



Designation: E3368/E3368M – 23a

Standard Specification for Ballistic-Resistant Helmets Worn by U.S. Public Safety Officers¹

This standard is issued under the fixed designation E3368/E3368M; 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 specification specifies minimum performance requirements and test methods for the ballistic resistance of helmets used by U.S. public safety officers and intended to protect the head against handgun and rifle ammunition.

1.1.1 The test methods within this specification were developed and validated for broadly available helmet designs. Some helmet designs may require additional or different testing than that specified in this specification.

1.2 This specification addresses ballistic performance in terms of:

- 1.2.1 Helmet resistance to penetration (RTP) of shell, fasteners, and weak points;
- 1.2.2 Helmet shell ballistic limit (V50); and
- 1.2.3 Face shield RTP and deformation.

1.3 Helmets covered by this specification are classified into RTP ballistic protection levels (see Section 8).

1.4 This specification addresses non-ballistic performance in terms of:

- 1.4.1 Helmet impact attenuation;
- 1.4.2 Helmet shell compression resistance;
- 1.4.3 Face shield resistance to blunt impact, deflection, and projectile impact;
- 1.4.4 Face shield optics; and
- 1.4.5 Retention system strength.

1.5 Backface deformation (BFD) measurement is not addressed as a requirement for compliance with this specification. If the user of this specification is interested in BFD measurement, see [Appendix X1](#).

1.6 Armor appliques are not addressed within this version of the specification.

1.7 This specification is applicable for compliance testing, verification testing, certification testing, or research and development testing.

1.8 This specification is divided into the following sections:

Section	Title
1	Scope
2	Referenced Documents
3	Terminology
4	Significance and Use
5	Test Threats, Equipment, and Materials
6	Test Item Requirements
7	Procedure for Visual Examination
8	Helmet Resistance to Penetration (RTP) Ballistic Protection Levels and Test Threats
9	Ballistic Performance Requirements for Helmet Shell RTP and BFD
10	Ballistic Performance Requirements for Face Shields
11	Ballistic Performance Requirements for Helmet Shell Ballistic Limit (V50)
12	Ballistic Performance Requirements for Fasteners
13	Ballistic Performance Requirements for Weak Points
14	Non-ballistic Performance Requirements for Helmets and Face Shields
15	Product Documentation Requirements
16	Product Label and Package Label Requirements
17	Test Report
18	Keywords
Annex A1	ASTM Helmet RTP Ballistic Protection Levels and Associated Test Threats
Annex A2	Ballistic Testing Summary
Annex A3	Non-ballistic Testing Summary
Appendix X1	Optional Backface Deformation Measurement Acceptance Criteria and Test Procedure

1.9 *Units*—The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system are not necessarily exact equivalents; therefore, to ensure conformance with the standard, each system shall be used independently of the other, and values from the two systems shall not be combined.

1.10 *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.*

1.11 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the*

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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

E3005 Terminology for Body Armor

E3062/E3062M Specification for Indoor Ballistic Test Ranges for Small Arms and Fragmentation Testing of Ballistic-resistant Items

E3111/E3111M Test Methods for Ballistic Resistant Head Protection

E3299/E3299M Test Methods for Compression Resistance of Helmets

E3342/E3342M Specification for Nonballistic-resistant Helmets Specifically Designed to be Worn by Law Enforcement and Corrections Officers When Maintaining Order in Violent Situations

E3343/E3343M Test Methods for Nonballistic-resistant Helmets Worn by Law Enforcement and Corrections

2.2 Other Standards:

ANSI/SAAMI Glossary of Terms³

ANSI/ISEA Z87.1 American National Standard for Occupational and Educational Personal Eye and Face Protection Devices³

ISO/IEC 17025 General requirements for the competence of testing and calibration laboratories⁴

MIL-DTL-46593B (with Amendment 1) Detail Specification: Projectile, Calibers .22, .30, .50, and 20 mm Fragment Simulating⁵

3. Terminology

3.1 Definitions:

3.1.1 The following terms and definitions from Terminology **E3005** are applicable.

3.1.2 *ammunition, n*—one or more loaded cartridges consisting of case, primer, propellant, and one or more projectiles.

3.1.3 *backface deformation, BFD, n*—the indentation in the backing material caused by a projectile impact on the test item during testing; synonymous with *backface signature*.

3.1.4 *ballistic resistance, n*—a characteristic of protective equipment or materials describing their ability to provide protection from projectiles.

3.1.5 *cartridge, n*—a single assembled unit consisting of a bullet, propellant, primer, and the case; synonymous with *round*.

3.1.6 *conditioning, n*—a process that exposes an item, prior to testing, to a specified controlled environment or physical stresses, or both.

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 National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

⁴ Available from International Organization for Standardization (ISO), ISO Central Secretariat, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland, <https://www.iso.org>.

⁵ Available online at ASSIST Quick Search, <http://quicksearch.dla.mil>.

3.1.7 *fair hit, n*—a test threat impact (on a test item) that meets all specified requirements in a particular test method.

3.1.8 *model, n*—the manufacturer's design, with unique specifications and characteristics, of a particular item.

3.1.9 *shot-to-edge distance, n*—the distance from the center of the projectile impact to the nearest test item edge.

3.1.10 *shot-to-shot distance, n*—the distance from the center of the projectile impact to the center of any other projectile impact on the test item.

3.1.11 *supplier, n*—the party that is responsible for ensuring that products meet and, if applicable, continue to meet, the requirements of an ASTM specification, a purchase specification, a contract, or an independent, third-party conformity assessment body (e.g., certifier, testing laboratory).

3.1.12 *test item, n*—a single article intended for testing.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *armor applique, n*—a removable unit of protective material (soft armor or hard armor) intended to be placed over the strike face of a protective product, such as a ballistic-resistant helmet or shield, to enhance ballistic protection in a localized area.

4. Significance and Use

4.1 The purpose of this specification is to provide performance requirements and test methods for the evaluation of ballistic helmets worn by public safety officers.

4.2 This specification may be used by suppliers, certification bodies, testing laboratories, research and development organizations, and others assessing the performance of ballistic helmets.

4.3 The specification may be used by purchasers in their evaluation of products to meet their needs and requirements.

5. Test Threats, Equipment, and Materials

5.1 The test range shall meet the requirements of Specification **E3062/E3062M** (including the temperature and humidity requirements).

5.1.1 No firearms shall be used for testing.

NOTE 1—Specification **E3062/E3062M** allows the use of a universal receiver or firearm for testing. This specification does not allow use of firearms for testing.

5.2 The following equipment shall meet the requirements of Test Methods **E3111/E3111M**, Section 6, Test Equipment and Apparatus: yaw-measuring equipment, headforms, test item fixtures, witness panels, conditioning chambers, dunk tanks, weatherometers, and laser scanning equipment.

5.3 Equipment for non-ballistic testing shall meet the requirements of the relevant sections of Test Methods **E3343/E3343M** and **E3299/E3299M**.

5.4 Equipment for test item conditioning shall be as described in Test Methods **E3111/E3111M**, Section 10, Conditioning of Test Items.

6. Test Item Requirements

6.1 Test items shall be actual products that are sized as specified in Sections 9 – 14 of this specification.