



Standard Test Method for Rockwell and Brinell Hardness of Metallic Materials by Portable Hardness Testers¹

This standard is issued under the fixed designation E110; 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 test method defines the requirements for portable instruments that are intended to be used to measure the Rockwell or Brinell hardness of metallic materials by performing indentation tests on the surface of materials in the field or outside of a test lab, or in cases where the size or weight of the test piece prevents it from being tested on a standard E10 or E18 hardness tester.

1.2 The principles used to measure the Rockwell or Brinell hardness are the same as those defined in the E18 standard test method for Rockwell or E10 standard test method for Brinell.

NOTE 1—Standard test methods E10 and E18 will be referred to in this test method as the standard methods.

1.3 The portable hardness testers covered by this test method are verified only by the indirect verification method. Although the portable hardness testers are designed to employ the same test conditions as those defined in the standard test methods, the forces applied by the portable Rockwell and Brinell testers and the depth measuring systems of the portable Rockwell testers may not meet the tolerance requirements of the standard methods. Portable hardness testers shall use indenters that meet the requirements of the standard test methods.

1.4 This test method does not apply to portable hardness testers that measure hardness by a means or procedure that is different than those defined in E10 or E18. For example, this test method does not apply to the methods defined in ASTM standard Practice A833, Test Methods A956 and A1038 or B647.

1.5 A report section is included to define how to indicate that the test result was obtained by using a portable device that conforms to this document.

1.6 Annex A1 is included that defines the periodic indirect verification and daily verification requirements for these instruments.

1.7 *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:²

A833 Practice for Indentation Hardness of Metallic Materials by Comparison Hardness Testers

A956 Test Method for Leeb Hardness Testing of Steel Products

A1038 Test Method for Portable Hardness Testing by the Ultrasonic Contact Impedance Method

B647 Test Method for Indentation Hardness of Aluminum Alloys by Means of a Webster Hardness Gage

E10 Test Method for Brinell Hardness of Metallic Materials

E18 Test Methods for Rockwell Hardness of Metallic Materials

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

E140 Hardness Conversion Tables for Metals Relationship Among Brinell Hardness, Vickers Hardness, Rockwell Hardness, Superficial Hardness, Knoop Hardness, Scleroscope Hardness, and Leeb Hardness

2.2 ISO Standards:³

ISO/IEC 17025 : General requirements for the competence of testing calibration laboratories

ISO/IEC 17011 : Conformity assessment -- General requirements for accreditation bodies accrediting conformity assessment bodies

¹ This test method is under the jurisdiction of ASTM Committee E28 on Mechanical Testing and is the direct responsibility of Subcommittee E28.06 on Indentation Hardness Testing.

Current edition approved July 1, 2014. Published July 2014. Originally approved in 1955. Last previous edition approved in 2010 as E110– 10. DOI: 10.1520/E0110-14.

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