



Designation: E127 – 20

Standard Practice for Fabrication and Control of Flat Bottomed Hole Ultrasonic Standard Reference Blocks¹

This standard is issued under the fixed designation E127; 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 a procedure for fabrication and control of metal alloy reference blocks used in ultrasonic examinations that contain flat bottom holes (FBH).

1.2 These blocks may be used for checking the performance of ultrasonic examination instrumentation and search units and for standardization and control of ultrasonic examination of metal alloy products.

1.3 The reference blocks described are suitable for use with either the direct-contact method or immersion pulse-echo ultrasonic methods.

1.4 Standard sets are described for flat surface sound entry; the Basic set, Area-Amplitude set, and Distance Amplitude set.

1.5 The requirements for FBH fabrication may be applied to round bar/billet reference standards and reference standards fabricated from other product forms.

1.6 This practice does not specify reference reflector sizes or product rejection limits. It does describe fabrication practices and applied tolerances. In all cases of conflict between this practice and customer specifications, the customer specification shall prevail.

1.7 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.

1.8 This practice has incorporated the requirements of Practice E428 and Guide E1158. Reference standards that were manufactured under Practice E428 and Guide E1158 comply with the requirements of this practice.

1.9 *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 appro-*

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

1.10 *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

B107/B107M Specification for Magnesium-Alloy Extruded Bars, Rods, Profiles, Tubes, and Wire

B221 Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes

B241/B241M Specification for Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube

E317 Practice for Evaluating Performance Characteristics of Ultrasonic Pulse-Echo Testing Instruments and Systems without the Use of Electronic Measurement Instruments

E428 Practice for Fabrication and Control of Metal, Other than Aluminum, Reference Blocks Used in Ultrasonic Testing (Withdrawn 2019)³

E1065 Practice for Evaluating Characteristics of Ultrasonic Search Units

E1158 Guide for Material Selection and Fabrication of Reference Blocks for the Pulsed Longitudinal Wave Ultrasonic Testing of Metal and Metal Alloy Production Material (Withdrawn 2019)³

E1316 Terminology for Nondestructive Examinations

E1324 Guide for Measuring Some Electronic Characteristics of Ultrasonic Testing Instruments

E2375 Practice for Ultrasonic Testing of Wrought Products

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 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 The last approved version of this historical standard is referenced on www.astm.org.

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