



# Ballistic-Resistant Body Armor for Women

## Market Survey Report

February 2019



**Homeland  
Security**

Science and Technology





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## FOREWORD

The U.S. Department of Homeland Security (DHS) established the System Assessment and Validation for Emergency Responders (SAVER) Program to assist emergency responders making procurement decisions. The National Urban Security Technology Laboratory (NUSTL) located within the DHS Science and Technology Directorate (S&T) manages the SAVER Program, which conducts objective assessments and validations on commercially available equipment and systems and develops knowledge products that provide relevant equipment information to the emergency responder community. The SAVER Program mission includes:

- Conducting impartial, practitioner-relevant, operationally oriented assessments and validations of emergency response equipment.
- Providing information, in the form of knowledge products, that enables decision-makers and responders to better select, procure, use and maintain emergency response equipment.

SAVER Program knowledge products provide information on equipment that falls under the categories listed in the DHS Authorized Equipment List (AEL), focusing primarily on two main questions for the responder community: “What equipment is available?” and “How does it perform?” These knowledge products are shared nationally with the responder community, providing a life- and cost-saving asset to DHS, as well as to Federal, state and local responders.

NUSTL is responsible for all SAVER activities, including selecting and prioritizing program topics, developing SAVER knowledge products, coordinating with other organizations and ensuring flexibility and responsiveness to first responder requirements.

NUSTL provides expertise and analysis on a wide range of key subject areas, including chemical, biological, radiological, nuclear and explosive weapons detection; emergency response and recovery; and related equipment, instrumentation and technologies. In support of this tasking, NUSTL conducted a market survey of commercially available ballistic-resistant body armor for women. This equipment falls under AEL reference number O30E-01-VSTO titled Vests, Operational.

Visit the SAVER website at [www.dhs.gov/science-and-technology/SAVER](http://www.dhs.gov/science-and-technology/SAVER) for more information on the SAVER Program, or to view additional reports on ballistic-resistant body armor for women and other technologies.



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## EXECUTIVE SUMMARY

Ballistic-resistant body armor is worn by law enforcement officers to increase their safety while in the field or during special operations. Body armor is designed to provide law enforcement officers with a layer of personal protection against specific ballistic threats within its coverage area during incidents involving firearms. With women's presence in law enforcement steadily increasing, body armor is being optimized specifically for the female physique. This market survey report includes 17 ballistic-resistant armor carrier models ranging in price from \$480 to \$1,730.

The body armor identified in this market survey report is designed specifically for the female physique, and is available in a variety of colors, fabrics and ballistic performance levels. All products in this market survey report correspond with a ballistic performance level identified in the U.S. Department of Justice, National Institute of Justice Ballistic Resistance of Body Armor Standard 0101.06. This standard establishes the minimum performance requirements and test methods for the ballistic resistance of personal body armor intended to protect against gunfire, and is often utilized by law enforcement agencies to assist in determining if specific body armor meets their protective needs. The ballistic performance level of the products in the market survey report has not been independently verified by the SAVER Program.

Law enforcement agencies that consider purchasing body armor for women should carefully research the overall capabilities and limitations of each ballistic-resistant armor carrier in relation to their agency's operational needs.

# TABLE OF CONTENTS

1.0 Introduction.....	1
2.0 Overview.....	2
2.1 Current Technologies .....	2
2.1.1 Optimization for Women .....	2
2.1.2 Increased Durability .....	2
2.1.3 Moisture Wicking Fabric .....	2
2.2 Standards.....	2
2.2.1 NIJ Body Armor Plate Classification .....	3
3.0 Product Information .....	4
3.1 Angel Armor, RISE.....	7
3.2 Armor Express, Equinox .....	7
3.3 Armor Express, Evolution .....	7
3.4 Armor Express, Instructor Vest .....	8
3.5 Armor Express, Lo-Pro .....	8
3.6 Armor Express, Med Vest.....	8
3.7 Armor Express, Overt Carrier System (Slick Configuration) .....	8
3.8 Armor Express, Revolution .....	9
3.9 Point Blank Enterprise Inc., Elite .....	9
3.10 Point Blank Enterprise Inc., Vision .....	9
3.11 Propper International Inc., 4PV-FEM.....	10
3.12 U.S. Armor Corporation, Enforcer 5000 .....	10
3.13 U.S. Armor Corporation, Enforcer 6000 .....	11
3.14 United Shield International, Fortress.....	11
3.15 Vel-tye LLC., Private Security Tactical Vest.....	11
4.0 Manufacturer and Vendor Contact Information .....	12
5.0 Summary.....	13



## LIST OF FIGURES

Figure 2-1 P-BFS Performance Test Summary.....	3
Figure 3-1 RISE.....	7
Figure 3-2 Equinox.....	7
Figure 3-3 Evolution.....	7
Figure 3-4 Instructor Vest.....	8
Figure 3-5 Lo-Pro.....	8
Figure 3-6 Med Vest.....	8
Figure 3-7 Revolution.....	8
Figure 3-8 Overt Carrier System.....	9
Figure 3-9 Elite.....	9
Figure 3-10 Vision.....	9
Figure 3-11 4PV-FEM.....	10
Figure 3-12 Enforcer 5000.....	10
Figure 3-13 Enforcer 6000.....	11
Figure 3-14 Fortress.....	11
Figure 3-15 Private Security Tactical Vest.....	11

## LIST OF TABLES

Table 3-1 Ballistic-Resistant Body Armor for Women Product Comparison Matrix.....	5
Table 4-1 Manufacturer and Vendor Contact Information.....	12

## 1.0 INTRODUCTION

Ballistic-resistant body armor is often worn by law enforcement officers to increase their safety while in the field or during special operations. Body armor is designed to provide law enforcement officers with a layer of personal protection against specific ballistic threats within its coverage area during incidents involving firearms. With women's presence in law enforcement steadily increasing, body armor is being optimized specifically for the female physique. To provide law enforcement organizations with information on ballistic-resistant body armor for women, the System Assessment and Validation for Emergency Responders (SAVER) Program conducted a market survey on commercially available ballistic-resistant body armor for women.

This market survey report is based on information gathered from February 2 to June 21, 2017, from vendor websites, Internet research, industry publications and a government issued request for information that was posted on the Federal Business Opportunities [website](#). Additional information was obtained from the vendors through May 17, 2018.

For inclusion in this report, the ballistic-resistant body armor had to meet the following criteria:

- Commercially available
- Designed specifically for the female physique
- Fall within National Institute of Justice (NIJ) Armor Classification ballistic performance levels IIA, II, IIIA, III and IV.

Due diligence was performed to develop a report that is representative of products in the marketplace.

## 2.0 OVERVIEW

Law enforcement officers are in inherent danger while on duty and when responding to emergency situations. Ballistic-resistant body armor is used to help officers combat some of the dangers posed by firearms. Ballistic-resistant body armor has traditionally been developed for the male physique, but as women continue to join the law enforcement community it has become essential to design body armor for the female physique as well.

### 2.1 CURRENT TECHNOLOGIES

#### 2.1.1 OPTIMIZATION FOR WOMEN

The features of body armor optimized specifically for women focus primarily on modifications to the chest and hip areas, enabling them to be as protected and comfortable as men while wearing body armor. The NIJ's Justice Technology Information Center (JTIC)<sup>i</sup> notes that flexible armor, which is most frequently used by the law enforcement community, is comprised of separate front and back panels. When this armor is identified as either male or gender neutral it is comprised of two planar panels. When flexible armor is designed for the female physique two different panels are typically used, planar for the back and non-planar for the front. Non-planar armor panels that are designated as female generally use the same material layout as their planar counterpart but are designed to better conform to the female physique by utilizing different construction techniques such as folds and stitching to accomplish a better fit.

#### 2.1.2 INCREASED DURABILITY

Law enforcement officers regularly encounter situations in which their gear may be compromised, including body armor. As such, ballistic-resistant body armor is being developed with reinforced stitching for ballistic performance purposes.

#### 2.1.3 MOISTURE WICKING FABRIC

Moisture wicking fabrics have been introduced into ballistic-resistant body armor carriers and other law enforcement gear, including uniforms, to assist officers in maintaining an ideal body temperature and increase comfort levels. These fabrics work by pulling moisture away from the body to the exterior of the garment where it can easily evaporate, resulting in dryer garments. Wicking fabrics are typically comprised of synthetic fabrics, including polyester.

### 2.2 STANDARDS

NIJ Standard 0101.06, Ballistic Resistance of Body Armor<sup>ii</sup>, was published in 2008. This standard specifies the minimum performance requirements that ballistic resistant body armor must meet to satisfy the specifications of criminal justice agencies and the methods that should be used to test the armor's performance.

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<sup>i</sup> U.S. Department of Justice, National Law Enforcement and Corrections Technology Center, Body Armor Compliance Testing Program, Topic: Flexible Ballistic-resistant Body Armor Containing Two Panel Designs. [www.justnet.org/pdf/CTP-Administrative-Clarification-CTP-2015-03\\_Public.pdf](http://www.justnet.org/pdf/CTP-Administrative-Clarification-CTP-2015-03_Public.pdf)

<sup>ii</sup> U.S. Department of Justice, Office of Justice Programs, National Institute of Justice, Ballistic Resistance of Body Armor Standard 0101.06. [www.ncjrs.gov/pdffiles1/nij/223054.pdf](http://www.ncjrs.gov/pdffiles1/nij/223054.pdf)

In 2015, the NIJ National Law Enforcement and Corrections Technology Center’s Body Armor Compliance Testing Program released an administration clarification focusing on flexible ballistic-resistant body armor containing two panel designs typically used in body armor optimized for women. This clarification was intended to ensure the non-planar body armor model designs are subjected to equivalent performance requirements as planar body armor model designs. This ensures that female armor that consists of a non-planar front panel and a planar back panel are subject to the same level of ballistic testing and the test data generated from each provide equivalent levels of confidence.

### 2.2.1 NIJ BODY ARMOR PLATE CLASSIFICATION

Personal body armor covered in NIJ Standard 0101.06 are classified into five types–IIA, II, IIIA, III and IV–based on their level of ballistic performance. Armor models undergo compliance testing, specifically the Perforation and Backface Signature Test (P-BFS)<sup>iii</sup>, which measures three BFS indentations and demonstrates the armor’s resistance to perforation. Performance test summaries by classification can be found in Figure 2-1.

Armor Type	TEST VARIABLES					PERFORMANCE REQUIREMENTS			SHOT REQUIREMENTS					
	Test Round	Test Bullet	Bullet Mass	Conditioned Armor Test Velocity*	New Armor Test Velocity*	Hits Per Panel at 0° Angle	Maximum BFS Depth	Hits Per Panel at 30° or 45° Angle <sup>†</sup>	Shots Per Panel	Panel Size	Panel Condition	Panels Required	Shots Required	Total Shots Required
IIA	1	9 mm FMJ RN	8.0 g (124 gr)	355 m/s (1165 ft/s)	373 m/s (1225 ft/s)	4	44 mm (1.73 in)	2	6	Large	New Conditioned	4	24	144
										Small	New Conditioned	2	12	
	2	.40 S&W FMJ	11.7 g (180 gr)	325 m/s (1065 ft/s)	352 m/s (1155 ft/s)	4	44 mm (1.73 in)	2	6	Large	New Conditioned	4	24	
										Small	New Conditioned	2	12	
II	1	9 mm FMJ RN	8.0 g (124 gr)	379 m/s (1245 ft/s)	398 m/s (1305 ft/s)	4	44 mm (1.73 in)	2	6	Large	New Conditioned	4	24	144
										Small	New Conditioned	2	12	
	2	.357 Magnum JSP	10.2 g (158 gr)	408 m/s (1340 ft/s)	436 m/s (1430 ft/s)	4	44 mm (1.73 in)	2	6	Large	New Conditioned	4	24	
										Small	New Conditioned	2	12	
IIIA	1	.357 SIG FMJ FN	8.1 g (125 gr)	430 m/s (1410 ft/s)	448 m/s (1470 ft/s)	4	44 mm (1.73 in)	2	6	Large	New Conditioned	4	24	144
										Small	New Conditioned	2	12	
	2	.44 Magnum SJHP	15.6 g (240 gr)	408 m/s (1340 ft/s)	436 m/s (1430 ft/s)	4	44 mm (1.73 in)	2	6	Large	New Conditioned	4	24	
										Small	New Conditioned	2	12	
III	1	7.62 mm NATO FMJ	9.6 g (147 gr)	847 m/s (2780 ft/s)	-	6	44 mm (1.73 in)	0	6	All	Conditioned	4	24	24
IV	1	.30 Caliber M2 AP	10.8 g (166 gr)	878 m/s (2880 ft/s)	-	1 to 6	44 mm (1.73 in)	0	1 to 6	All	Conditioned	4 to 24	24	24
Special	-	Each test threat to be specified by armor manufacturer or procuring organization.				Armor performance and shot requirements shall depend on armor type.								

\*Target measurement velocity. Fair hit measurement velocities must be within ± 9.1 m/s (± 30 ft/s) of this value, as defined in Section 7.6.  
<sup>†</sup>Each armor that is to be shot at angles other than 0° shall be shot once at a 30° angle and once at a 45° angle.

**Figure 2-1 P-BFS Performance Test Summary**  
*Courtesy of NIJ*

<sup>iii</sup> U.S. Department of Justice, Office of Justice Programs, National Institute of Justice, Ballistic Resistance of Body Armor Standard 0101.06, Section 7.8. [www.ncjrs.gov/pdffiles1/nij/223054.pdf](http://www.ncjrs.gov/pdffiles1/nij/223054.pdf)

### 3.0 PRODUCT INFORMATION

This market survey report provides information on 17 ballistic-resistant body armor carrier models for women that range in price from \$480 to \$1,730. These products are listed in Table 3-1. Products are listed in alphabetical order by manufacturer.

Product data was obtained directly from the manufacturer or distributor, or their respective websites. The information obtained has not been independently validated by the SAVER program.

Product features in Table 3-1 are defined as follows:

**Manufacturer** indicates the manufacturer of the product.

**Vendor** indicates the vendor of the product.

**Product** indicates the product name of the product.

**Cost** indicates the price of the product rounded to the nearest U.S. dollar as quoted by the vendor, or posted on their website.

**Fabric/Composition** provides information about the type of material used to construct the interior lining, outer shell and ballistic material of each product.

**Type of Vest** indicates if the product is identified as flexible, rigid, concealable and/or external.

**NIJ Ballistic Performance Level** identifies the NIJ Standard 0101.06 ballistic-performance level assigned to the product.

**Moisture Wicking** indicates if the product is designed with moisture wicking fabrics that are designed to pull moisture from the body to assist with increasing comfort and regulating body temperature.

**Reinforced Stitching** indicates if the product has been enhanced via multiple stitches in order to strengthen the product.

**Table 3-1 Ballistic-Resistant Body Armor for Women Product Comparison Matrix**

Manufacturer	Vendor	Product	Cost	Fabric/Composition			Type of Vest	NIJ Ballistic Performance Level	Moisture Wicking	Reinforced Stitching
				Interior Lining	Outer Shell	Ballistic Material				
Angel Armor	N/A	RISE (AngArm-00052)	\$949	Antimicrobial mesh	55% CORDURA® nylon and 48% polyester	Hybrid DSM Dyneema & TexTech Sixth Generation Core Matrix Technology	Concealable Flexible	IIIA	✓	✓
Armor Express	Arrow Safety Device	Equinox (AEXPG2-A2-IIIA-FEM)	\$882	Moisture wicking and Anti-microbial	Poly-cotton	N/R	Concealable	IIIA	✓	✓
Armor Express	Arrow Safety Device	Evolution (AEXPG2-A2-IIIA-FEM)	\$890	Breeze Knit™ Anti-microbial	Lightweight Microfiber	N/R	Concealable	IIIA	✓	✓
Armor Express	Arrow Safety Device	Instructor Vest (AEXPG2-A2-IIIA-FEM)	\$921 to \$972	N/R	500/600 Denier	N/R	External Rigid	IIIA		✓
Armor Express	Arrow Safety Device	Lo-Pro (AEXPG2-A2-IIIA-FEM)	\$889	Spantron nylon knit fabric	Spantron nylon knit fabric	N/R	Concealable Flexible	IIIA	✓	✓
Armor Express	Arrow Safety Device	Med Vest (AEXPG2-A2-IIIA-FEM)	\$921 to \$972	N/R	500/600 Denier	N/R	External Rigid	IIIA		✓
Armor Express	Arrow Safety Device	Overt Carrier System Slick Configuration (AEXPG2-A2-IIIA-FEM)	\$921	N/R	500/600 Denier	N/R	External Flexible	IIIA		✓
Armor Express	Arrow Safety Device	Revolution (AEXPG2-A2-IIIA-FEM)	\$900	Breeze Knit™ Anti-microbial	Denier Microfiber twill	N/R	Concealable	IIIA	✓	✓
Point Blank Enterprise Inc.	Tactical & Survival Inc.	Elite (AXIIIA)	\$750	Armorvent with EVAP technology	Durable Water Repellant microfiber	Woven Amarid and UD Polyethylene	Concealable Flexible	IIIA	✓	✓
Point Blank Enterprise Inc.	Tactical & Survival Inc.	Vision (AXIIIA)	\$750	Aegis antimicrobial body side/outlast smart fabric	Durable Water Repellant microfiber	Woven Amarid and UD Polyethylene	Concealable External Flexible	IIIA	✓	✓
Propper International Inc.	Bob Barker Company Inc.	4PV-FEM Defender 2 (REN-2087)	\$500	Mesh 100% nylon/sides 82% nylon 18% spandex	82% nylon 18% spandex	94% Style U590 Twaron Aramid Laminate 6% Twaron Style 1006 Woven Aramid	Concealable Flexible	II	✓	✓

Manufacturer	Vendor	Product	Cost	Fabric/Composition			Type of Vest	NIJ Ballistic Performance Level	Moisture Wicking	Reinforced Stitching
				Interior Lining	Outer Shell	Ballistic Material				
Propper International Inc.	Bob Barker Company Inc.	4PV-FEM Opti 2 (REN-2068)	\$500	Mesh 100% nylon/sides 82% nylon 18% spandex	82% nylon 18% spandex	45% DSM SB 115, 36% DSM 117, 14% Sparta 1187, 5% Twaron D2642 SOS	Concealable Flexible	II	✓	✓
Propper International Inc.	Bob Barker Company Inc.	4PV-FEM Defender 3 (REN-3125)	\$500	Mesh 100% nylon/sides 82% nylon 18% spandex	82% nylon 18% spandex	81% Style U590 Twaron Aramid Laminate, 19% Twaron Style 1006 Woven Aramid	Concealable Flexible	IIIA	✓	✓
U.S. Armor Corporation	N/A	Enforcer 5000 (5226)	\$1,010 to \$1,730	Akwadyne moisture wicking mesh	Poly micro suede	Honeywell Gold Flex®, Spectra Shield® II and Dupont Kevlar® XP	Concealable External Flexible	II	✓	✓
U.S. Armor Corporation	N/A	Enforcer 6000 (6326F)	\$1,010 to \$1,730	Akwadyne moisture wicking mesh	Poly micro suede	Honeywell Gold Shield®, Spectra Shield®, TexTech Core Matrix and Dyneema	Concealable External Flexible	IIIA	✓	✓
United Shield International	N/A	Fortress (TKU-FEM-IIIA)	\$850 to \$1,100	Moisture wicking polyester	TPU coated ripstop nylon	100% Twaron Aramid fabrics	Concealable Flexible	IIIA	✓	✓
Vel-Tye	Quantum Consulting Services LLC*	Private Security Tactical Vest	\$230 to \$429	Mesh inner liner	60% 1000D Codura 30% Anti-microbial Super Mesh 10% Velcro Hook and Loop	200D Weldable Nylon, 1006 TW LM Aramid, U 590 Aramid	Concealable External Flexible	IIIA	✓	✓

**Key:**  
✓: system is equipped with corresponding feature (standard issue or optional add-on)  
N/A: not applicable  
N/R: no response  
NIJ: National Institute of Justice  
\*: Quantum Consulting Services LLC responded to the request for information, and jointly provided content for the Private Security Tactical Vest found in this report.  
Information in the table is based on data gathered from vendors, manufacturers and their websites.

### 3.1 ANGEL ARMOR, RISE

The RISE, Model AngArm-00052, is flexible and concealable, and the outer shell is constructed of 55 percent CORDURA® nylon and 45 percent polyester with an antimicrobial mesh interior liner. This vest features moisture wicking, reinforced stitching and is available in black; Angel Armor offers custom colors upon request. The RISE vest is classified at NIJ Ballistic Performance Level IIIA, and the ballistic element is comprised of hybrid DSM Dyneema and TexTech sixth generation Core Matrix Technology.

The RISE carrier is custom fitted for each user, and has a Manufacturer's Suggested Retail Price (MSRP) of \$949.



**Figure 3-1 RISE**  
*Courtesy of Angel Armor*

### 3.2 ARMOR EXPRESS, EQUINOX

The Equinox is concealable, and the outer shell is constructed of polyester-cotton with a moisture wicking, anti-microbial inner lining. This vest features moisture wicking, reinforced stitching, and is available in six colors: black, brown, light blue, navy, tan and white. The Equinox vest equipped with Vortex IIIA body armor, Model AEXPG2-A2-IIIA-FEM, is classified at NIJ Ballistic Performance Level IIIA.

The Equinox vest is available in sizes small to 2XL, but can be custom fitted for each user, and has an MSRP of \$882.



**Figure 3-2 Equinox**  
*Courtesy of Armor Express*

### 3.3 ARMOR EXPRESS, EVOLUTION

The Evolution is concealable, and the outer shell is constructed of a lightweight microfiber with a Breeze Knit™ anti-microbial inner lining. This vest features moisture wicking, reinforced stitching, and is available in six colors: black, brown, light blue, navy, tan and white. The Evolution vest equipped with Vortex IIIA body armor, Model AEXPG2-A2-IIIA-FEM, is classified at NIJ Ballistic Performance Level IIIA.

The Evolution vest is available in sizes small to 2XL, but can be custom fitted for each user, and has an MSRP of \$890.



**Figure 3-3 Evolution**  
*Courtesy of Armor Express*

### 3.4 ARMOR EXPRESS, INSTRUCTOR VEST

The Instructor Vest is external and rigid, and constructed of 500/600 Denier polyester. This vest features reinforced stitching and is available in red. The Instructor Vest equipped with Vortex IIIA body armor, Model AEXPG2-A2-IIIA-FEM, is classified at NIJ Ballistic Performance Level IIIA.

The Instructor Vest is available in sizes small to 2XL, but can be custom fitted for each user, and has an MSRP range of \$921 to \$972.



Figure 3-4 Instructor Vest  
*Courtesy of Armor Express*

### 3.5 ARMOR EXPRESS, LO-PRO

The Lo-Pro is concealable and flexible, and constructed of Spantron nylon knit fabric. This vest features moisture wicking, reinforced stitching, and is available in two colors: black and white. The Lo-Pro vest equipped with Vortex IIIA body armor, Model AEXPG2-A2-IIIA-FEM, is classified at NIJ Ballistic Performance IIIA.

The Lo-Pro vest is available in sizes small to 2XL, and has an MSRP of \$889.



Figure 3-5 Lo-Pro  
*Courtesy of Armor Express*

### 3.6 ARMOR EXPRESS, MED VEST

The Med Vest is external and rigid, and constructed of 500/600 Denier polyester. This vest features reinforced stitching and is available in navy. The Med Vest equipped with Vortex IIIA body armor, Model AEXPG2-A2-IIIA-FEM, is classified at NIJ Ballistic Performance Level IIIA.

The Med Vest is available in sizes small to 2XL, but can be custom fitted for each user, and has an MSRP range of \$921 to \$972.



Figure 3-6 Med Vest  
*Courtesy of Armor Express*

### 3.7 ARMOR EXPRESS, OVERT CARRIER SYSTEM (SLICK CONFIGURATION)

The Overt Carrier System (Slick Configuration) is external and flexible, and constructed of 500/600 Denier polyester. This vest features reinforced stitching and is available in nine colors: black, coyote brown, midnight LAPD navy, multicam, navy, range red, ranger green, tactical gray and urban digital. The Overt Carrier System equipped with Vortex IIIA body armor, Model AEXPG2-A2-IIIA-FEM, is classified at NIJ Ballistic Performance Level IIIA.

This Overt Carrier System is available in sizes small to 2XL, but can be custom fitted for each user, and has an MSRP of \$921.



Figure 3-7 Revolution  
*Courtesy of Armor Express*

### 3.8 ARMOR EXPRESS, REVOLUTION

The Revolution is concealable, and the outer shell is constructed of Denier Microfiber twill with a Breeze Knit™ anti-microbial inner lining. This vest features moisture wicking, reinforced stitching and is available in six colors: black, brown, light blue, navy, tan and white. The Revolution is classified at NIJ Ballistic Performance Level IIIA.

The Revolution vest equipped with Vortex IIIA body armor, Model AEXPG2-A2-III A-FEM, is available in sizes small to 2XL, but can be custom fitted for each user, and has an MSRP of \$900.



Figure 3-8 Overt Carrier System  
*Courtesy of Armor Express*

### 3.9 POINT BLANK ENTERPRISE INC., ELITE

The Elite, Model AXIII A, is flexible and concealable, and the outer shell is constructed of durable water repellent microfiber with an interior constructed of Armorvent featuring EVAP™ technology. This Elite features moisture wicking, reinforced stitching and is available in four colors: black, navy, tan and white. The Elite is classified at NIJ Ballistic Performance Level IIIA. The ballistic element is comprised of woven Aramid and Uni-Directional Polyethylene and has an option for incorporating ThorShield to increase protection against electroshock weapons.

The Elite vest is custom fitted for each end user, and has an MSRP of \$750.



Figure 3-9 Elite  
*Courtesy of Point Blank Enterprise Inc.*

### 3.10 POINT BLANK ENTERPRISE INC., VISION

The Vision, Model AXIII A, is flexible and concealable, and the outer shell is constructed of durable water repellent microfiber with an Aegis antimicrobial liner and outlast smart fabric interior. This vest features moisture wicking, reinforced stitching and is available in four colors: black, navy, tan and white. The Vision is classified at NIJ Ballistic Performance Level IIIA and is compliant with the DEA and FBI Body Armor test protocols. The ballistic element is comprised of woven Aramid and UD Polyethylene and has an option for incorporating ThorShield to increase protection against electroshock weapons.

The Vision vest is custom fitted for each user, and has an MSRP of \$750.



Figure 3-10 Vision  
*Courtesy of Point Blank Enterprise Inc.*

### 3.11 PROPPER INTERNATIONAL INC., 4PV-FEM

The 4PV-FEM is flexible and concealable, and the outer shell is constructed of 82 percent nylon and 18 percent spandex with a 100 percent nylon mesh liner and sides constructed of 82 percent nylon and 18 percent spandex. This vest features moisture wicking, reinforced stitching and is available in four colors: black, coyote (tan), navy and white. The 4PV-FEM offers three models that are classified at NIJ Ballistic Performance Level II and IIIA.

- The 4PV-FEM Defender 2 model, with Ballistic Package REN-2087, is classified at NIJ Level II and its ballistic element is comprised of 94 percent Style U590 Twaron Aramid Laminate and 6 percent Twaron Style 1006 Woven Aramid.
- The 4PV-FEM Opti 2 model, with Ballistic Package REN-2068, is also classified at NIJ Level II and its ballistic element is comprised of 45 percent DSM, 36 percent DSM 117, 14 percent Sparta 1187 and 5 percent Twaron D2642 SOS.
- The 4PV-FEM Defender 3 model, with Ballistic Package REN-3125, is classified at NIJ Level IIIA and its ballistic element is comprised of 81 percent Style U590 Twaron Aramid Laminate and 19 percent Twaron Style 1006 Woven Aramid.

The 4PV-FEM vest is available in sizes extra small to 2XL, measurements are custom sized for each user, and has an MSRP of \$500.



Figure 3-11 4PV-FEM  
Courtesy of Propper  
International Inc.

### 3.12 U.S. ARMOR CORPORATION, ENFORCER 5000

The Enforcer 5000, Model 5226, is flexible and concealable, and the outer shell is constructed of poly micro suede with an Akwadyne moisture wicking mesh interior lining. This vest features moisture wicking, reinforced stitching and is available in four colors: black, navy, tan and white; U.S. Armor Corporation offers custom colors upon request. The Enforcer 5000 is classified at NIJ Ballistic Performance Level II. The ballistic element is comprised of Honeywell's Gold Flex®, Spectra Shield® II fabric and DuPont's Kevlar XP®.

The Enforcer 5000 vest is available in sizes small to 4XL, and has an MSRP range of \$1,010 to \$1,730.



Figure 3-12 Enforcer 5000  
Courtesy of U.S. Armor  
Corporation

### 3.13 U.S. ARMOR CORPORATION, ENFORCER 6000

The Enforcer 6000, Model 6326F, is flexible and concealable, and the outer shell is constructed of poly micro suede with an Akwadyne moisture wicking mesh interior. This vest features moisture wicking, reinforced stitching and is available in five colors: black, dark navy, royal blue, tan and white; U.S. Armor Corporation offers custom colors upon request. The Enforcer 6000 is classified at NIJ Ballistic Performance Level IIIA. The ballistic element is comprised of Honeywell's Gold Shield®, Spectra Shield®, TexTech Core Matrix and Dyneema.

The Enforcer 6000 carrier is custom fitted for each user, and has an MSRP range of \$1,010 to \$1,730.



**Figure 3-13 Enforcer 6000**  
*Courtesy of U.S. Armor Corporation*

### 3.14 UNITED SHIELD INTERNATIONAL, FORTRESS

The Fortress, Model TKU-FEM-IIIA, is flexible and concealable, and the outer shell is constructed of thermoplastic polyurethane coated ripstop nylon with a moisture wicking polyester interior. This vest features moisture wicking, reinforced stitching and is available in five colors: black, blue, olive drab, tan and white. The Fortress is classified at NIJ Ballistic Performance Level IIIA. Ballistic element is comprised of 100 percent Twaron Aramid fabrics.

The Fortress carrier is custom fitted for each user, and has an MSRP range of \$850 to \$1,100.



**Figure 3-14 Fortress**  
*Courtesy of United Shield International*

### 3.15 VEL-TYE LLC., PRIVATE SECURITY TACTICAL VEST

The Private Security Tactical Vest, 3A Model 1, is flexible and concealable and can also be worn externally. The outer shell is constructed of 60& 1000D Codura, 30% Anti-microbial super mesh and 10% Velcro® hook and loop, with a mesh inner liner. The Private Security Tactical Vest features moisture wicking, reinforced stitching and is available in four colors: black, coyote tan, multicam and ranger green. The carrier is classified at NIJ Ballistic Performance Level IIIA. The ballistic element is comprised of 1006 TW LM Aramid, and U 590 Aramid with a 200D Weldable nylon panel covering.

The Private Security Tactical Vest is available in sizes small to 2XL, and has an MSRP range of \$230 to \$429.



**Figure 3-15 Private Security Tactical Vest**  
*Courtesy of Vel-Tye LLC.*

## 4.0 MANUFACTURER AND VENDOR CONTACT INFORMATION

Additional information on the products included in this market survey report can be obtained from the following companies.

**Table 4-1 Manufacturer and Vendor Contact Information**

Company	Address	Phone Number	E-mail/Website	Contact
Angel Armor	4557 Denrose Court Fort Collins, CO 80524	(970) 235-2961	<a href="mailto:david.goldfain@angelarmor.com">david.goldfain@angelarmor.com</a> <a href="http://www.angelarmor.com">www.angelarmor.com</a>	Dave Goldfain
Arrow Safety Device	123 Dixon Street Selbyville, DE 19975	(302) 856-2516	<a href="mailto:rcannon@arrowsouthpenn.com">rcannon@arrowsouthpenn.com</a> <a href="http://www.arrowsafetydevice.com">www.arrowsafetydevice.com</a>	Renee Cannon
Bob Barker Company Inc.	134 N. Main Street Fuquay-Varina, NC 27526	(877) 446-0551	<a href="mailto:kellyflaviani@bobbarker.com">kellyflaviani@bobbarker.com</a> <a href="http://www.bobbarker.com">www.bobbarker.com</a>	Kelly Flaviani Burgess
Hardwire LLC	1947 Clarke Avenue Pocomoke City, MD 21851	(410) 957-3669	<a href="mailto:matthew.kraeuter@hardwirellc.com">matthew.kraeuter@hardwirellc.com</a> <a href="http://www.hardwirellc.com">www.hardwirellc.com</a>	Matthew Kraeuter
Point Blank Enterprise Inc.	2102 NW 2 <sup>nd</sup> Street Pompano Beach, FL 33069	(540) 735-4944	<a href="mailto:bhalstead@pbearmor.com">bhalstead@pbearmor.com</a> <a href="http://www.pointblankenterprises.com">www.pointblankenterprises.com</a>	Bryant Halstead
Quantum Consulting Services LLC	P.O. Box 87643 Tuscan, AZ 85754	(520) 991-0541	<a href="mailto:Quantumcs63@gmail.com">Quantumcs63@gmail.com</a> <a href="http://www.blueridgearmor.com">www.blueridgearmor.com</a>	Alex Solis
Propper International Inc.	Industrial Park Guanajibo 1040 WF Brennan Street Mayaguez, PR 00680	(787) 357-3004	<a href="mailto:zoraidaa@propper.com">zoraidaa@propper.com</a> <a href="https://propper.com">https://propper.com</a>	Zoraida Arzola
Tactical & Survival Specialties Inc.	3900 Early Road Harrisonburg, VA 22801	(540) 434-8874	<a href="mailto:sales@tssi-ops.com">sales@tssi-ops.com</a> <a href="http://www.tssi-ops.com">www.tssi-ops.com</a>	Matt Nassar
U.S. Armor Corporation	10715 Bloomfield Avenue Santa Fe Springs, CA 90670	(562) 207-4240	<a href="mailto:david@usarmor.com">david@usarmor.com</a> <a href="http://www.usarmor.com">www.usarmor.com</a>	David Miller
United Shield International	1606 Barlow Street #1 Traverse City, MI 49686	(231) 933-1179	<a href="mailto:Unitedshield.pjb@gmail.com">Unitedshield.pjb@gmail.com</a> <a href="http://www.unitedshield.com">www.unitedshield.com</a>	Paul Banducci
Vel-Tye LLC.	5188 Cleveland Street Virginia Beach, VA 23462	(757) 518-5400	<a href="mailto:joe.watts@veltye.com">joe.watts@veltye.com</a> <a href="http://www.veltye.com">www.veltye.com</a>	Joe Watts

## 5.0 SUMMARY

Ballistic-resistant body armor is worn by law enforcement officers to increase their safety while in the field or during special operations. Body armor is designed to provide law enforcement officers with a layer of personal protection against specific ballistic threats within its coverage area during incidents involving firearms.

This market survey report provides information on 17 ballistic-resistant armor carrier models, including three 4PV-FEM models, designed for women. The ballistic-resistant body armor identified in this market survey report are available in a variety of costs, closures, colors and fabrics that are designed specifically for the female physique to allow for a better, safer fit. All products in this market survey report are classified by the ballistic performance levels of NIJ Standard 0101.06 and feature non-planar designs that are intended to better fit the female physique. Twelve of the products feature moisture wicking, which intends to keep the emergency responder cooler by drawing moisture away from the body.

Emergency responder agencies considering purchasing ballistic-resistant body armor should carefully research each product's overall capabilities and limitations in relation to their agency's operational needs.