Blauer®
SERIOUS PROTECTION

HOMELAND DEFENDER®

PROTECTIVE ENSEMBLES FOR CBRN AND HAZMAT INCIDENTS

NEW **BRN-94®**
NFPA 1994 CLASS 4, *page 10*

GORE Chempak® FABRIC

NOMEX® only by DuPont

TÜV MANAGEMENT SERVICE ISO 9001

HOMELAND DEFENDER®

SERIOUS PROTECTION FROM CBRN THREATS

Blauer brings over 80 years of product design and manufacturing expertise to you with our Homeland Defender® line of CBRN protective ensembles. Our daily field work with public safety and military professionals enables us to provide the world's most mission-ready protective ensembles.

For more information go to
www.blauerhomelanddefender.com
or email us at chembio@blauer.com

MODERN DAY THREATS REQUIRE CUTTING-EDGE PPE PERFORMANCE.

The threats and performance requirements that first responders and defense personnel face today are radically different than the past. Hazardous industrial chemicals and materials are used in more industries than ever and are stored and transported throughout the country. First responders now join the ranks of dedicated HAZMAT teams and military personnel as being required to maintain operational readiness for CBRN incidents as terrorist organizations target these chemicals and materials as relatively easy to access tools of mass destruction for use in heavily populated civilian areas. Homeland Defender® ensembles made with GORE® CHEMPAK® fabrics provide the protection, comfort and durability needed to get the job done in the worst CBRN environments.

Certified to the NFPA 1994 Standard on Protective Ensembles for First Responders to CBRN Terrorism Incidents and the NFPA 1992 Standard on Liquid Splash-Protective Ensembles for Hazardous Materials, Blauer's Homeland Defender® suits provide a higher level of protection required to operate in tactically demanding "hot zone" and "warm zone" environments. Homeland Defender® suits are independently certified to strict design and performance requirements.

THE GORE® CHEMPAK® ADVANTAGE

Comfort
Whether you're operating in the "hot zone" or "warm zone", Homeland Defender® suits offer a level of comfort that allows responders to function effectively for long durations until the mission is complete. Each suit is designed with a cooling mechanism to alleviate heat stress as compared to conventional HAZMAT suits. This allows for extended response durations and fewer shift rotations.

Durability
The durability of any CBRN suit is important from a safety and investment standpoint. Homeland Defender® suits are uniquely rugged in both fabric and seam construction to allow for worry-free tactical, rescue, and DECON operations without the need for chemical tape. Homeland Defender® suits can be reused multiple times if they are not contaminated.

Speed and Mobility
Homeland Defender® suits fit your body like conventional outerwear and are certified for use with tactical-style boots. Unlike most traditional HAZMAT suits, our suits allow you to run, jump, and move as needed without compromising protection from dangerous chemical and biological agents.

ABOVE AND BEYOND OSHA

Homeland Defender® suits raise the bar for what first responders should expect from their CBRN ensembles. OSHA-rated HAZMAT suits are designed for cleanup and decontamination operations but can be cumbersome, uncomfortable, and delicate. The Multi-Threat suit, XRT suit, and BRN-94 suit are designed specifically for operations where speed, comfort, and durability are crucial.

NFPA 1994 VS. OSHA

Most HAZMAT teams operate in OSHA-rated suits that have changed very little in design and functionality for decades. The problem with this approach is that OSHA ratings only indicate how the suit is designed to interact with the respirator or SCBA and do not factor in any performance requirements related to chemical permeation. In contrast, the NFPA 1994 and NFPA 1992 standards are built around both design and performance requirements. While no suit can guard against all chemical, radiological and biological threats, ensembles certified to NFPA standards are intended to provide protection against a much broader range of threats than basic OSHA-rated suits, which are made from numerous fabric technologies, each engineered to protect against specific chemical threats. Although there is no official relation between the two, a rough comparison of the various NFPA 1994 classes to OSHA levels may be helpful.

OSHA VS. NFPA 1994 COMPARISON CHART

OSHA-Defined Threat	OSHA Level	NFPA 1994 Class	NFPA-Defined Threat
Airborne and liquid concentrations are at or above IDLH* requiring the highest level of protection for both respiratory system and skin.	Level A: User and SCBA are fully encapsulated within the suit.	NA	NA
Airborne concentrations are at or above IDLH* requiring the highest level of protection for respiratory system. Liquid concentrations are below IDLH* allowing for a lesser level of skin protection.	Level B: User is encapsulated within the suit, while the SCBA is contained outside.	Class 2: User is encapsulated within the suit, while the SCBA is contained outside.	Airborne and liquid concentrations are at or above IDLH* requiring the highest level of protection for both respiratory system and skin.
Airborne and liquid concentrations are below IDLH* allowing for a lesser level of respiratory and skin protection.	Level C: User is encapsulated within the suit and using an APR or PAPR.	Class 3: User is encapsulated within the suit and using an APR or PAPR.	Airborne and liquid concentrations are below IDLH* allowing for a lesser level of respiratory and skin protection.
Nuisance, Non-Chemical "Powder" Contamination	Level D: Use of basic shield PPE such as coveralls, disposable outer boots, safety glasses. Dust filter required for radiation contamination.	Class 4: User is encapsulated in the suit and using APR or PAPR.	For use in incidents involving biological or radiological particulates where concentrations are below IDLH

* IDLH = "Immediately Dangerous to Life and Health"

MULTI-THREAT ENSEMBLE

NFPA 1994 CLASS 2, NFPA 1992

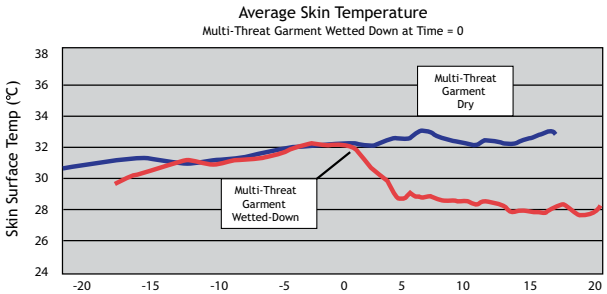
DUAL-CERTIFIED PROTECTION FOR HOT ZONE CBRN MISSIONS

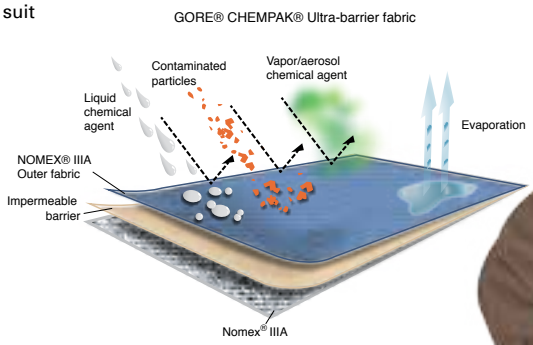
Blauer's Multi-Threat ensemble offers the highest level of protection in the Homeland Defender® line from liquid and vapor forms of CBRN agents. The suit is made of GORE® CHEMPAK® Ultra-barrier fabric and is certified to NFPA 1994 Class 2 and NFPA 1992 for protection against chemical warfare agents (CWA's) and toxic industrial chemicals (TIC's) at concentrations at or above IDLH when worn with approved SCBA systems. For added protection, this revolutionary non-permeable membrane is laminated to a 4.5 ounce NOMEX IIIA outer and inner shell, which provides excellent static dissipative performance and resists melting, dripping, and burning when exposed to high heat and flame.

SUPERIOR HEAT STRESS MANAGEMENT

First responders, HAZMAT, and tactical teams must deal with heat stress and elevated core body temperatures caused in large part by their PPE ensembles, which trap body heat and interfere with the body's sweat response. The Multi-Threat suit effectively alleviates this problem through a unique "evaporative cooling" capability. The NOMEX® IIIA outer shell has been engineered to absorb water without affecting the integrity or protective performance of the underlying GORE® CHEMPAK® barrier. By wetting the suit down with water before or during use, the wearer benefits from a natural cooling effect similar to sweating as the water evaporates from the outer shell.

During in-field wear trials, users have reported a dramatic cooling effect when sprayed with water after wearing the Multi-Threat suit for extended periods of physically demanding activity.





Reference: "Wear Trial Performance of GORE® CHEMPAK® Ultra Barrier Fabrics: Multi-Threat Garment Application", 2005.

Multi-Threat Ensemble

FEATURES & BENEFITS

- Form-fitting design for superior mobility and confined space operations
- NOMEX® IIIA laminate fabrics for limited FR protection
- Approved for use with tactical-style boots
- Tactical gloves for superior dexterity
- One piece design with integrated CBRN booties and gloves
- Rubber to rubber SCBA mask interface eliminates the need for chemical tape
- Evaporative cooling capability allows for extended response times
- Rugged GORE® CHEMPAK® Ultra-barrier fabric and extra strength seams for safer operations in demanding CBRN environments
- Reusable – Can be laundered multiple times if no gross contamination

Navy and rear zipper versions available

APPLICATIONS

- S.W.A.T. – active shooter and high-risk clandestine lab entry
- Urban Search and Rescue (US&R)
- HAZMAT
- DECON
- "Hot Zone" search and rescue

GORE® CHEMPAK® ULTRA-BARRIER FABRIC PERMEATION RESULTS** - MULTI-THREAT SUIT

Challenge Agents	Concentration (NFPA 1994 test requirement)	NFPA 1994 One Hour Exposure Threshold	Time to Breakthrough
Chemical Warfare Agents			
Mustard (HD)*	10g/m^2	< 4 µg/cm^2	>720 minutes
Sarin (GB)	10g/m^2	< 1.25 µg/cm^2	>720 minutes
Soman (GD)*	10g/m^2	< 1.25 µg/cm^2	>720 minutes
VX	10g/m^2	< 1.25 µg/cm^2	>720 minutes
Liquid Toxic Industrial Chemicals			
Dimethyl Sulfate*	10g/m^2	< 6 µg/cm^2	>480 minutes
Gaseous Toxic Industrial Chemicals			
Acrolein*	350 ppm	< 6 µg/cm^2	>480 minutes
Acrylonitrile*	350 ppm	< 6 µg/cm^2	>480 minutes
Ammonia*	1000 ppm	< 6 µg/cm^2	>480 minutes
Chlorine*	350 ppm	< 6 µg/cm^2	>480 minutes
Cyanogen Chloride	1000 ppm	< 6 µg/cm^2	>450 minutes
Hydrogen Chloride	350 ppm	< 6 µg/cm^2	>480 minutes

*NFPA 1994 CWA and TIC test requirements **All data obtained per NFPA 1994 (2007 or 2012 edition) Class 2 test methodology.

NFPA 1992, GARMENT ELEMENT AND SEAM REQUIREMENTS

Chemical Penetration	Chemical	Requirement	Minimum Required time	Typical Results
MATERIAL	Acetone	No Visible Penetration	60 min	PASS
	Dimethylformamide			PASS
	Ethyl Acetate			PASS
	Nitrobenzene			PASS
	Sodium Hydroxide			PASS
	Sulfuric Acid			PASS
	Tetrahydrofuran			PASS
SEAMS	Isopropyl Alcohol	No Visible Penetration	60 min	PASS
	Sulfuric Acid			PASS

MULTI-THREAT ENSEMBLE PROTECTIVE PERFORMANCE

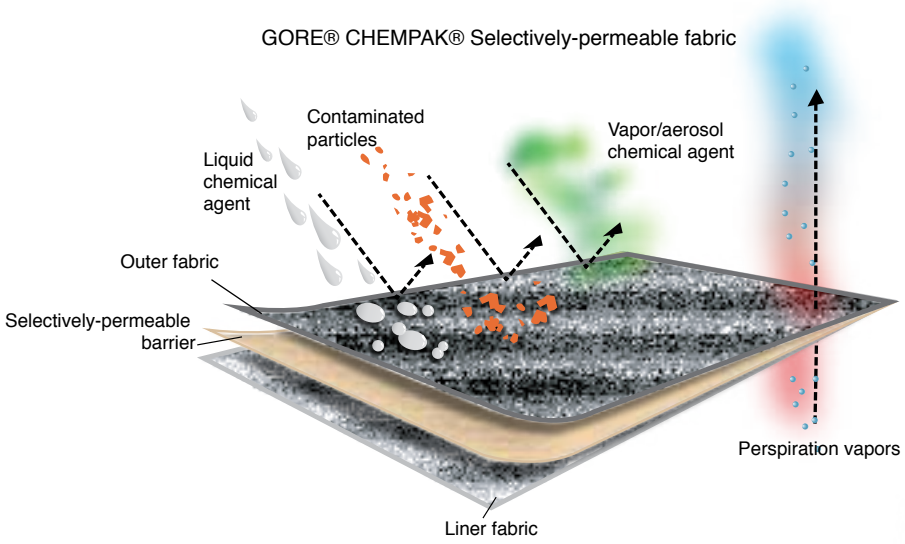
Test	NFPA 1994 Requirement	Blauer Multi-Threat Ensemble Performance
MIST Testing	PPDFsys > 361	PPDFsys > 2,000
Chemical Permeation - Seams	≤ 1.25 - 4.0 µg/cm²	< 0.17 µg/cm²
Seam Strength - fabric to fabric	≥ 15 lbf/2 in	> 191 lbf/2 in
Seam Strength - fabric to butyl	≥ 15 lbf/2 in	> 140 lbf/2 in

XRT ENSEMBLE

NFPA 1994 CLASS 3

EXTENDED DURATION RESPONSE FOR WARM ZONE CBRN INCIDENTS

Blauer's XRT ensemble is certified to the NFPA 1994 standard for Class 3 protection against liquid and vapor CBRN agents at levels below IDLH. Made with GORE® CHEMPAK® Selectively-permeable fabric, the XRT suit is lightweight and highly breathable to provide comfort during extended response operations. The suit's one piece design with integrated glove system and booties eliminates the need for chemical tape and allows first responders and consequence management personnel to quickly self-don the suit with approved APR/PAPR systems.



Reflective trim, radio pocket, and thigh pockets are optional features.

FEATURES & BENEFITS

- Lightweight and form-fitting for excellent mobility
- Breathable barrier fabric allows heat and sweat vapor to dissipate away from the body for greater comfort and extended wear time (up to 8 hrs)
- Front-entry design allows for self-donning if necessary
- Integrated glove system and booties eliminate the need for chemical tape
- Approved for use with tactical-style boots
- Rugged GORE® CHEMPAK® Selectively-permeable fabric and extra-strength seams allow for safer operations in demanding tactical and perimeter control situations
- Price point appropriate for mass distribution and cache strategies

APPLICATIONS

- Perimeter security and control of CBRN environments
- DECON
- "Warm Zone" search and rescue
- Escape from contaminated environments
- Medical triage for WMD and industrial accident victims
- Consequence management

SERIOUS PROTECTION FROM CBRN THREATS

Hoodless version available for use with PAPR hoods

COMPETITIVE PRODUCT COMPARISON

	XRT Suit 	Tychem® CPF3 	Saratoga HAMMER Suit 
DHS Grant-Eligible Certification	NFPA 1994 Class 3	NONE	NONE
Barrier Technology	CHEMPAK® Selectively Permeable membrane	Tychem® to Polypropylene	Absorptive
Fire Retardant	NO	NO	NO
Fit	Form-fitting	Form-fitting	Form-Fitting
Function	Security & DECON	DECON & HAZMAT	Tactical & Security
Entry Point	Front	Front	Two-piece
Tactical Boot Approval	YES	NA	NA
Tactical Style Glove Approval	YES	NA	NA
Chemical Tape (Recommended)	NO	YES	NO
Heat Stress Mgmt System	Breathable	NONE	Air Permeable

GORE® CHEMPAK® SELECTIVELY-PERMEABLE FABRIC PERMEATION RESULTS** - XRT SUIT

Challenge Agents	Concentration (NFPA 1994 test requirement)	NFPA 1994 One Hour Exposure Threshold	Exposure Duration (Actual)	Cumulative Permeation After 8 Hours
Chemical Warfare Agents				
Mustard (HD)*	10g/m^2	< 4 µg/cm^2	>480 minutes	< 0.2 µg/cm^2
Sarin (GB)	10g/m^2	< 1.25 µg/cm^2	>480 minutes	< 0.2 µg/cm^2
Soman (GD)*	10g/m^2	< 1.25 µg/cm^2	>480 minutes	< 0.1 µg/cm^2
Tabun (GA)	10g/m^2	< 1.25 µg/cm^2	>480 minutes	< 0.1 µg/cm^2
VX	10g/m^2	< 1.25 µg/cm^2	>480 minutes	< 0.3 µg/cm^2
Liquid Toxic Industrial Chemicals				
Dimethyl Sulfate*	10g/m^2	< 6 µg/cm^2	>480 minutes	Nothing detected
Gaseous Toxic Industrial Chemicals				
Acrolein*	40 ppm	< 6 µg/cm^2	>480 minutes	< 0.1 µg/cm^2
Acrylonitrile*	40 ppm	< 6 µg/cm^2	>480 minutes	Nothing detected
Ammonia*	40 ppm	< 6 µg/cm^2	>480 minutes	Nothing detected
Chlorine*	40 ppm	< 6 µg/cm^2	>480 minutes	< 0.2 µg/cm^2
Cyanogen Chloride	40 ppm	< 6 µg/cm^2	>480 minutes	Nothing detected
Hydrogen Chloride	40 ppm	< 6 µg/cm^2	>480 minutes	Nothing detected
Phosgene	40 ppm	< 6 µg/cm^2	>480 minutes	Nothing detected

*NFPA 1994 CWA and TIC test requirements **All data obtained per NFPA 1994 Class 3 test methodology

XRT ENSEMBLE PROTECTIVE PERFORMANCE

Test	NFPA 1994 Requirement	Blauer XRT Ensemble Performance
MIST Testing	PPDFsys > 76	PPDFsys > 1,000
Chemical Permeation - Seams	≤ 1.25 - 4.0 µg/cm^2	< 0.3 µg/cm^2
Seam Strength - fabric to fabric	≥ 15 lbf/2 in	> 84 lbf/2 in
Seam Strength - fabric to butyl	≥ 15 lbf/2 in	> 21 lbf/2 in

BRN-94® ENSEMBLE

NFPA 1994 CLASS 4, NFPA 1999 MULTI-USE ENSEMBLE

Blauer's BRN-94® Ensemble is the first purpose-designed PPE to be certified to the NFPA 1994 Standard on Protective Ensembles for First Responders to CBRN Terrorism Incidents for CLASS 4 protection against radiological and biological particulate threats as well as the NFPA 1999 Standard for Multiple-Use and Single-Use Ensembles for protection against blood-borne pathogens, body fluids, and common chemicals.

The BRN-94 ensemble is made with GORE® CROSSTECH® fabric to provide durable protection against liquid and particulate biological and radiological threats while remaining highly breathable for lower heat stress on the wearer during extended response operations. The BRN-94 was developed in response to the Ebola Virus Disease outbreak and is designed with integrated barrier gloves and booties, a liquid-resistant zipper and storm fly, and integrated hood with a chlorobutyl face seal for use with approved APR/PAPR masks. Like the other CBRN ensembles in Blauer's Homeland Defender® line, the BRN-94 is self-sealing and requires no chemical tape.

OPERATIONAL USES

- First Receivers
- Physical security
- Warm-zone patrol
- DECON
- Contaminated patient transport and handling
- Mortuary operations

FEATURES & BENEFITS

- Certified to NFPA 1994 for Class 4 and NFPA 1999 Multiple-Use and Single-Use Ensemble
- Simple, one-piece coverall design with integrated gloves, booties, and hood for fewer potential areas of exposure and efficient donning/doffing
- Highly breathable GORE CROSSTECH fabric allows for longer mission durations due to low thermal burden.
- Machine washable for multiple uses if not exposed to CBRN agents
- Durable fabric and seams prevent accidental contamination and provide user confidence

BRN-94® overglove

BRN-94® barrier glove

FREQUENTLY ASKED QUESTIONS

Are Blauer's Homeland Defender® suits OSHA certified?

No. OSHA provides ensemble configuration guidance but does not certify suits. Blauer suits are certified to the NFPA 1994 Standard on Protective Ensembles for First Responders to CBRN Terrorism Incidents and NFPA 1992. The NFPA standards are more comprehensive than OSHA guidelines because they specify design and protective performance requirements. OSHA ratings only apply to the design of a suit for various threat levels and how the suit fits with a respirator or SCBA.

What are GORE® CHEMPAK® and CROSSTECH® Fabrics made of?

GORE® CHEMPAK® and CROSSTECH® fabrics are made with high-strength fluoropolymer barrier films that are laminated to various inner and outer shell fabrics for use in CBRN contaminated environments. GORE® CHEMPAK® Ultra-Barrier fabric is impermeable and is appropriate for use in environments where CBRN agents are at or above IDLH levels when worn with approved SCBA systems. GORE® CHEMPAK® Selectively-Permeable fabric is breathable and offers protection against CBRN agents in concentrations below IDLH when worn with approved respirators. GORE® CROSSTECH® fabrics are lightweight and breathable enough for everyday wear with the added benefit of protection against liquid and airborne biological and radiological threats.

How do I care for my Homeland Defender® suit?

Homeland Defender suits require only basic storage and maintenance. Every Homeland Defender® suit comes with a User Manual, which provides detailed instructions for storage and care of the garment. To insure the protective performance of your Homeland Defender® suit, it is important that these instructions are followed at all times.

What is the shelf-life of Homeland Defender® suits?

Homeland Defender® suits have a shelf life of ten years if basic storage and care instructions are followed. The actual shelf life depends on the extent and conditions under which the garment is used and stored. Blauer is conducting aging studies with an independent laboratory and may revise this figure upwards if sufficient data is obtained indicating longer shelf-life.

Can any respirator be worn with Homeland Defender® suits?

No. Because every respirator face piece is constructed differently, the NFPA 1994 Standard requires that ensembles be certified with specific SCBA's, APR's, or PAPR's to ensure user safety. Only respirators and SCBA systems that are certified by NIOSH as CBRN approved and listed on each Homeland Defender® ensemble's certification may be worn.

Do Homeland Defender® suits provide thermal or FR protection?

The Multi-Threat suit provides limited FR protection due to its NOMEX® IIIA outer and inner shells, which will resist melting, dripping, and burning when exposed to high heat and flame. However, the suit does not have any insulative layer and will not protect the wearer from sustained high temperatures. The XRT and BRN-94® suits offers no FR or thermal protection.

Can Homeland Defender® suits be deconed and re-used?

The Multi-Threat and BRN-94® suits are designed to be laundered multiple times for reuse if not contaminated. Users should follow all care instructions as detailed in the User Manual to insure the protective qualities of their Homeland Defender® suits are adequately maintained.

The XRT suit is designed for more limited use and has not been evaluated against wash/dry cycles.

Does Blauer warranty its Homeland Defender® suits?

Yes. Blauer warrants that every Homeland Defender® suit is free of defects in materials and workmanship and is certified to the specified standards stated on its certification label when it is shipped from our factory. If an agency or end-user receives a Homeland Defender® suit from Blauer and it is damaged or suspected of having defects, Blauer will coordinate the return and evaluation of the suit and issue a new or repaired suit as appropriate.

How do I obtain evaluation samples of Homeland Defender® suits?

Contact Blauer's Homeland Defender® service desk by phone (800-225-6715 x 245) or e-mail (Chembio@blauer.com). We will discuss your agency's needs and coordinate an in-person demonstration.

Does Blauer also sell the respirators and boots that are certified with Homeland Defender® suits?

No. Blauer manufactures and sells the suits only.

How much do Homeland Defender® suits cost?

Pricing for Homeland Defender® suits is based on unit volume for each purchase order. Contact our Homeland Defender® service desk for a quote.

I have additional questions about Blauer's Homeland Defender® line. Who should I contact to get more information?

Please either contact our Homeland Defender® help desk (800-225-6715 x 245) or e-mail (chembio@blauer.com) or your local Blauer sales representative.

Blauer®
SERIOUS PROTECTION

HOMELAND DEFENDER®

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