



Designation: E3236/E3236M – 21

Standard Specification for Ballistic-resistant Barriers Used in Homeland Security or Public Safety Applications¹

This standard is issued under the fixed designation E3236/E3236M; 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 requirements for ballistic-resistant barriers to be used in homeland security or public safety applications for protection against complete penetration of projectiles from small arms². The purpose of this specification is to define baseline performance for ballistic-resistant barriers.

1.2 Items covered by this specification may be rigid or flexible barriers of uniform ballistic layout that are either temporarily or permanently installed. Examples of products include cubicle partitions; non-structural barriers; security checkpoint barriers; and barriers installed in judges' benches, school safe rooms, and service counters.

1.2.1 This specification addresses two configurations of barriers: (1) stand-alone and (2) in conjunction.

1.2.2 For barriers that include a viewport(s), each viewport shall be tested in accordance with Test Method E3141/E3141M.

1.2.3 This specification is not intended to address architectural products covered by ASTM Committees F12 and F33, such as building materials and security glazing.

1.3 This specification defines ballistic performance categories, and the supplier shall declare the ballistic performance category(ies) for testing to this specification.

1.4 This specification requires both Resistance to Penetration (RTP) Testing and Ballistic Limit (V_{50}) Testing.

1.4.1 In addition to the required tests, an optional test with specific temperature conditions is provided that allows testing beyond the minimum requirements of this specification. See Appendix X1. Statements of conformance with this specification shall not include any optional tests unless the optional test is conducted, and the results are included in the test report.

¹ This specification is under the jurisdiction of ASTM Committee E54 on Homeland Security Applications and is the direct responsibility of Subcommittee E54.04 on Personal Protective Equipment (PPE).

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² Small arms are defined as portable firearms, typically including handguns, shotguns, rifles, and light machine guns (Terminology E3005).

tion shall not include any optional tests unless the optional test is conducted, and the results are included in the test report.

1.5 This specification requires testing of ballistic-resistant barriers in one of the following two ways:

1.5.1 *Stand-alone Products*—Test items shall be shoot packs, armor coupons, or actual products mounted in a test fixture with air backing.

1.5.2 *In Conjunction Products*—Test items shall be actual products mounted in the intended use configuration, including mounting hardware and any materials expected to be in front of and behind the product.

1.6 It is anticipated that this specification will be referenced by certifiers, purchasers, or other users to meet their specific needs.

1.7 Selection and procurement guidance is provided in Appendix X2 to assist purchasers in using this specification.

1.8 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.

1.8.1 The user of this standard will identify the system of units to be used, and it is critical to ensure that any cross-referenced standards maintain consistency of units between standards.

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 appropriate 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:³

E3005 Terminology for Body Armor

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

E3110/E3110M Test Method for Collection of Ballistic Limit Data for Ballistic-resistant Torso Body Armor and Shoot Packs

E3112/E3112M Test Method for Ballistic-resistant Products and Shoot Packs

E3141/E3141M Test Method for Ballistic Resistant Shields for Law Enforcement

2.2 ISO/IEC Standards:⁴

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

ISO/IEC 17050-1 Conformity assessment – Supplier’s declaration of conformity – Part 1: General requirements

ISO/IEC 17050-2 Conformity assessment – Supplier’s declaration of conformity – Part 2: Supporting documentation

ISO/IEC 17065 Conformity assessment – Requirements for bodies certifying products, processes and services

2.3 Other Standards:

MIL-STD-662F Military Standard: V₅₀ Ballistic Test for Armor⁵

NIJ Standard-0101.06 Ballistic Resistance of Body Armor⁶

3. Terminology

3.1 From Terminology E3005: *ballistic limit*, *ballistic material*, *complete penetration*, *controlled ambient*, *hard armor*, *obliquity*, *plate*, *small arms*, *shoot pack*, *soft armor*, *test item*, *test threat*, and *V₅₀*.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *armor coupon*, *n*—a test item prepared with materials, or with materials and construction features, utilized in body armor or other ballistic-resistant products, but not intended to be used as a ballistic-resistant product.

3.2.1.1 *Discussion*—The armor coupon may be either rigid or soft.

3.2.2 *ballistic layup*, *n*—the layering and arrangement of ballistic materials through the thickness of a protective product.

3.2.3 *in conjunction*, *adj*—intended to be used with another material or item in close proximity to either surface of the protective product.

³ 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.

⁴ 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>.

⁵ Available from U.S. Government Printing Office, Superintendent of Documents, 732 N. Capitol St., NW, Washington, DC 20401-0001, <http://www.access.gpo.gov>.

⁶ Available from National Institute of Justice (NIJ), 810 7th St., NW, Washington, DC 20531, <http://nij.gov>.

3.2.4 *stand-alone*, *adj*—intended to be used with no other material or item within 5 cm [2 in.] of either surface of the protective product.

3.2.5 *supplier*, *n*—the party that is responsible for ensuring that products meet and, if applicable, continue to meet, the requirements. (Adapted from ISO/IEC 17065)

3.2.6 *supplier’s declaration of conformity (SDOC)*, *n*—the procedure by which a first party or supplier conveys assurance that the object of conformity fulfills specified requirements.⁷

4. Design and Configuration Requirements

4.1 The ballistic-resistant barrier shall be free of any unintended holes, voids, bulges, protrusions, or dents.

4.2 The surfaces of the barrier shall be free from blisters, cracks, crazing, chipped corners or edges, sharp edges, or delamination.

5. Test Item Requirements

5.1 Test Item Quantity

5.1.1 The number of test items required depends on the supplier-declared ballistic performance category, the materials being tested, and the test item configuration. See Fig. A1.1 through Fig. A1.5 in Annex A1 for the expected number of test items for each performance category.

5.2 Stand-alone Product Testing

5.2.1 Single-piece Test Items:

5.2.1.1 Each test item shall be either:

(a) The actual product, or

(b) An armor coupon, at least 380 mm by 380 mm [15.0 in. by 15.0 in.] and having identical ballistic layup and build as the actual product.

5.2.2 Multi-Piece Test Items:

5.2.2.1 The test item shall be the actual product or a miniature mockup of a complete system build (for example, three identical panels connected together by vertical or horizontal joints).

5.3 In Conjunction Product Testing

5.3.1 Single-piece Test Items:

5.3.1.1 Each test item shall be an actual product of representative size mounted in its intended use configuration.

5.3.2 Multi-Piece Test Items:

5.3.2.1 The test item shall be the actual product or a miniature mockup of a complete system build (for example, three identical panels connected together by vertical or horizontal joints) mounted in its intended use configuration.

5.4 Test Items for Optional Testing

5.4.1 One or more additional test items may be needed to fit the necessary shots for optional testing at extreme temperatures.

6. Performance Requirements

6.1 Resistance to Penetration (RTP) Testing

⁷ Definition source: https://www.standardsportal.org/usa_en/conformity_assessment/suppliers_declaration.aspx.