



THE BEST  
OFFENSE  
IS A GOOD  
**DEFENSE**

Every soldier in the world wears a bulletproof vest; it is practically the main defensive gear for anyone who uses a firearm, for those working in security agencies, in companies specialized in the transportation of valuables, in the penitentiary police and even for private citizens. Thanks to the resistance of its plate, a bulletproof vest is capable of saving lives.



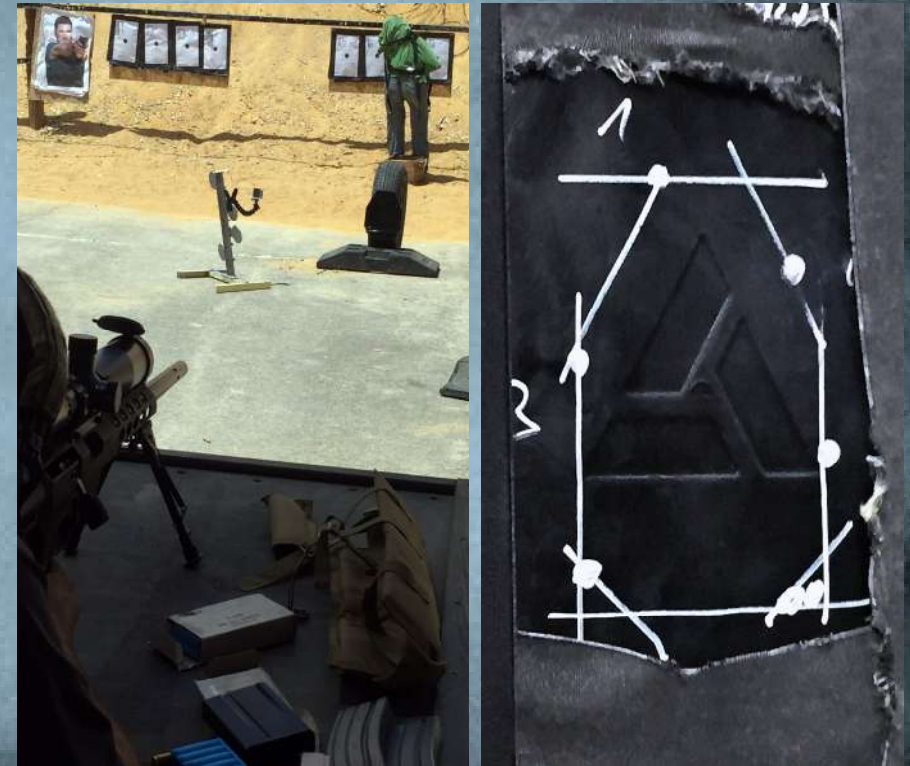
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All information in this presentation is strictly confidential

In a modern-day operational scenario, the probability of being hit by multiple shots, including high calibre rounds, highlights the limitations of the most widely used personal ballistic protective gear.

When an operator takes a direct hit on his protective vest, he suffers a major trauma from the impact which restricts his ability to react immediately; moreover, in an intense exchange of gunfire at close quarters, his vest is likely to be hit by two or more shots which can jeopardise the protection system and cause it to fail.

Delta Shield has developed and patented a Swiss-made protection system, capable of stopping a large number of shots without causing almost any trauma to the operator wearing it and is resistant even if hit by several shots impacting close to one other.



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## WHY DELTA SHIELD IS BETTER

The Delta Shield plate is certified and tested to NIJ level III standard and obviously guarantees protection from lower calibres; the NIJ level III standard requires that the protective plate is hit by 6 shots, with a 50 mm gap between the shots and a minimum distance of 68 mm from the edge, and that the trauma caused by impact (backface deformation of the plate) does not exceed 44 mm.

But we at Delta Shield believe these parameters are entirely unsatisfactory. Our solution guarantees far more: it is capable of absorbing a greater number of shots just a few millimetres apart and guarantees the plate's total efficiency even when hit 30 mm from the edge.






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## THE TECHNOLOGY BEHIND

The **Delta Shield**, a Swiss made plate, offers a really high quality level of protection;  
It is so high that, despite being a level III plate, it fulfills the level IV international standard.  
This is due to the use of new techniques and materials, that improve protection against bullets of all kinds, as well sharp-edged objects.



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 Mittglied des VPAM		<b>Prüfzeugnis</b> Test Certificate 16Z143A01
<b>Inhaber des Dokumentes:</b> Holder of the document		DELTA SHIELD SA At Fiduciaria Fontana Street Motta n. 24 CH-6830 Chiasso Schweiz
Prüfung der durchschusshemmenden Eigenschaften von Schutzwesten nach: <small>Test of the bullet resistance of body armour according to:</small> <b>NIJ Standard - 0101.04, June 2001</b>		
<b>Hersteller:</b> <small>Manufacturer</small>	DELTA SHIELD SA At Fiduciaria Fontana	
<b>Auftraggeber:</b> <small>Applicant</small>	DELTA SHIELD SA At Fiduciaria Fontana	
<b>Prüfgegenstand:</b> <small>Sample</small>	Schutzwesteneinschub (Hartschutz) <small>Insert for body armour vest (hard armour)</small>	
<b>Probenbezeichnung:</b> <small>Designation</small>	model: D-3SA-MK1	
<b>Prüfdatum:</b> <small>Test date</small>	19. Mai 2016	
<b>Detaillierergebnisse siehe</b> <b>Prüfbericht Nr.:</b> <small>Detailed results see test report No.</small>	16W143A01	
 <b>Die vorgelegte Probe erfüllte die Anforderungen nach:</b> <small>The submitted sample met the requirements according to:</small> <b>NIJ Standard - 0101.04</b> <b>Armor Type III</b>		
<small>Die Prüfergebnisse beziehen sich ausschließlich auf die im zugehörigen Prüfbericht beschriebenen Prüfgegenstände. Die Gültigkeit dieses Dokumentes erlischt, wenn Veränderungen oder Modifizierungen des Herstellungsprozesses, der Materialien und/oder des Qualitätsmanagementsystems vorgenommen werden, die zu einer Beeinträchtigung der Produktkonformität führen können. Dieses Dokument ist nur mit Unterschrift und Dienstsiegel gültig. Original nur mit Prägung im Staatswappen. Die ausgearbeiteten Versuchsprotokolle dieses Dokumentes ist nur mit schriftlicher Genehmigung des Beschussamtes Mellrichstadt erlaubt. The test results relate only to the tested samples described in the accompanying test report. This document loses its validity, if an alteration or modification to the manufacturing process, materials and/or quality management system could impact the product conformity. This document is only valid with signature and official seal. Only the original document has an embossed coat of arms. The document is subject only to approval with written approval of Beschussamt Mellrichstadt.</small>		
Beschussamt Mellrichstadt, 23. Mai 2016		
 Willner		
Beschussamt Mellrichstadt (Mellrichstadt Ballistics Agency) - Lohstr. 5 - 97638 Mellrichstadt Telefon +49-9776-7050-0 - Telefax +49-9776-5457 - mellrichstadt@beschussamt.bayern.de - Germany		

## PROTECTION TYPES

### VESTS IIIA NIJ + PLATES LEVEL III NIJ

- often bulky and rigid
- protect from powerful shots only in the area covered by rigid plates
- allow up to 44 mm blunt trauma indentation

### VESTS WITH CERAMIC PLATES LEVEL III “STAND-ALONE”

- effectively protect from high velocity bullets but can take a limited number of hits with a minimum gap of 50 mm between shots
- allow up to 44 mm blunt trauma indentation
- they are fragile and in the event of a strong shock may be so badly damaged as to cease to be effective
- in many cases they cannot be immersed in water, on pain of causing a drop in performance
- these are the most expensive and hard-to-find models, but are lightweight

### VESTS WITH POLYETHYLENE PLATES LEVEL III “STAND-ALONE”

- effectively protect from high velocity bullets but can take a limited number of hits with a minimum gap of 50 mm between shots
- allow up to 44 mm blunt trauma indentation
- typically allow for blunt trauma at maximum certifiable limit
- do not protect from widely used ammo rounds such as the SS109 standard NATO

### VESTS WITH DELTA SHIELD PLATES

- protect effectively from powerful and high velocity rounds
- transfer minimal blunt trauma, only 10 mm from a distance of 15 m
- can absorb more than 12 hits
- withstand impacts as close together as 3 mm
- do not require radiographic inspection



## TECHNICAL CHARACTERISTICS



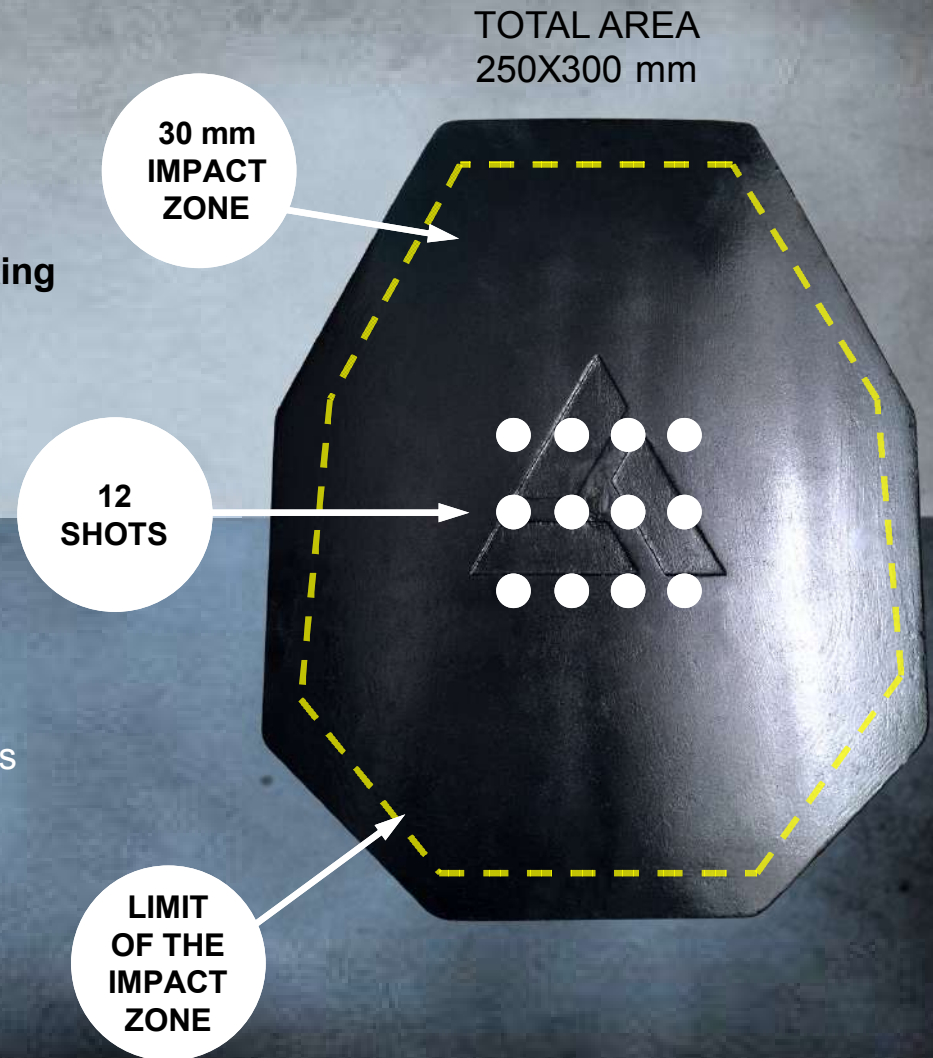
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<b>KIND</b>	Ballistic plate
<b>MATERIALS</b>	Non - ceramic
<b>SIZE</b>	Standard 300x250 mm
<b>EFFECTIVE COVERAGE AREA</b>	76%
<b>THICKNESS</b>	17 mm
<b>WEIGHT</b>	2.7 Kg +/- 5%
<b>MULTIPLE IMPACT RESISTANCE</b>	12 shots
<b>TYPE</b>	Stand-alone
<b>AVERAGE TRAUMA from 15 m</b>	10 mm
<b>PROTECTION LEVEL</b>	AP 4.6 x 30 mm (2,0g -31 grs) copper plated steel bullet 5.45 x 39 - initial speed of 952 m/s 5.56 SS 109 - initial speed of 949 m/s 5.56 M 193 - initial speed of 947 m/s AP 5,7 x 28 SS 190 F.N. 7,62 x 25 Tokarev FMJ Steel Core 7.62 x 39 Kalashnikov-MSK - initial speed of 729 m/s 7.62 x 51 Nato ball M 80 - initial speed of 855 m/s 7.62 x 54R LPS - initial speed of 875 m/s 7,62 x 54R Incendiary
<b>SERVICE LIFE</b>	10 years
<b>STORAGE REQUIREMENTS</b>	Minimal
<b>DESIGN</b>	Shooter cut



## GENERAL CHARACTERISTIC

- Produces almost no trauma
- More than 12 shots resistance
- Resistance to close shots
- The technology doesn't require any Radiographic Testing
- Stand-alone
- No rebound effect  
(in case of subsonic shots, as well as supersonic shots)  
and produces no bullet slivering or splintering of any kind
- Thermal shock resistant
- Totally waterproof
- High resistance to severe environmental conditions
- Service life of 10 years
- More than 36% of protection in case of shots near its edges
- NIJ Standard - Armor Type III Certification

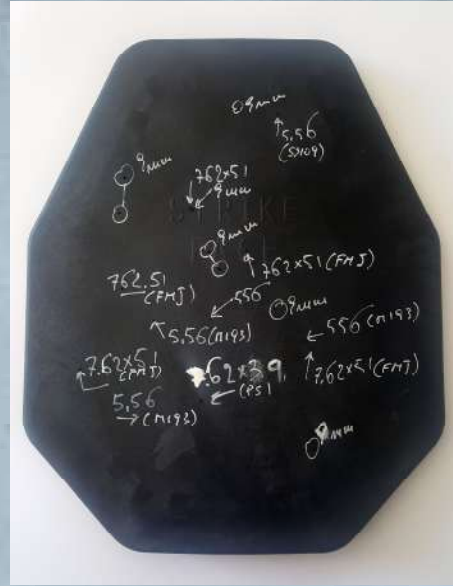


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PRODUCES  
ALMOST NO TRAUMA  
FROM 15 M



RESISTANCE  
TO MORE THAN  
12 SHOTS



RESISTANCE  
TO CLOSE  
RANGE SHOTS  
WITH DRAGUNOV



DOES NOT  
REQUIRE  
RADIOGRAPHIC  
TESTING



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## KINETIC ENERGY

Every time a bullet hits a ballistic plate, it generates kinetic energy which spreads throughout the plate; the faster the plate disperses the energy, the less trauma there is to the user.

Conventional plates are unable to disperse kinetic energy properly, causing bodily harm to the operator.

Luckily things are different when it comes to **Delta Shield!**

Our plate is designed to spread energy sideways, without any harmful effect to the user.

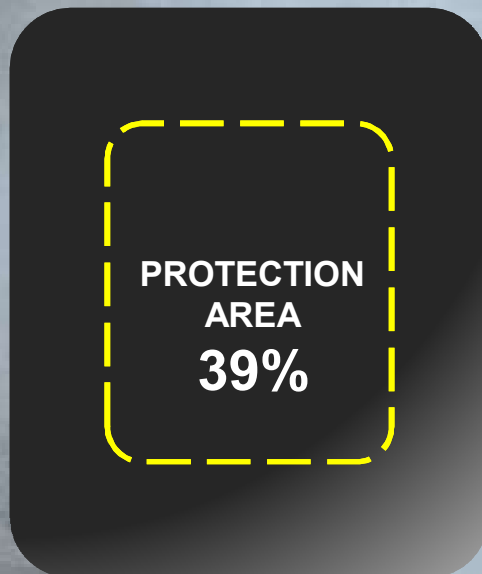


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## EFFECTIVE PROTECTION AREA

The NIJ standard  
specifies a minimum protective area  
of 39%

250X300 mm



**DELTA SHIELD**  
It covers 76% of the total area,  
providing users with protection  
even near the edges

250X300 mm



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## MULTI IMPACT

Ballistic plates are normally made of polyethylene or ceramic that do not assure a safe level of protection to the wearer. This is not the case with Delta Shield.

### POLYETHYLENE:

Can take up to six 7.62 Nato shots but transmits a very high trauma, near the limit of the standard.

### CERAMIC:

In the proximity of the first shot, traditional plates become unusable and ineffective.

### DELTA SHIELD:

Can resist multiple shots, without any restriction to the distance between bullet impact points.

In the proximity of the first shot, traditional plates become unusable and ineffective. Other than that, the trauma is always very high.



Beschussamt Mellrichstadt - 2 - Report-No.: 16W143D01#  
Lohstraße 5, 97638 Mellrichstadt Test date: 19.05.2016

#### Description of the specimen in shooting direction (specification of the manufacturer):

hard armour plate single curved

manufacturer's data:  
Metal alloy / polymer  
Single curve - shooter cut  
18mm  
41kg/m<sup>2</sup>  
300x250x18mm  
Medium

Size of the samples (mm): 300 x 250, thickness (mm): 17,0  
Total weight determined by the Beschussamt (g) : 2821  
Mass per unit area determined by the Beschussamt (kg/m<sup>2</sup>) : ---  
Mass per unit area determined by the manufacturer (kg/m<sup>2</sup>) : ---

#### Test conditions and results:

Calibre : 7,62 x 54R M.N. (7,62 Russ.)  
Bullet type : FMJ/PS/FeC (mild steel core, LPS, Ost, CN119)  
Bullet mass : 9,60g  
Weapon : test barrel No. 01/01  
Barrel length : 600mm  
Twist length : 240mm  
Shooting distance : 15,00m  
Test range temp. : 22°C  
Test range humid. : 43%  
Backing Material : Roma No.1  
Backing material calibration: 19,0mm 18,5mm 19,0mm

No.	veloc.	energy	pene-	angle	depth	diam.	remarks
	V(12,50)	E(12,50)	tr.	plasticine			
	[m/s]	[J]	Y/N	[deg.]	[mm]	[mm]	
1	830	3307	N	90,0	33,0	80	
2	845	3427	N	90,0	18,0	50	
3	860	3550	N	90,0	19,0	50	
4	872	3650	N	90,0	11,0	40	
5	875	3675	N	90,0	20,0	70	

90 degree = 0 degree NATO

The test was carried out according to special requirements of the applicant. A final classification is not applicable.

This report consists of 2 pages and 1 appendix

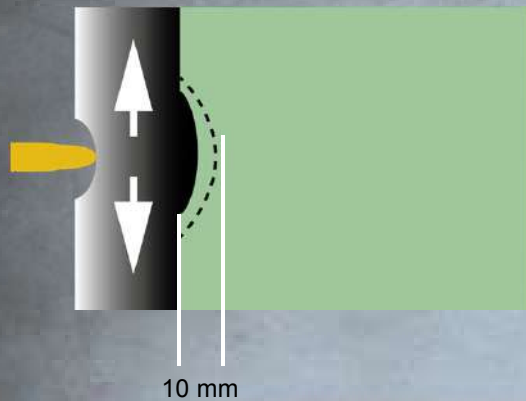


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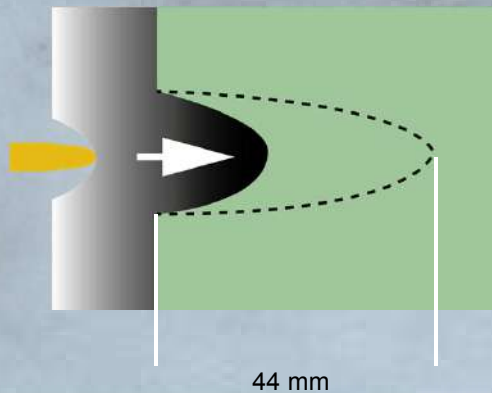
## TRAUMA EFFECT

DELTA SHIELD



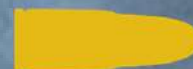
VS

CONVENTIONAL BALLISTIC PLATE



## MULTI IMPACT DAMAGE

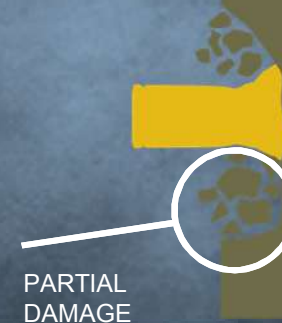
BULLET



CERAMIC



SUPPORT



In the proximity of the first shot impacted, traditional plates become unusable and ineffective



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## SERVICE LIFE

### CONVENTIONAL BALLISTIC PLATES

The service life of conventional plates  
is **5 years**

which may be reduced in the presence of  
external factors such as  
humidity, extreme temperatures, chemical agents,  
accidental falls and blows,  
inadequate storage conditions etc.



VS

### DELTA SHIELD

The service life of Delta Shield plates  
is **10 YEARS**

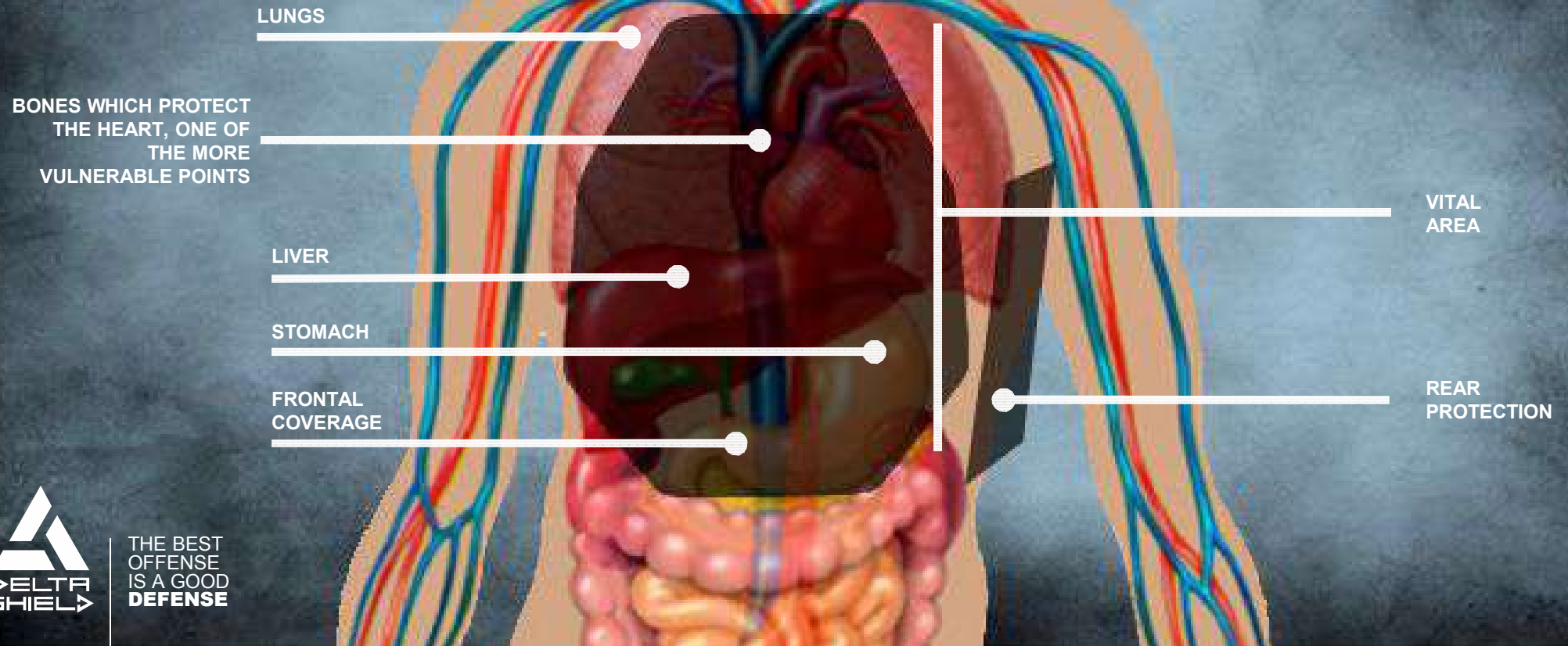
even when exposed to external agents  
such as high and low temperatures  
and water immersion.

Unlike conventional plates,  
Delta Shield does not require  
Radiographic Testing.



















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## PROTECTION OF VITAL ORGANS



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# PROTECTION LEVELS

 NO PROTECTION										
 PROTECTION										
 KEVLAR BULLET VEST										
	22 LR	9 mm	Magnum .44	5.45x39 mm MSC	5.56x45 mm M193	5.56x45 mm SS109	7.62x39 mm MSC	7.62x54R mm LPS	7.62x54R mm SNIPER	7.62x51 mm M80
	✓	✓	✓	✗	✗	✗	✗	✗	✗	✗
 BALLISTIC CERAMIC PLATES	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
 BALLISTIC POLYTHYLENE PLATES	✓	✓	✓	✗	✓	✗	✓	✗	✓	✓
	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

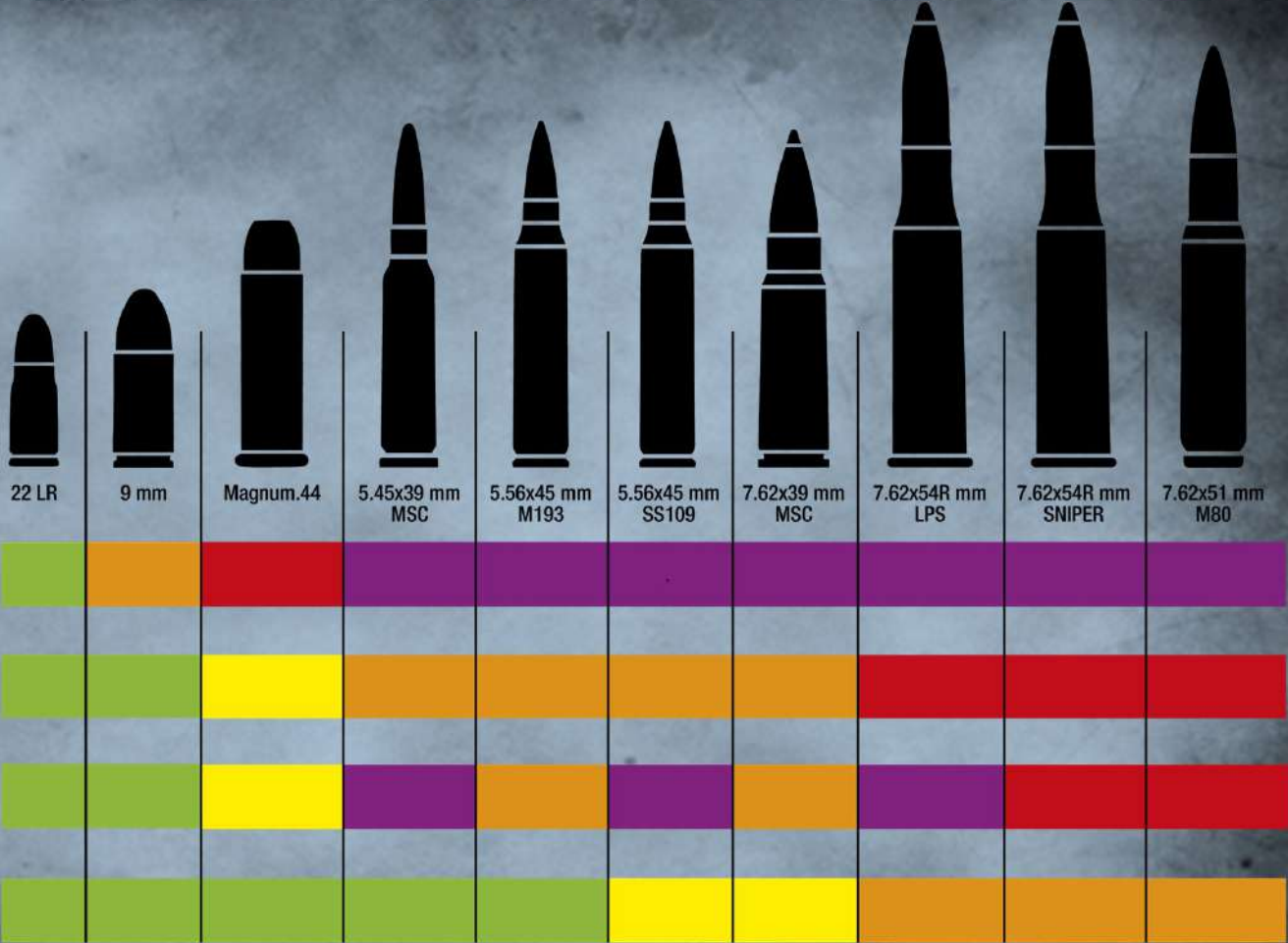
Average values of products on the market.



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# TRAUMA FROM A DISTANCE OF 15 M



Average values of products on the market.



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# AFTER 12 SHOTS


✗ PERFORATION











✓ NO PERFORATION

KEVLAR BULLET VEST

BALLISTIC CERAMIC PLATES

BALLISTIC POLYTHYLENE PLATES

 DELTA SHIELD

										
	22 LR	9 mm	Magnum .44	5.45x39 mm MSC	5.56x45 mm M193	5.56x45 mm SS109	7.62x39 mm MSC	7.62x54R mm LPS	7.62x54R mm SNIPER	7.62x51 mm M80
KEVLAR BULLET VEST	✓	✓	✓	✗	✗	✗	✗	✗	✗	✗
BALLISTIC CERAMIC PLATES	✓	✓	✓	✗	✗	✗	✗	✗	✗	✗
BALLISTIC POLYTHYLENE PLATES	✓	✓	✓	✗	✗	✗	✗	✗	✗	✗
DELTA SHIELD	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Average values of products on the market.



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## RIFLE THREATS COMPARISON

Delta Shield  
complies with all  
of these standards



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HARD ARMOR	LEVELS			
USA NIJ 0101.06 NIJ 0101.04	(III-) 5.56x45 M193, 3.35g 930 m/s*	(III+) 7.62x39 MSC, 7.9g 730 m/s*	III 7.62x51 M80 NATO BALL, 9.6g 847 m/s*	III++ 5.56x45 SS109, 4.0g 930 m/s*
US ARMY I/E/X - SAPI	A 7.62x51 M80 NATO Ball, 9.6g 847 m/s*	B 7.62x54 R LPS MSC, 9.6g 847 m/s*	C 5.56x45 M855 Ball, 4.0g 999 m/s*	
RUSSIA GOST R 50744-95	3 5.45x39 AK 74 7-N-6, PS MSC, 3.4g 900 m/s*	3 7.62x39 AK 47 57-n-231, PS MSC, 7.9g 725 m/s**	4 5.45x39 AK 74 7-N-10, PP HSC, 3.6g 900 m/s*	5 7.62x54 R SVD 57-N-323S, LPS MSC, 9.6g 830 m/s*
Germany VPAM BSW2006 (TR2008)	SK 6 7.62x39 FMJ/PB/Fe-Core 8.0g PS 720 m/s*	SK 7 (SK 3) .308 Winchester FMJ/PB/SC 9.55g MEN, DM111 830 m/s*	SK 7 (SK 3) .223 Remington FMJ/PB/SCP 4.0g MEN, SS109 950 m/s*	
GERMANY TR2003	Special (SK3+) 7.62x39 M43 VMS/Fe-Core, 8.0g 730 m/s*	SK3 7.62x51 DM111 VMS/Wk, 9.5g 830 m/s*	SK3 5.56x45 DM11 VMS/Wk + P, 4.0g 950 m/s*	
POLAND PN-V-87000 2011	K3-A 7.62x39 PS, 7.9g 720 m/s**	K3-B 5.45x45 SS109, 4.0g 950 m/s**	K3-C 7.62x51 M80, 9.6g 840 m/s**	
UK HOSDB 2007	HG3 5.56x45 LE223T3 Bonded SP, 4.02g 750 m/s**	RF1 7.62x51 L2A2 NATO Ball, 9.3g 830 m/s**	(RF1) 5.56x45 L2A1 (SS109 eq.) 4.0g 930 m/s**	RF2 7.62x51 L40A1 NATO Ball HP, 9.7g 850 m/s**

\* Velocity +/- 10 m/s  
\*\* Velocity +/- 15 m/s

THIS COMPARISON IS SIMPLIFIED BY NOT TAKING INTO CONSIDERATION DIFFERENCES IN TEST PROTOCOLS  
(I.E. REQ, BFS, SHOT-TO-SHOT SPACING, SHOT-TO-EDGE DISTANCE, CONDITIONING)



## PERFORMANCE COMPARED TO NIJ STANDARDS



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PERFORMANCE	NIJ STANDARD	DELTA SHIELD PANEL
BFS (Maximum Blunt Trauma)	44 mm	10 mm average
Maximum number of shots allowed per panel	6 shots	12 shots
Minimum shot-to-shot distance	51 mm	3 mm
Minimum shot-to-edge distance	68 mm	25 mm (Delta Shield Panel Standard)
Extreme temperature testing	ONLY LEVELS: IIA-II-III	IIA-II-IIIA Special Type-III-III Special Type-IV
Duration	5 years	10 years





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