



Designation: E1571 – 21

Standard Practice for Electromagnetic Examination of Ferromagnetic Steel Wire Rope¹

This standard is issued under the fixed designation E1571; 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 application and standardization of instruments that use the electromagnetic, the magnetic flux, and the magnetic flux leakage examination method to detect flaws and changes in metallic cross-sectional areas in ferromagnetic wire rope products.

1.1.1 This practice includes rope diameters up to 2.5 in. (63.5 mm). Larger diameters may be included, subject to agreement by the users of this practice.

1.2 *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 are provided for information only and are not considered standard.

1.3 *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.*

1.4 *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:*²

E543 Specification for Agencies Performing Nondestructive Testing

E1316 Terminology for Nondestructive Examinations

2.2 *Other Documents:*

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

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

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

ISO 9712 Nondestructive Testing—Qualification and Certification of NDT Personnel⁵

3. Terminology

3.1 *Definitions*—For definitions of terms used in this practice, refer to Terminology **E1316**.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *dual-function instrument, n*—a wire rope NDT instrument designed to simultaneously detect and display changes of metallic cross-sectional area on one channel and local flaws on another channel of a dual-channel strip chart recorder or another appropriate device.

3.2.2 *local flaw (LF), n*—a discontinuity in a rope, such as a broken or damaged wire, a corrosion pit on a wire, a groove worn into a wire, or any other physical condition that degrades the integrity of the rope in a localized manner.

3.2.3 *loss of metallic cross-sectional area (LMA), n*—a relative measure of the amount of material (mass) missing from a location along the wire rope and is measured by comparing a point with a reference point on the rope that represents maximum metallic cross-sectional area, as measured with an instrument.

3.2.4 *single-function instrument, n*—a wire rope NDT instrument designed to detect and display either changes in metallic cross-sectional area or local flaws, but not both, on a strip chart recorder or another appropriate device.

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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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 of America, Inc. (AIA), 1000 Wilson Blvd., Suite 1700, Arlington, VA 22209-3928, <http://www.aia-aerospace.org>.

⁵ 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>.

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

