



Designation: E 214 – 01

Standard Practice for Immersed Ultrasonic Examination by the Reflection Method Using Pulsed Longitudinal Waves¹

This standard is issued under the fixed designation E 214; 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 Department of Defense.

1. Scope

1.1 This practice² describes an ultrasonic examination procedure for detecting discontinuities in material using instruments that transmit and receive pulsed longitudinal ultrasonic waves introduced into the material to be examined while immersed in or impinged upon by a liquid coupling agent. This practice applies to any material that can conduct sound waves of an appropriate frequency, and can be immersed in a liquid coupling agent for inspection, or can be subject to inspection by the use of a column or stream of the couplant between the search unit and the material being examined.

NOTE 1—Practice E 1001 is a complementary document that extends Practice E 214 by describing more detailed procedures.

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:

E 127 Practice for Fabricating and Checking Aluminum Alloy Ultrasonic Standard Reference Blocks³

E 428 Practice for Fabrication and Control of Steel Reference Blocks Used in Ultrasonic Inspection³

E 1001 Practice for Detection and Evaluation of Discontinuities by the Immersed Pulse-Echo Ultrasonic Method Using Longitudinal Waves³

E 1316³

2.2 ASNT Documents

ASNT SNT-TC-1A Recommended Practice for Personnel Qualification and Certification in Nondestructive Testing⁴
ASNT CP-189, Standard for Qualification and Certification of Nondestructive Testing Personnel⁴

2.3 Aerospace Industries Association Document

National Aerospace Standard NAS 410, NAS Certification and Qualification of Nondestructive Test Personnel⁵

2.4 Military Specifications

MIL-STD-410, Nondestructive Testing Personnel Certification and Qualification⁶

3. Terminology

3.1 *Definitions*—For definitions of terms used in this practice, see Terminology E 1316.

4. Basis of Application

4.1 Personnel Qualification. If specified in the contractual agreement, personnel performing examinations to this standard shall be qualified in accordance with a nationally recognized NDT personnel qualification practice or standard such as ANSI/ASNT-CP-189, SNT-TC-1A, MIL-STD-410, or a similar document and certified by the employer or certifying agency, as applicable. The practice or standard used and its applicable revision shall be identified in the contractual agreement between the using parties.

4.2 Written Procedure. A detailed written procedure shall be used for the performance of ultrasonic examinations in accordance with this practice. The written procedure should address all applicable portions of this practice, for the purposes of consistency in application and the repeatability of the examination results. Specific requirements regarding the preparation and approval of the written procedure should be determined by the purchaser and supplier agreement.

¹ This practice is under the jurisdiction of ASTM Committee E07 on Nondestructive Testing and is the direct responsibility of Subcommittee E07.06 on Ultrasonic Testing Procedures.

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² For ASME Boiler and Pressure Vessel Code applications see related Practice SE-214 in the Code.

³ *Annual Book of ASTM Standards*, Vol 03.03.

⁴ Available from the American Society for Nondestructive Testing, 1711 Arlington Plaza, P.O. Box 28518, Columbus, OH 43228-0518.

⁵ Available from American National Standards Institute, 11 West 42nd Street, 13th Floor, New York, NY, 10036

⁶ Available from Standardization Documents Order Desk, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA, 19111-1054, Attn: NPODS.