ADVANCED CLEARANCE ENSEMBLE ACE

Allen-Vanguard Corporation | Canada

GENERAL DESCRIPTION
The newest of Med-Eng (now under Allen Vanguard) personal protective equipment (PPE), the Advanced Clearance Ensemble provides full body protection. The modular component design allows for the addition of trousers, sleeves and blast or ballistic plates without assistance. The equipment offers easy assembly with fasteners and pull cords for emergency extraction with minimal movement.

Primary features are
- Scalable, modular components.
- Multi-purpose protective platform.
- Suitable for multi-threat environments.
- Lightweight, comfortable fit.
- Continuous fragmentation protection.
- Ballistic protection to the torso.

PROTECTIVE PERFORMANCE | MASS

<table>
<thead>
<tr>
<th>PROTECTION LEVEL</th>
<th>MATERIAL SPECIFICATIONS</th>
<th>MASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>V50 level according to NATO STANAG 2920</td>
<td>Layered Aramid fibre</td>
<td>15.5 kg (vest, blast plates and pouch, sleeves and trousers) based on medium size</td>
</tr>
</tbody>
</table>

COLOUR OPTIONS AND SIZE
The standard colour is olive and the kit is available in small, medium small, medium and large sizes. Med-Eng’s PPE for deminers and ERW technicians is comprised of soft and rigid ballistic inserts. All equipment is machine washable once inserts are removed and has a seven-year life expectancy. Details can be provided by the manufacturer on request.

MED-ENG demining apron in operation

TEST AND EVALUATION
All Med-Eng PPE products have been tested in live blast testing at DRES (Defense Research Establishment Suffield) using the NATO STANAG 2920 and IMAS 10.30 PPE standards. Internal test reports can be provided by the manufacturer on request.

COST
Not given.
LIGHTWEIGHT DEMINING ENSEMBLE (LDE)

Allen-Vanguard Corporation | Canada

GENERAL DESCRIPTION
The Lightweight Demining Ensemble (LDE) has been in production since 1999 and provides continuous frontal protection. The modular system allows for additional full body protection when combined with protective sleeves, back protector and breast and groin steel add-ons. The kit is lightweight and flexible and can be worn in all climates without body cooling equipment.

Primary features are
- The apron’s chest plate integrates with the VBS-250 Visor Band System or LDH Helmet for continuous protection of the upper body, neck and head.
- Lightweight design reduces heat stress and fatigue.
- Retractable groin plate for easier kneeling.
- Trousers include thigh and shin plates for greater protection.
- Scalable protection platform to provide more balanced, full-body protection.

PROTECTIVE PERFORMANCE | MASS

<table>
<thead>
<tr>
<th>PROTECTION LEVEL</th>
<th>MATERIAL SPECIFICATIONS</th>
<th>MASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>V50 level according to NATO STANAG 2920</td>
<td>Layered Aramid fibre</td>
<td>8.56 kg (apron and trousers), based on medium size</td>
</tr>
</tbody>
</table>

COLOUR OPTIONS AND SIZE
The standard colours are olive, but also available in gray, each with black trim and the kit is available in extra small, small, medium small, medium and large sizes. Med-Eng (now under Allen Vanguard) PPE is comprised of soft and rigid ballistic inserts. All equipment is machine washable once inserts are removed and has a seven-year life expectancy. Details can be provided by the manufacturer on request.

TEST AND EVALUATION
All Med-Eng PPE products have been tested in live blast testing at DRES (Defense Research Establishment Suffield) using the NATO STANAG 2920 and IMAS 10.30 PPE standards. Internal test reports can be provided by the manufacturer on request.

COST
Not given.
SRS-5 SUIT & HELMET ENSEMBLE

Allen-Vanguard Corporation | Canada

GENERAL DESCRIPTION
Since 1999, Med-Eng (now under Allen Vanguard) has been providing high demining protection levels with the SRS-5 Suit & Helmet Ensemble. The ensemble is the only head-to-toe protective system of Allen Vanguard that allows mine clearance personnel to operate on the widest range of blast-type anti-personnel mines. A built-in fan allows for ventilation and cooling in the helmet along with an anti-fog appliqué on the visor to reduce misting. The manufacturer offers the BCS-4 cooling system and mentions that it is recommended for use with the SRS-5. Details will be given by the manufacturer on request.

SRS 5 Suit | Primary features are
> Additional frontal chest and groin protection, including an integrated groin protector.
> Retractable groin plate for easier kneeling.
> Break away zippers, fasteners and pull cords for quick emergency extraction.

SRS 5 Helmet | Primary features are
> Provides full face, neck and head protection.
> Wide field of view.
> Advanced retention system for stability.
> Three visor options | VB-250, VBE-580 and VBC-250.
> Visors integrate with SRS-5 Suit collar for continuous protection.
> Optional communication connections for select radios and mine detectors.

PROTECTIVE PERFORMANCE | MASS

<table>
<thead>
<tr>
<th>PROTECTION LEVEL</th>
<th>MATERIAL SPECIFICATIONS</th>
<th>MASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>V50 level according to NATO STANAG 2920</td>
<td>Layered Aramid fibre</td>
<td>19.59 kg (jacket with chest and &amp; groin plates, trousers and back protector and integrated groin protector); 3.2 kg (helmet with visor) based on medium size</td>
</tr>
</tbody>
</table>

COLOUR OPTIONS AND SIZE
The standard colour of the SRS-5 ensemble and the helmet is olive and the ensemble is available in small, medium small, medium and large sizes; the helmet is available in medium and extra large sizes. Med-Eng PPE is comprised of soft and rigid ballistic inserts. All equipment is machine washable once inserts are removed and has a seven-year life expectancy. Details can be provided by the manufacturer on request.

TEST AND EVALUATION
All Med-Eng PPE products have been tested in live blast testing at DRES (Defense Research Establishment Suffield) using the NATO STANAG 2920 and IMAS 10.30 PPE standards. Internal test reports can be provided by the manufacturer on request.

COST
Not given.
DEMINING APRON

Allen Vanguard Corporation | Canada

GENERAL DESCRIPTION
Since 2001, the Med-Eng (now under Allen Vanguard) demining apron has addressed the need for comfort and flexibility while providing basic protection against threats from blast-type anti-personnel mines. While providing frontal protection, the apron is lightweight with an open back to provide necessary ventilation and allow heat to disperse in hot, humid climates.

Primary features are
- A one-piece garment easily put on and removed.
- Frontal protection from the shoulders to the upper thighs.
- Rigid chest plate for fragmentation, overpressure and impact protection.
- Chest plate integrates with the VBS-250 Visor Band System or LDH Helmet for continuous protection of the upper body, neck and head.
- Apron weight is distributed around the hips to reduce risk of neck strain.

PROTECTIVE PERFORMANCE | MASS

<table>
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<tr>
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<th>MATERIAL SPECIFICATIONS</th>
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</tr>
</thead>
<tbody>
<tr>
<td>V50 level according to NATO STANAG 2920</td>
<td>Layered Aramid fibre</td>
<td>3.41 kg (apron only) based on regular size</td>
</tr>
</tbody>
</table>

COLOUR OPTIONS AND SIZE
The standard colour of the apron is charcoal grey and the kit is available in regular or large sizes. Med-Eng PPE is comprised of soft and rigid ballistic inserts. All equipment is machine washable once inserts are removed and has a seven-year life expectancy. Details can be provided by the manufacturer on request.

TEST AND EVALUATION
All Med-Eng PPE products have been tested in live blast testing at DRES (Defense Research Establishment Suffield) using the NATO STANAG 2920 and IMAS 10.30 PPE standards. Internal test reports can be provided by the manufacturer on request.

COST
Not given.
DC PROTECTION VEST

Dachrng Advanced Material Co. Ltd | China

GENERAL DESCRIPTION

The internal layer of the DC bulletproof protection vest is made of ultra high molecular weight polyethylene (UHMWPE) material, an advanced material which is light weight, soft, comfortable, UV resistant and waterproof. It provides high energy absorption and fast shock wave dissipation, so it is suitable for ballistic/blast field.

The outer shell of the vest is made of polycarbonate components, which allows ventilation. It is water resistant and there are several pockets on the surface, including those for the reinforced plates. The outer cover can be adjusted freely, with Velcro tapes on the shoulder and waist, The outer cover is washable at 40°C but can not be dry cleaned. A trauma pad inside the outer cover provides extra protection. The protection area of different models varies from 0.25 m² to 0.4 m².

The bulletproof jacket has a protection area of 0.4 m² to 0.6 m². It is composed of polyethylene unidirectional fabric only. High molecular polyethylene fabric can absorb the heat and striking of bullets. The body armour is attached to the body with Velcro straps and is easily put on and removed. The outer cover is washable but can not be dry cleaned.

Protection Vest DC2-3B  Protection Jacket DC2-4  Protection Jacket DC2-5
The body armour is available in white, black, blue and all kinds of camouflage, and in small, medium, large, extra large and extra extra large sizes.

Product life expectation: five years.

**EQUIPMENT IN USE TO DATE**

The protection vest has been used by the police forces of Henan Yunnan and Zhejian in China, and by other clients in France, Greece, Iran, Iraq, Israel, Korea, Nigeria, Russia, Saudi Arabia, United Arab Emirates, U.K, and USA.

**TEST AND EVALUATION**

Tests are conducted using the standard NIJ STAND 0101.04, and by the test agency, Quality Supervision and Test Center of Bulletproof Products of the China Ordnance Industry. Test reports can be provided by the manufacturer on request.

**COST**

Protective vest: US$ 320
Protective jackets: no information provided by the manufacturer
ENVOSTAR DEMINING BODY ARMOUR

ENVOSTAR Co Ltd | Cambodia

GENERAL DESCRIPTION

The Envostar demining body armour provides frontal protection from the shoulders to the upper thighs. Specially fixed extensions protect the vulnerable armpit areas. The modular system consists of a backless apron – a back panel can be mounted – and backless trousers. The front ruff is designed to overlap the visor to ensure continuous protection for both the upper body and face.

The lightweight design helps to minimise hazards caused by heat stress and fatigue. The apron is well suited for hot and humid climates.

The outer cover is washable and can be replaced if worn out. According to the manufacturer, the apron design is most suitable for the kneeling position.

PROTECTIVE PERFORMANCE | MASS

<table>
<thead>
<tr>
<th>PROTECTION LEVEL</th>
<th>MATERIAL SPECIFICATIONS</th>
<th>MASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>V50 450 m/sec according to standards MIL-STD-622F and NATO/STANAG 2920 using calibre 0.22, 17 grain fragment simulating projectiles conforming to MIL-P-46593A and UNMAS IMAS 10.30.</td>
<td>Protective panels are water-repellent treated, and manufactured by the Twaron company. The outside cover is made of cotton and can be easily replaced. On request the manufacturer offers fire-resistant fabrics Tecasafe or Normex for the cover.</td>
<td>Apron: 2 kg (medium size) Trousers: 1.8 kg</td>
</tr>
</tbody>
</table>

COLOUR OPTIONS

The demining body armour is available in several colours.

TEST AND EVALUATION

Test reports can be provided by the manufacturer on request. According to the manufacturer, the equipment has been regularly tested by H.P. White Laboratories, Maryland, USA.

EQUIPMENT IN USE TO DATE

ENVOSTAR have exported the demining body armour to 41 countries, and approximately 15,000 vests have been produced over the last 10 years.

COST

US$ 210 for the apron, up to US$ 1,200 for the whole demining body armour.
GARANT HOLDFAST DEMINING APRON WITH SHIN GUARDS TYPE HDA-1

GENERAL DESCRIPTION
The HDA-1 demining apron was developed and field tested in conjunction with demining operators working in difficult and harsh environments. The apron provides a large area of frontal protection together with the helmet type HDH-1, helmet type LSH-4 or the demining visor DVH-1.

The apron is durable, has a rugged design and can be serviced in the field. It is well suited for hot and humid climates, has a washable outer and parts can be replaced if worn. It is suitable for kneeling and upright positions and can be put on and taken off conveniently. It is easily removed in case of injury and can be equipped with special pouches for tools.

PROTECTIVE PERFORMANCE | MASS

<table>
<thead>
<tr>
<th>PROTECTION LEVEL</th>
<th>MATERIAL SPECIFICATIONS</th>
<th>MASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufactured according to IMAS 10.30</td>
<td>Outer cover: Cordura (other materials are available on request)</td>
<td>Approx. 4 kg (depending on size)</td>
</tr>
<tr>
<td>STANAG 2920</td>
<td>Inner part: Aramid</td>
<td></td>
</tr>
<tr>
<td>MIL-STD-662F</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

COLOUR OPTIONS AND SIZE
The HDA-1 is available in several colours, eg navy blue, black, green, desert sand. Other colours are available on customer specification. Available sizes are small, medium, large and extra large. Other sizes available on request.

EQUIPMENT IN USE TO DATE
Garant clients include militaries, police forces, special forces, bomb squads, customs authorities, the United Nations and NGOs. The product range comprises body armour, vehicle and aircraft armouring, semi-finished products and components. The company is specialised in this field and offers state-of-the-art solutions, products, services and training to a demanding clientele.

TEST AND EVALUATION
Test reports can be provided by the manufacturer on request. According to the manufacturer, the equipment has been regularly tested by independent test laboratories.

All products are manufactured according to the ISO 9001:2000 quality assurance standard.

COST
Prices available on request.

COMPATIBILITY OF COMPONENTS

<table>
<thead>
<tr>
<th>GARANT Holdfast demining visor DVH-1</th>
<th>GARANT Holdfast demining helmet HDH-1</th>
<th>GARANT Holdfast search suit helmet LSH-4</th>
<th>Other equipment eg “Bfr Boots”</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>GARANT Holdfast demining vest HDV-1</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>HDA-1</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

A deminer wears the Demining Apron

Demining Apron kneeling
GARANT HOLDFAST DEMINING VEST TYPE HV-1

GARANT Sicherheitstechnik | Germany and Switzerland

GENERAL DESCRIPTION

The GARANT demining vest HDV-1 is designed for maximum comfort and as little hindrance as possible for the user, while still providing protection to all vital parts of the body. The HDV-1 optimizes protection when worn with, for example, the HDH-1 or LSH-4 helmets or with the DVH-1 demining visor.

The main features of the demining vest HDV-1 are

- Durability, with a rugged design and can be serviced in the field;
- Well suited for hot and humid climates;
- Washable outer and parts can be replaced if worn out;
- Suitable for kneeling and upright positions;
- Easily put on and taken off;
- Easy to remove in case of injury; and
- Can be equipped with special pouches for tools.

PROTECTIVE PERFORMANCE | MASS

<table>
<thead>
<tr>
<th>PROTECTION LEVEL</th>
<th>MATERIAL SPECIFICATIONS</th>
<th>MASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frontal protection against anti-personnel mines. Groin flap standard. Manufactured according to IMAS 10.30 STANAG 2920 MIL-STD-662F.</td>
<td>Outer cover: Cordura (other materials are available upon request) Inner part: Aramid.</td>
<td>Approx. 2 kg (depending on size).</td>
</tr>
</tbody>
</table>

COLOUR OPTIONS

- The HDV-1 is available in navy blue, black, green, desert sand with other colours available on customer specification.
- Available in small, medium, large and extra large with other sizes available on request.

TEST AND EVALUATION

Test reports can be provided by the manufacturer on request. According to the manufacturer, the equipment has been regularly tested by independent test laboratories. All products are manufactured according to the ISO 9001:2000 quality assurance standard.

COST

Prices available on request.

COMPATIBILITY OF COMPONENTS

The compatibility of all GARANT protective products are given (see article on GARANT Demining Apron).
GENERAL DESCRIPTION

The GARANT search suit LSA-4 is a compromise between a high level of protection and maximum mobility. It can be used in any sweep search for possible improvised explosive devices or where hostile ballistic threats might exist. The protection type or level can be altered to suit on the operational situation. This is done by either inserting ceramic tiles in the front and back or by attaching blast plates to the front of the suit. It is designed to work as part of the entire demining system including, for example, with the HDH-1 or LSH-4 helmets or with the DVH-1 demining visor.

The main features of the search suit LSA-4 are
- Durability, with a rugged design and can be serviced in the field;
- Well suited for hot and humid climates;
- Washable outer, and parts can be replaced if worn out;
- Suitable for kneeling and upright positions;
- Easily put on and taken off;
- Easy to remove in case of injury; and
- Can be equipped with special pouches for tools.

The suit consists of trousers, jacket and ballistic helmet with visor.

PROTECTIVE PERFORMANCE | MASS

<table>
<thead>
<tr>
<th>PROTECTION LEVEL</th>
<th>MATERIAL SPECIFICATIONS</th>
<th>MASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufactured according to IMA S 10.30</td>
<td>Outer cover: fire-retardant treated polyester ripstop (other materials are available on request)</td>
<td>Approx. 16 kg including helmet and visor (depending on size)</td>
</tr>
<tr>
<td>STANAG 2920</td>
<td>Inner part: Aramid</td>
<td></td>
</tr>
<tr>
<td>MIL-STD-662F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suit: V50 450 m/s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helmet: V50 450 m/s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visor: V50 450 m/s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suit with ceramic plates: V50 1,200 m/s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suit with blast plates: V50 1,000 m/s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other levels of protection available on customer specification</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

COLOUR OPTIONS AND SIZE

- The LSA-4 is available in navy blue, black, green, desert sand with other colours available on customer specification.
- Available in small, medium, large and extra large sizes with others available on request.

TEST AND EVALUATION

Test reports can be provided by the manufacturer on request. According to the manufacturer, the equipment has been regularly tested by independent test laboratories. All products are manufactured according to the ISO 9001:2000 Quality Assurance Standard.

COST

Prices available on request.

COMPATIBILITY OF COMPONENTS

The compatibility of all GARANT protective products are given (see article on GARANT Demining Apron).
FBF210 EXPLOSION-PROOF OUTFIT

Research Institute of Surgery, Chongqing | China

GENERAL DESCRIPTION

The FBF210 explosion-proof outfit (EPO) composed of helmet and visor, protective suit and footwear, and was invented in 1998 to meet the demands of minesweeping on the border of China and Vietnam. It can protect against fragments and secondary projectiles of the explosion, while attenuating and alleviating the blast waves.

The protective suit protects the head, face, chest, abdomen, crotch and legs against explosive devices. The protective footwear protects the lower limbs and feet.

It is light weight, soft and comfortable to wear. The outfit can be put on and taken off conveniently. The jacket should be put on first, then the trousers. The protective jacket is open-backed which facilitates ventilation. The protective footwear can be put on without taking off the shoes.

The tool pockets on the jacket do not hamper protective performance. The size and number of the pockets can be changed on request.

The protective outfit can be used on slopes below 45º and is also suitable for use in jungles, coasts and deserts. It provides effective protection in the standing, kneeling or prone positions.

The outfit can be used in rainy conditions and in temperatures between -40º C up to + 65º C. Product life is estimated at 10 years, but the equipment can not be used again after being hit by fragments or bullets, whether the material is penetrated or not.

PROTECTIVE PERFORMANCE | MASS

<table>
<thead>
<tr>
<th>PROTECTION LEVEL</th>
<th>MATERIAL SPECIFICATIONS</th>
<th>MASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helmet and protective suit</td>
<td>protect against the injuries of prefabricated flinders from fragmentation mines within 650 TNT package at the 35 m from the explosion centre</td>
<td></td>
</tr>
<tr>
<td>Helmet and visor</td>
<td>V ≤550 m/s 0.72 g steel ball</td>
<td>Helmet: Kevlar</td>
</tr>
<tr>
<td>Protected area of the visor:</td>
<td>690 cm²</td>
<td>Visor: carbonised fibre</td>
</tr>
<tr>
<td>Protective suit</td>
<td>V ≤630 m/s 0.72 g steel ball</td>
<td>Dyneema Fraglight</td>
</tr>
<tr>
<td>Protective footwear</td>
<td>No amputation should occur within the package of 210 g TNT explosion.¹</td>
<td>Dyneema Fraglight</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt; 6.0kg</td>
</tr>
</tbody>
</table>

¹ According to the manufacturer.
COLOUR OPTIONS AND SIZE

- The standard colour is camouflage but other colours are available on request.
- The protective suit and footwear are available in small, medium and large, with other sizes available on request.

The EPO is in service in the demining missions in Yunnan and Guangxi provinces of China. Other clients are in Afghanistan, Congo, Eritrea, Lebanon, Pakistan, Thailand and Turkey.

TEST AND EVALUATION

The outfit was tested by the Research Institute of Engineer Equipment Test and Verification of the General Equipment Department in China. Results are available from the manufacturer on request.

IN USE TO DATE

The EPO is in service with demining missions in Yunnan and Guangxi Provinces of China, and in Afghanistan, Congo, Eritrea, Lebanon, Pakistan, Thailand and Turkey.

COST

- The whole outfit: 11,800 yuan (US$ 1,731);
- Helmet and visor: 2,200 yuan (US$ 322);
- Protective clothes (jacket and trousers): 6,000 yuan (US$ 880);
- Footwear: 3,600 yuan (US$ 528).

(Currency conversion as of 1 December 2008.)
GENERAL DESCRIPTION

The **ROFI Armadillo demining vest** is the company’s next generation of demining equipment with a focus on user comfort for higher efficiency in field operations. The Armadillo has been developed in close cooperation with Norwegian People’s Aid and Kode design bureau, over four years of design, development and testing. The product won awards from the Norwegian Design Council in 2008.

With its features for mobility, ergonomics, ventilation and comfort, the Armadillo reduces the risk of fatigue, overheating and stress, all factors influencing work performance. This helps to achieve higher clearance speeds and a lower risk of accidents.

Combined with the ROFI Facemask, the vest provides the excellent protection combined with high comfort and flexibility to work. It can be used in the upright position when operating a metal detector and in both squatting and kneeling positions while prodding.

Also a Armadillo panty¹ is available and can be worn in combination with the vest and face mask.

The vest unit covers the front, abdomen, sides and shoulders, including a collar which connects the clothing and the face protection. It can also be combined with a demining apron or pants.

The vest’s ballistic inserts can easily be removed, and the outer cover can be washed in a washing machine in 40°C.

### PROTECTIVE PERFORMANCE | MASS

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</tr>
</thead>
<tbody>
<tr>
<td>V50-450 m/s</td>
<td>Aramid fibre</td>
<td>3.4 kg</td>
</tr>
<tr>
<td>According to STANAG 2920</td>
<td></td>
<td>(large size)</td>
</tr>
</tbody>
</table>

¹ For more information see: [http://www.rofi.no/Modules/Page/viewPage.asp?modid=7067&level=7067](http://www.rofi.no/Modules/Page/viewPage.asp?modid=7067&level=7067)
COLOUR OPTIONS AND SIZE

- Outer cover (vest) | Cordura, 1,000 denier, UN blue, sand or red. Other colours on request.
- The vest is available in small, medium, large and extra large sizes. Other sizes on request.

TEST AND EVALUATION

ROFI Armadillo is tested in accordance with the new CEN Workshop Agreement on testing of PPE used in mine action. Test results available on request.

COST

Not given.

EQUIPMENT IN USE TO DATE

Used or purchased by following organisations: Handicap International, Landmine Action, Mine Detection and Dog Center, Norwegian People’s Aid, Omar and RONCO. The vest is currently used in demining programmes in Afghanistan, Lebanon and Sudan.
ROFI FENDER HALF PROTECTED BACK (HPB) DEMINING APRON

ROFI Industrier | Norway

GENERAL DESCRIPTION
The Fender HPB demining apron was designed in cooperation with demining organisations working in Afghanistan to meet the specific requirements for demining in that environment. The apron protects deminers when operating metal detectors in the upright position, as well as in both squatting and kneeling positions during prodding. The protective ensemble consists of a vest unit covering the front, sides, shoulders, neck and upper part of the back, including a second collar to protect between the vest and the visor. The lower part consists of a detachable apron with straps to provide comfortable and functional protective clothing.

The ballistic inserts of the vest can be easily removed, and the outer cover can be washed in a washing machine at temperatures up to 40° C. The apron can be cleaned using a brush and wet cloth.

PROTECTIVE PERFORMANCE | MASS

<table>
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<tr>
<th>PROTECTION LEVEL</th>
<th>MATERIAL SPECIFICATIONS</th>
<th>MASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>V-50-450 m/s, according to STANAG 2920</td>
<td>Aramid fibre</td>
<td>4.9 kg (large size)</td>
</tr>
</tbody>
</table>

COLOUR OPTIONS AND SIZE
> Outer cover (vest) | Cordure, 1000 denier, UN blue.
> Cover, lower part | PVC-coated polyester, 900 denier, 600 g/sqm, dark blue.
> The demining ensemble is available in small, medium, large and extra large sizes.

TEST AND EVALUATION
The Fender HPB was tested in Afghanistan by the UNMACA. Internal test reports are available through the UNMACA Programme Manager.

COST
Not given.
ROFI RAVELIN DEMINING VEST

ROFI Industrier | Norway

GENERAL DESCRIPTION
The RAVELIN demining vest was designed in cooperation with Norwegian People’s Aid and Danish Church Aid to meet the specific requirements for demining in tropical climates. The vest protects deminers operating metal detectors in an upright position, as well as in both squatting and kneeling positions during prodding.

The vest unit covers the front, abdomen, sides, shoulders and neck, and includes a second collar to protect between the vest and the visor. ROFI offers three different versions of the vest: OB (open back strap system), HPB (half-protected back) and PB (protected back).

The ballistic inserts of the vest can easily be removed, and the outer cover can be washed in a washing machine at temperatures up to 40° C.

PROTECTIVE PERFORMANCE | MASS

<table>
<thead>
<tr>
<th>PROTECTION LEVEL</th>
<th>MATERIAL SPECIFICATIONS</th>
<th>MASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>V50-450 m/s</td>
<td>Aramid fibre</td>
<td>2.2 kg</td>
</tr>
<tr>
<td>optionally 600 m/sec according to STANAG 2920</td>
<td></td>
<td>(large size)</td>
</tr>
</tbody>
</table>

COLOUR OPTIONS AND SIZE
- Outer cover (vest): Cordura, 1,000 denier, UN blue or red.
- The demining vest is available in small, medium, large and extra large sizes.

TEST AND EVALUATION
Test reports can be provided by the manufacturer on request.

COST
Not given.

EQUIPMENT IN USE TO DATE
Used or purchased by many organisations, including Danish Church Aid, Danish Demining Organisation, Norwegian People’s Aid, RONCO, Swiss Federation for Demining and the US State Department. The vest is currently used in demining projects in Afghanistan, Angola, Bosnia and Herzegovina, Croatia, Eritrea, Ethiopia, Iraq, Iran, Mozambique, Oman, Sri Lanka, Sudan and Yemen.
SD RAPTOR APRON AND SD450 APRON

Apron Security Devices (PVT) Ltd. | Zimbabwe

GENERAL DESCRIPTION
Both aprons cover the deminer’s body from the shoulder to mid-thigh, including the crotch. They are light weight and their open-back design allows body heat to disperse when performing demining activities in hot climates, as well as the free movement of the arms. An optional evaporative cooling system is available. Tool pockets can be provided as an option.

Performance ensures basic protection against threats from blast anti-personnel mines. One of the main features is the one-piece design which aims to maintain integrity during a blast. The outer cover is washable and can easily be replaced.

PROTECTIVE PERFORMANCE | MASS

<table>
<thead>
<tr>
<th>PROTECTION LEVEL</th>
<th>MATERIAL SPECIFICATIONS</th>
<th>MASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>V50 = 450 m/s according to STANAG 2920</td>
<td>Core: Raptor apron ballistic polyamide</td>
<td>3.7 kg</td>
</tr>
<tr>
<td></td>
<td>SD450 Apron – Kevlar</td>
<td>3.5 kg</td>
</tr>
<tr>
<td></td>
<td>Cover: Cordura textured nylon</td>
<td></td>
</tr>
</tbody>
</table>

EQUIPMENT IN USE TO DATE
Security Devices armour has been supplied to more than 65 humanitarian demining organisations, government departments and international agencies around the world. (References available on request.)

COLOUR OPTIONS AND SIZE
The demining aprons can be delivered in orange and royal blue. The aprons are suitable for all normal positions when used with a visor.

TEST AND EVALUATION
In-house testing is done for quality assurance and research and development by the manufacturers in their own laboratory using a firing rig built in accordance with STANAG 2920. Independent tests have been carried out by organisations such as The Mine Action Centre of the Southern African Development Community. Test reports can be provided by the manufacturer on request.

The SADAC 450 apron

COST
Price on request.