



Designation: E570 – 20

Standard Practice for Flux Leakage Examination of Ferromagnetic Steel Tubular Products¹

This standard is issued under the fixed designation E570; 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.

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

1. Scope*

1.1 This practice covers the application and standardization of equipment using the flux leakage test method for detection of outer surface and inner surface discontinuities in ferromagnetic steel tubular products (**Note 1**) of uniform cross section, such as seamless and welded tubing. While this method may be sensitive to subsurface discontinuities, it is not the primary method used to identify these types of discontinuities. A secondary method, such as Ultrasonic Testing, should be considered for assessment of these types of discontinuities.

NOTE 1—The term “tube” or “tubular product” will be used to refer to both pipe and tubing.

1.2 This practice is intended for use on tubular products having outside diameters from approximately ½ to 24 in. (12.7 to 610 mm) with wall thicknesses to ½ in. (12.7 mm). These techniques have been used for other sizes, however, and may be so specified upon contractual agreement between the purchaser and the supplier.

1.3 This practice does not establish acceptance criteria; they must be specified by the using parties.

1.4 *Units*—The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.5 *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.*

1.6 *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 Recom-*

mendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

2. Referenced Documents

2.1 *ASTM Standards:*²

E543 Specification for Agencies Performing Nondestructive Testing

E1316 Terminology for Nondestructive Examinations

2.2 *Other Documents:*

SNT-TC-1A Recommended Practice for Personnel Qualification and Certification of Nondestructive Testing Personnel³

ANSI/ASNT CP-189 ASNT Standard for Qualification and Certification of Nondestructive Testing Personnel³

NAS-410 NAS Certification and Qualification of Nondestructive Personnel (Quality Assurance Committee)⁴

ISO 9712 Non-destructive Testing—Qualification and Certification of NDT Personnel⁵

3. Terminology

3.1 Definitions of terms relating to flux leakage examination are provided in Terminology **E1316**.

4. Summary of Practice

4.1 This method consists of the following steps:

4.1.1 The tube wall is magnetized at the area under examination to a proper level approaching magnetic saturation.

NOTE 2—Tubes subjected to magnetic inspections can retain various strengths and configuration of residual magnetic fields depending upon the magnetization technique. If the residual field resulting from a given technique can interfere with subsequent applications of the tube, then a supplemental demagnetization process may be required.

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

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

⁴ Available from Aerospace Industries Association (AIA), 1000 Wilson Blvd., Suite 1700, Arlington, VA 22209, <http://www.aia-aerospace.org>.

⁵ Available from International Organization for Standardization (ISO), 1, ch. de la Voie-Creuse, CP 56, CH-1211 Geneva 20, Switzerland, <http://www.iso.org>.

¹ This practice is under the jurisdiction of ASTM Committee E07 on Nondestructive Testing and is the direct responsibility of Subcommittee E07.07 on Electromagnetic Method.

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