

Terms & Definitions

Version V1.0

Last Update: 22.September 2008

A - F

ACP

Abbreviation for Automatic Colt Pistol.

Angled testing

Part of the ballistic material testing, in accordance with the German technical guideline for body armor. Angle between bullet line of flight and test object is 25°.

AP

Abbreviation for Armor Piercing. Used for the classification of bullets, regarding the deformation characteristics.

Aramide

Short form of aromatic polyamide. All amide groups (-CO-NH-) are separated by phenylene groups, that is, the amide groups attach to phenyl rings opposite to each other. Depending on the position of the amide groups, the result is called para or meta aramide. Aramide is a chemical raw material which is used for production of high performance fibers, sold under the tradenames Kevlar®, Twaron® and Artec®.

Areal weight

Weight of armor panels divided by protection area of the panels. Numerical value followed by the unit g/dm² means, weight in gram of the ballistic package with size 10 x 10 cm. Areal weight offers the possibility to compare different ballistic packages independently of their protective area.

Backface signature

Depth of depression made in the backing material, created by a nonpenetrating projectile impact. Backface signature is measured from the plane defined by the front edge of the backing material fixture. In accordance with the German technical guideline for concealable body armor, the value is not allowed to exceed a 44 mm limit.

Ballistic test laboratory

Beside examination and testing of handguns, shooting devices, ammunition and propelling charges, they also perform ballistic material testings. This includes bulletproof vests, armored vehicles and bulletproof glass. In Germany, ballistic test laboratories are located in Mellrichstadt, Ulm, Munich, Suhl, Kiel, Köln and Hannover.

Biometry

Biometry is the science of measurements of the human body.

Blunt trauma

When a projectile is stopped by body armor, shockwaves pass through the body of the wearer. The damaging mechanism caused by impact in human tissue is called blunt trauma.

Compliance Test Report

The results of ballistic performance testing are summarized in the test report.

Contact shot

Part of ballistic material testing, in accordance with the German technical guideline for body armor. The weapon has permanent contact with the test object at 100±5 N pressure.

Crossply

Yarn can be woven into fabrics or processed into a crossply laminate. In a laminate, the completely stretched fibers are positioned parallel to each other and embedded in a chemical matrix, which is sealed by a foil. The crossply laminate is also known as shield.

DHPol

German Police University, which has emerged from the Police Academy (Polizei-Führungsakademie, PFA).

Dyneema®

Tradename of a high performance fiber, made of polyethylene, which is produced by the company DSM High Performance Fibers.

FMJ

Abbreviation for Full Metal Jacket. Used for classification of bullets.

G - L

Guideline

See technical guideline.

HK

Abbreviation for the German word „Hartkern“, which means hard core and is used for classification of bullets, regarding deformation characteristics.

Hybrid

A ballistic package is called hybrid (Latin: two different kinds of origin), when it consists of fabric as well as shield, or fabric respectively shield structure is made of different ballistic fibers.

Hydrolysis

Hydrolysis is a chemical process in which a compound is broken up by water into one or more new compounds. One fragment of the parent compound gains a hydrogen ion (H) from the water molecule. The other group collects the remaining hydroxyl group (OH) from the water molecule. Common formula of hydrolysis reaction:
$$A-B + H-OH \rightarrow A-H + B-OH$$

JHP

Abbreviation for Jacketed Hollow Point. Used for classification of bullets.

JSP

Abbreviation for Jacketed Soft Point. Used for classification of bullets.

Kevlar®

Tradename of a high performance fiber, made of polyamide, which is produced by the company DuPont.

Location of bullet

Result of ballistic performance testing. Depending on bullet position relatively to the test object, we have a complete penetration, a partial penetration or a ricochet.

LR

Abbreviation for Long Rifle. Used for classification of bullets.

LRN

Abbreviation for Lead Round Nose. Used for classification of bullets.

M - R

MsF

Abbreviation for the German word „Messing-Flachkopf“, which means brass flated nose and is used for classification of bullets, regarding type of bullet.

NIJ

Abbreviation for National Institute of Justice. As part of the U.S. Department of Justice, the NIJ is responsible for development and evaluation of standards for body armor.

Oeko-Tex Standard

„Oeko-Tex Standard 100“ is a certificate for products of the textile and clothing industry. It is the most widespread label for textiles, tested for harmful substances, worldwide. This quality standard specifies the analyses of harmful substances, which are classified as human ecological risky with appropriate, scientific valid limits.

Panel

Short form of ballistic panel. This is the protective component of an body armor, primarily consisting of ballistic resistant materials, usually enclosed in a nonremovable cover. Concealable body armor are normally provided with front and back panel.

Polyamide

Chemical name for a macro molecule (polymer), which is obtained by polymerisation and is used as raw material for production of high performance fibers. See also Aramide.

Polyethylene

Chemical name for a macro molecule (polymer), which is obtained by polymerisation of the monomer ethene (-CH₂-CH₂-) and is used as raw material for production of high performance fibers.

PTI

Institute for Police Technology in Germany (Polizei-technisches Institut).

S - Z

Shield

Another name for crossply laminate.

Shock absorber

Shock absorber can reduce the effect of an impacting bullet. They are normally made of pressed high performance fibers and will be positioned between body and ballistic panel.

Spectra®

Tradename of a high performance fiber, made of polyethylene, which is produced by the company Honeywell.

Technical guideline

In Germany, ballistic body armor is verified through ballistic performance testing, in compliance with the technical guideline. The guideline is published by a committee (UA FEM), which reports to the conference of the Secretaries of the Interior of Germany (IMK) and is responsible for development and evaluation of operational equipment standards. Responsible for editorial contents is the Institute for Police Technology (PTI), which is part of the German Police University (DHPol). Current version is TR „Ballistische Schutzwesten“, dated March 2008 - Revision October 2008.

Temperatur testing

Part of the ballistic material testing, in accordance with the german technical guideline for body armor. One armor sample is cooled down to $-20\pm 5^{\circ}\text{C}$ and another sample is heated up to $+70\pm 5^{\circ}\text{C}$.

Trauma

See blunt trauma.

Twaron®

Tradename of a high performance fiber, made of polyamide, which is produced by the company TeijinAramid.

UD

Abbreviation for Uni-Directional.

Uni-Directional

Description for orientation of fibers in a crossply lamianate. Fibers are aligned parallel to each other.

v50

v50 ballistic limit testing is a statistical test, originally developed by the U.S. military to evaluate hard armor. v50

testing experimentally identifies the velocity at which a bullet has a 50 percent chance of penetrating the test object.

VMR

Abbreviation for the german word „Vollmantel-Rundkopf“, which means full metal jacketed, round nose and is used for classification of bullets, regarding type of bullet.

VMS

Abbreviation for the german word „Vollmantel-Spitzkopf“, which means full metal jacketed, pointed nose and is used for classification of bullets, regarding type of bullet.

Wet testing

Part of ballistic material testing, in accordance with the german technical guideline for body armor. The test object is watered for 30 to 35 minutes and afterwards drained for 10 minutes.

WK

Abbreviation for the german word „Weichkern“, which means soft core and is used for classification of bullets, regarding deformation characteristics.

Zylon®

Tradename of a high performance fiber, made of PBO, which is produced by the company Toyobo.

S - Z