



Designation: E3005 – 24

# Standard Terminology for Body Armor and Ballistic Protection<sup>1</sup>

This standard is issued under the fixed designation E3005; 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 The scope of this terminology is to provide a standard terminology for body armor providing protection against ballistic threats, stabbing, fragmentation, blunt impact, or a combination of threats.

1.2 The intent of this terminology is to have terms, abbreviations, and formulas that are applicable across federal agencies, law enforcement and corrections agencies, testing and certification bodies, and manufacturers.

1.2.1 The terminology is kept general herein and should be defined more specifically as needed within individual test methods or other standards.

1.3 This terminology is not intended to describe test methods or performance requirements for body armor.

1.4 *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:<sup>2</sup>

[E3111/E3111M Test Methods for Ballistic Resistant Head Protection](#)

[E3113 Specification for Ballistic-resistant Vehicle Door Panels Used by Public Safety Agencies](#)

[E3141 Test Method for Ballistic Resistant Shields for Law Enforcement](#)

[E3236/E3236M Specification for Ballistic-resistant Barriers Used in Homeland Security or Public Safety Applications](#)

[E3347/E3347M Specification for Ballistic-Resistant Shields Used by Law Enforcement Officers](#)

<sup>1</sup> This terminology is under the jurisdiction of ASTM Committee E54 on Homeland Security Applications and is the direct responsibility of Subcommittee E54.04 on Public Safety Equipment.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

### 2.2 DOD Standard:<sup>3</sup>

[MIL-STD-3027 Method Standard for Performance Requirements and Testing of Body Armor](#)

### 2.3 ISO Standard:<sup>4</sup>

[ISO/IEC 17065 Conformity assessment: Requirements for bodies certifying products, processes and services](#)

### 2.4 SAAMI Standard:<sup>5</sup>

[SAAMI Glossary of Industry Terms](#)

## 3. Terminology

**accessory**, *n*—a body armor component that is detachable or removable from the body armor and is intended to provide extended area of coverage protection against threats that may include ballistic threats, stabbing, fragmentation, blunt impact, or a combination of threats.

DISCUSSION—Accessories are typically attachments to tactical body armor providing protection to areas not covered by the vest, such as the shoulders, upper arms, neck, sides, pelvis, and groin. See *tactical body armor*. See *vest*.

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

**angle of incidence**, *n*—the angle between the test threat line of aim and the line normal to a reference plane based on the front surface of the backing assembly or witness panel. See also *obliquity*.

DISCUSSION—Some standards have used the terms *angle of incidence* and *obliquity* as synonyms, but in this standard, they are defined differently. Fig. 1 provides examples to aid in visualizing the difference between *angle of incidence* and *obliquity*.

**applique**, *n*—a three-dimensional item molded from backing material that is shaped and sized for testing or conditioning a nonplanar test item.

DISCUSSION—Some appliques are designed for the purpose of filling the entire space behind a nonplanar test item; other appliques are designed to assess features of a nonplanar test item.

<sup>3</sup> Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401, <http://www.access.gpo.gov>.

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

<sup>5</sup> Available from Sporting Arms and Ammunition Manufacturers' Institute, Inc., 11 Mile Hill Rd, Newtown, Connecticut, 06470–2539, [www.saami.org](http://www.saami.org).

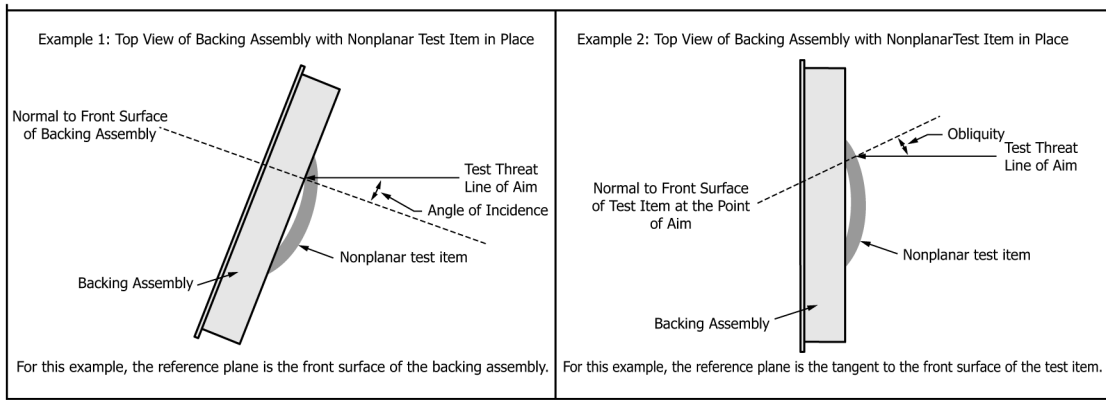


FIG. 1 Examples to Aid in Visualizing the Difference Between Angle of Incidence (Example 1) and Obliquity (Example 2)

**applique pattern**, *n*—a replica of the final product (that is, applique) used for preparing the applique mold cavity.

**areal density**, *n*—a measure of the mass of the armor panel per unit area, usually expressed in kilograms per square meter ( $\text{kg}/\text{m}^2$ ) or pound-mass per square foot ( $\text{lbm}/\text{ft}^2$ ).

**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. **E3347/E3347M – 23**

**armor carrier**, *n*—See *carrier*.

**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.

DISCUSSION—The armor coupon may be either rigid or soft. **E3236/E3236M – 21**

**armor panel**, *n*—a component of soft body armor consisting of protective materials, typically enclosed in a panel cover. See *ballistic panel*, *blunt impact panel*, *stab panel*. See also *panel cover*.

**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*.

DISCUSSION—Details necessary for making BFD measurements are specified in individual test methods.

**backface signature**, *n*—See *backface deformation*.

**backing assembly**, *n*—a backing fixture filled with backing material. For example, a clay block is a type of a backing assembly.

**backing fixture**, *n*—any apparatus designed to hold the backing material(s) for a specific test.

**backing material**, *n*—the substance placed behind the test item during testing.

DISCUSSION—The backing material typically provides support for the test item, and it may act as a witness material and may provide a measurable indication of the test item performance.

**ballistic layup**, *n*—the layering and arrangement of ballistic materials through the thickness of a protective product. **E3113 – 23, E3236/E3236M – 21**

**ballistic layup**, *n*—the layering of ballistic materials through the thickness of the ballistic-resistant item under consideration.

DISCUSSION—Ballistic materials are typically recorded from strike face to body side. **E3141 – 23**

**ballistic limit**, *n*—a measure of an item's ballistic resistance to complete penetration expressed as a velocity associated with some probability of perforation.

DISCUSSION—The item may be a test item, material, shoot pack, body armor, or other ballistic-resistant product.

**ballistic panel**, *n*—a type of armor panel intended to provide ballistic resistance.

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

**basic plane**, *n*—the plane through the centers of the external ear openings and the lower edges of the eye sockets.

DISCUSSION—See Fig. 2 for a pictorial representation of the location of the basic plane. **E3111/E3111M – 22**

**blunt impact panel**, *n*—a type of armor panel intended to provide protection against impact from a blunt object.

**blunt impact resistance**, *n*—a characteristic of protective equipment or materials describing their ability to provide protection against impact from a blunt object.

**body armor**, *n*—an item of personal protective equipment intended to protect the wearer from threats that may include ballistic threats, stabbing, fragmentation, or blunt impact.

DISCUSSION—Law enforcement and corrections officers typically refer to body armor as a vest. See *vest*.

**bridge gauge**, *n*—an assembly used for measuring that consists of a depth gauge and supports that rest on opposite sides of the backing fixture.

**bullet**, *n*—a projectile fired from a firearm or testing apparatus.