



Designation: E3005 – 18

## Standard Terminology for Body Armor<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 ( $\epsilon$ ) 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>

[E3086 Practice for Creating Appliques for Use in Testing of Nonplanar Soft Body Armor Designed for Females](#)

[E3107 Test Method for Resistance to Penetration and Back-face Deformation for Ballistic-resistant Torso Body Armor and Shoot Packs](#)

[E3110 Test Method for Collection of Ballistic Limit Data for Ballistic-resistant Torso Body Armor and Shoot Packs](#)

[E3112 Test Method for Ballistic-resistant Products and Shoot Packs](#)

<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 Personal Protective Equipment (PPE).

Current edition approved Oct. 1, 2018. Published October 2018. Originally approved in 2015. Last previous edition approved in 2015 as E3005 – 15. DOI: 10.1520/E3005-18.

<sup>2</sup> 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.

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

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

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

[NIJ Standard-0101.06 Ballistic Resistance of Body Armor](#)

#### 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. (Test Method E3110 – 18). 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. (Practice E3086 – 17)

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

<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).

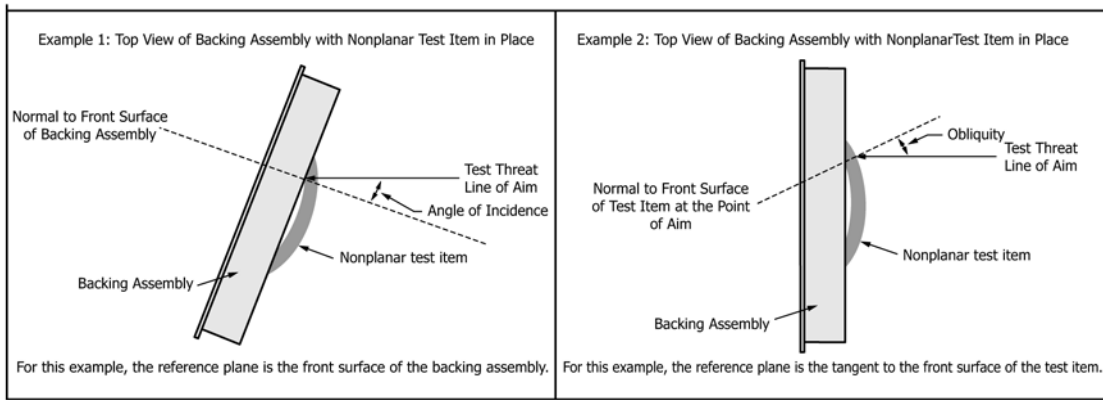


FIG. 1 Examples to Aid in Visualizing the Difference Between Angle of Incidence (Example 1) and Obliquity (Example 2)

**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 carrier, *n***—See *carrier*.

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

**ballistic limit, *n***—a measure of an item's ballistic resistance to complete penetration expressed as a velocity associated with some probability of perforation. (Test Method E3110 – 18)

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

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

**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*.

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

DISCUSSION—The SAAMI definition considers bullets to be projectiles fired from rifled barrels, which differentiates bullets from shot, slugs, fragment simulators, and other projectiles.

**carrier, *n***—a garment whose primary purpose is to retain the armor panel(s) or plate(s) and provide a means of supporting and securing the armor panel(s) or plate(s) to the wearer.

**cartridge, *n***—a single assembled unit consisting of a bullet, propellant, primer, and casing. Synonymous with *round*.

**combination armor, *n***—a type of body armor intended to protect the wearer from both ballistic threats and stabbing.

DISCUSSION—Combination armor is sometimes called dual-threat armor or multiple-threat armor.

**complete penetration, *n***—the result of a test threat impact if one or more of the following conditions are met: (1) any portion of a test threat, a fragment of a test threat, or a fragment of the test item passes through the wear face of the test item; (2) a hole is created through the test item; (3) the presence of a test threat, a fragment of a test threat, or a fragment of the test item is embedded or passes into the backing material; or (4) a hole is created through the witness panel. Synonymous with *perforation*.

DISCUSSION—The conditions for complete penetration are specified in individual test methods.

**concealable body armor, *n***—a vest designed to be worn under the shirt (uniform or undercover) or in a carrier that looks like a uniform shirt so that it is not easily seen.

DISCUSSION—Concealable body armor is also called concealable armor.