive Testing – Qualification and Certification of NDT Personnel

### 2.5 NAS Document:<sup>6</sup>

NAS-410 Certification and Qualification of Nondestructive Test Personnel

## 3. Significance and Use

3.1 This practice is intended to confirm the method of obtaining and evaluating the fluorescent penetrant indications on metallic surgical implants.

3.2 The product acceptance and rejection criteria will be as agreed upon between the purchaser and the supplier.

## 4. Fluorescent Penetrant Method

4.1 Perform fluorescent penetrant inspection of metallic surgical implants in accordance with Practice E165/E165M, Method A.

4.2 The penetrant system used shall conform to a minimum of Sensitivity Level 3, in accordance with the latest revision of AMS 2644.

4.3 All penetrant materials shall be compatible with each other, and approved in accordance with AMS-2644.

## 5. Preparation for Testing

5.1 Pre- and post-cleaning requirements are to be agreed upon between the purchaser and supplier.

5.2 If sand/grit blasting is used for pre-cleaning, take care to ensure that defects are not masked or peened over.

## 6. Penetrant Method Materials Control

6.1 The penetrant method materials deteriorate in usefulness through contamination and age. The following controls shall be used to evaluate the materials' usefulness unless the supplier's requirements are more stringent:

<sup>5</sup> Available from International Organization for Standardization (ISO), ISO Central Secretariat, BIBC II, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland, <http://www.iso.org>.

<sup>6</sup> Available from Aerospace Industries Association (AIA/NAS), 1000 Wilson Boulevard, Suite 1700, Arlington, VA 22209-3928.

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

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

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

<sup>4</sup> Available from Society of Automotive Engineers (SAE), 400 Commonwealth Dr., Warrendale, PA 15096-0001, <http://www.sae.org>.

\*A Summary of Changes section appears at the end of this standard