MOST BREATHABLE. LESS HEAT STRESS. NO EQUIVALENT.

GORE® PARALLON™
LINER SYSTEM

GORE® CROSSTECH®
MOISTURE BARRIER

GORE® RT 7100
MOISTURE BARRIER

GORE BARRIERS HAVE NO EQUIVALENT

TURNOUT GEAR

GLOVES

GORE® CHEMPAK® PRODUCTS
HAZMAT GEAR

360° PROTECTION

PARTICULATE HOODS

FOOTWEAR

To improve your safety and gear performance, Gore continues to push the technical capabilities of personal protective equipment (PPE) with unmatched product performance.

MOST BREATHABLE

- Proven to be the most breathable when new and after multiple heat exposures, allowing for the greatest heat stress relief.

PROVEN THERMAL PERFORMANCE

- Provides excellent thermal stability in the toughest conditions as proven in garment-level Pyroman testing and actual field use.

RELENTLESS DURABILITY

- Withstands the wear and tear from abrasion better than any other moisture barriers for long-lasting protection and breathability.

SAFE TO WEAR

- The only moisture barriers certified to OEKO-TEX® Standard 100, Class 2 in North America, ensuring the product you wear is free of bromine- and antimony-based flame retardants.

Paul Dacey
Breathability After Heat Exposure Test

GORE® PROTECTIVE BARRIERS

Gore has earned its industry-leading reputation by consistently delivering high breathability, long-lasting durability, and excellent thermal performance in all kinds of conditions. GORE® protective barriers help you manage heat stress better and they maintain their breathability after multiple fire calls.

When evaluating materials for your next set of turnout gear, keep in mind that your selection of moisture barrier alone has more impact on your turnout gear's breathability than any combination of outer shell and thermal liner you can make. If your body's heat cannot escape from your gear, you run the risk of elevated heart rate, raised body core temperature, and accelerated dehydration, potentially leading to heat exhaustion and impaired decision-making.

MOST BREATHABLE

Proven by NC State University

A group of firefighters wearing turnout gear participated in a third-party study to evaluate the physiological impact of protective barriers currently available in turnout gear.

Prior to the start of the trial, vital sign thresholds were established for the safety of the participants, which were then monitored throughout the study. When wearing the GORE® protective barriers, every participant finished the trial. However, when these same participants were wearing the competitive barrier, 40 percent (4 out of 10) were pulled out during the second work cycle because their heart rates exceeded their predetermined threshold.

This study confirmed that wearing the GORE® PARALLON® liner system delivered the highest breathability followed closely by GORE® CROSSTECH® black moisture barrier. Both of the GORE® protective barriers performed significantly better than the competition.

BREATHABILITY AFTER HEAT EXPOSURE

You should expect your gear to maintain its breathability after exposing it to high temperatures. Although this is not true for competitive barriers that have shown decreases in their capability to breathe, subjecting you to the the symptoms that come with elevated body core temperatures.

PROVEN THERMAL PERFORMANCE

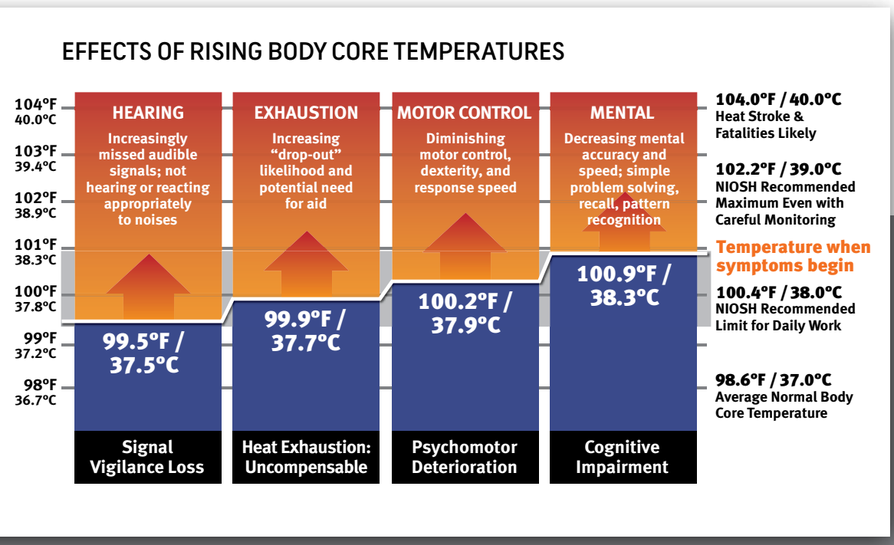
Reliable performance after exposure to high temperatures is essential in a protective barrier. Pyroman, ASTM F1930-15 is an industry-recognized protocol for evaluating system-level thermal performance in flashover-type conditions. A 12-second exposure in this test is considered a severe situation. When tested at North Carolina State University, the GORE® PARALLON™ liner system performed significantly better than traditional composites on the market today; whereas GORE® CROSSTECH® black moisture barrier performed similarly to Stedair® 4000 in this condition.

Dry insulation is more protective

Wet conventional gear can lose 1/3 of its thermal protection compared to when it's dry. However, gear with the GORE® PARALLON liner system remained relatively unchanged even after it gets wet from sweat.

PROOF

A third-party study coducted by NC State University proves GORE® Protective Barriers are your best choice for managing heat stress.



Small Differences Matter
United States military studies have shown that once your body reaches 99.5°F, even an increase of only 0.1°F is significant.

Amy Hogue
Sweating Guarded Hotplate

TOTAL HEAT LOSS (THL) VS RESISTANCE TO EVAPORATION OF SWEAT (RET)

The NC State trial confirmed that meaningful differences in body core temperatures did occur.

Ret values provide a better correlation to actual human physiological impact, whereas THL does not.

It's extremely important to consider your gear's Ret value, because your body's ability to lose heat through conduction is eliminated in warmer or sunny conditions and it solely relies on evaporative cooling. Since THL includes a conduction element in its equation, it does not provide adequate information on how gear will perform in warmer environments which are common to firefighters.

RET
Using the Sweating Guarded Hot Plate, this test focuses strictly on wet heat loss or evaporation. The result is a value that indicates how much resistance your turnout gear layers create for evaporation (aka sweat vapor) to move through them, so a lower number or less resistance is better. The environment at which this test is ran is 95°F with 40% relative humidity.

THL
Also using the Sweating Guarded Hot Plate, this test renders its results through a complex equation that calculates a combination of wet heat loss (evaporation) plus a dry heat loss (through conduction) achieved by your turnout gear layers, so a higher number is better. The environment at which this test is ran is 77°F with 65% relative humidity

Recent studies confirmed that Ret values provide a better correlation to actual human physiological impact, whereas THL does not.

SELECTING THE RIGHT BARRIER FOR YOU

Because departments and firefighters face different challenges, we continue to expand our family of innovative barriers that exceed the NFPA 1971 Standard. For more than 35 years, GORE® protective barriers have delivered the highest breathability in a broad range of conditions, while ensuring long-lasting durability and superior protection against hazards at the emergency scene. Which barrier product you need depends on you; but whatever you're up against, we've got you covered.

GORE® products provide the highest level of breathability and durability in today's market.

	GORE® PARALLON™ LINER SYSTEM	GORE® CROSSTECH® BLACK MOISTURE BARRIER	GORE® CROSSTECH® 3-LAYER MOISTURE BARRIER	GORE® RT7100 MOISTURE BARRIER
	Highest breathability **Maintains thermal protection better when gear gets wet**	**Best combination of breathability and durability** **Chosen by most major metros**	**Most durable for long lasting protection and fewer repairs**	**Excellent protection, performance, and value**
High breathability	✔✔✔✔	✔✔✔	✔✔✔	✔✔
Garment-level thermal performance	✔✔✔✔	✔✔✔	✔✔✔	✔✔✔
Outstanding durability	✔✔✔	✔✔✔	✔✔✔✔	✔✔
Warranty	5 years	5 years	7 years	4 years
OEKO-TEX® certified	Yes	Yes	Yes	Yes

Donna Purner
Footwear Lab

GORE® CROSSTECH® FOOTWEAR FABRIC

The advanced technology in GORE® CROSSTECH® footwear fabric provides durable, breathable protection without compromising comfort or agility, while standing up to the tough conditions structural firefighters face in the field. It is exceptionally durable even when repeatedly exposed to extreme heat.

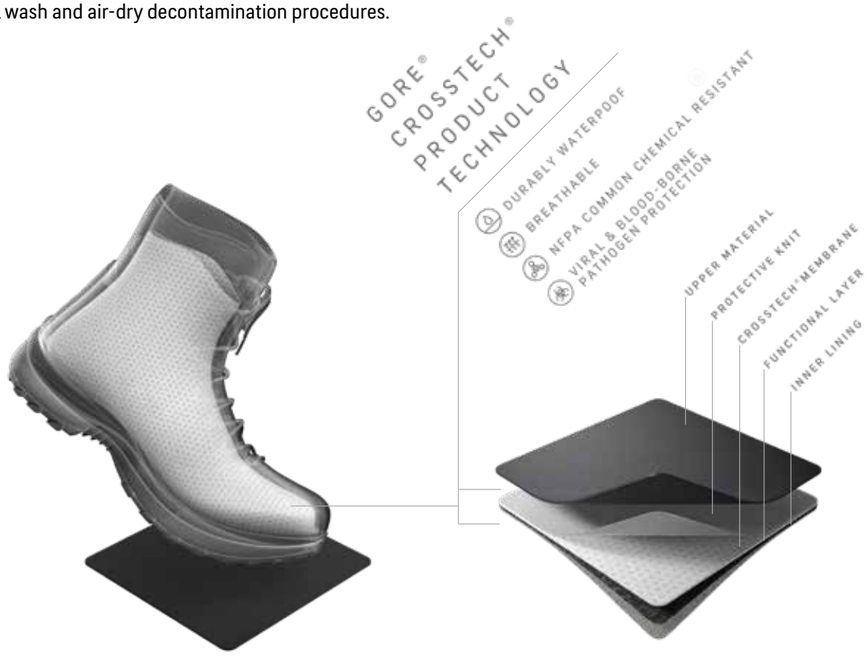
DECONTAMINATION EFFECTIVENESS

During the course of their jobs, firefighters are exposed to many chemicals, and their gear must provide safety and protection in these extreme conditions. The fire industry has traditionally considered rubber boots to be easier to decontaminate after exposure, but firefighters have found leather boots to be much more stable, flexible, and comfortable. A study performed in W. L. Gore & Associates' laboratories indicated that leather boot materials retained substantially lower amounts of most contaminants at the matrix level than rubber boot materials after normal wash and air-dry decontamination procedures.

PROVEN QUALITY

Every footwear bootie made of GORE® CROSSTECH® footwear fabric must pass a waterproofness test before being used in a boot. The bootie is filled with air and then submerged in water. If any leaks are found, the liner cannot be used.

We couldn't find any volunteers to walk through 500 miles of water, so we built a machine to simulate it. Before a certified manufacturer can offer a new boot, its design must pass this test. The boot with GORE® CROSSTECH® footwear fabric is submerged in water and flexed 500,000 times to ensure that it remains waterproof after extreme use.



Lynn Owens
Glove Lab

GORE® CROSSTECH® GLOVE INSERTS

Protective gloves are useless if you have to remove them to get the job done. The latest technology used in GORE® CROSSTECH® glove inserts combines flexibility, durability, and protection in gloves that enable you to complete challenging tasks while wearing gloves.

Improved dexterity and feel with less bulk in your palm, Gore's new technology is thinner without sacrificing durability. The insert's form-fitting construction reduces liner pull-out and provides better fit for both men and women.

OUTSTANDING DURABILITY

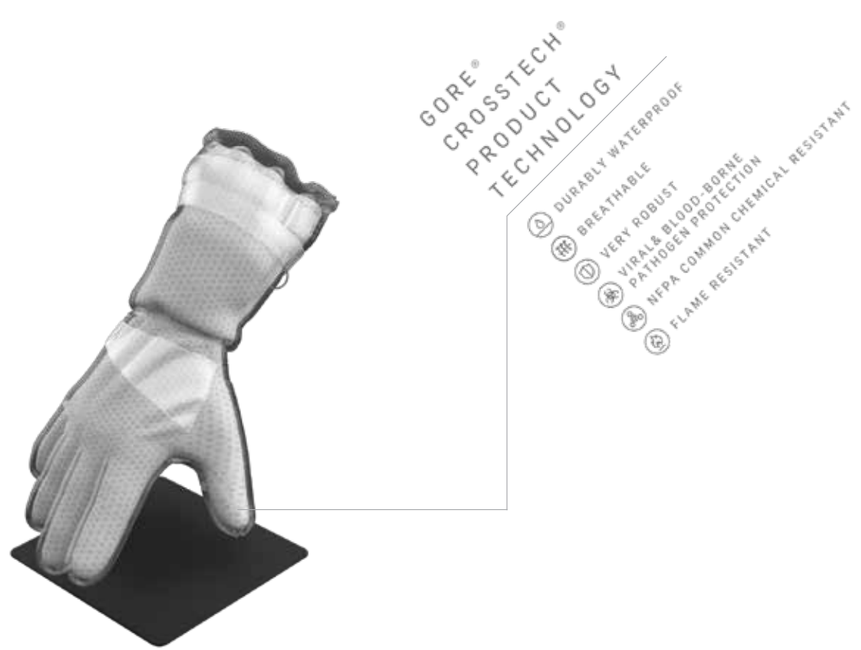
As you flex and bend your hands, the insert rubs against the glove's outer shell. Durable GORE® CROSSTECH® glove inserts resist this kind of wear and tear better than any other breathable barrier, especially when they're wet.

CONSISTENT THERMAL STABILITY

Unlike most competitive barriers, GORE® CROSSTECH® glove liners do not melt, crack, or leak after being exposed to 500°F heat.

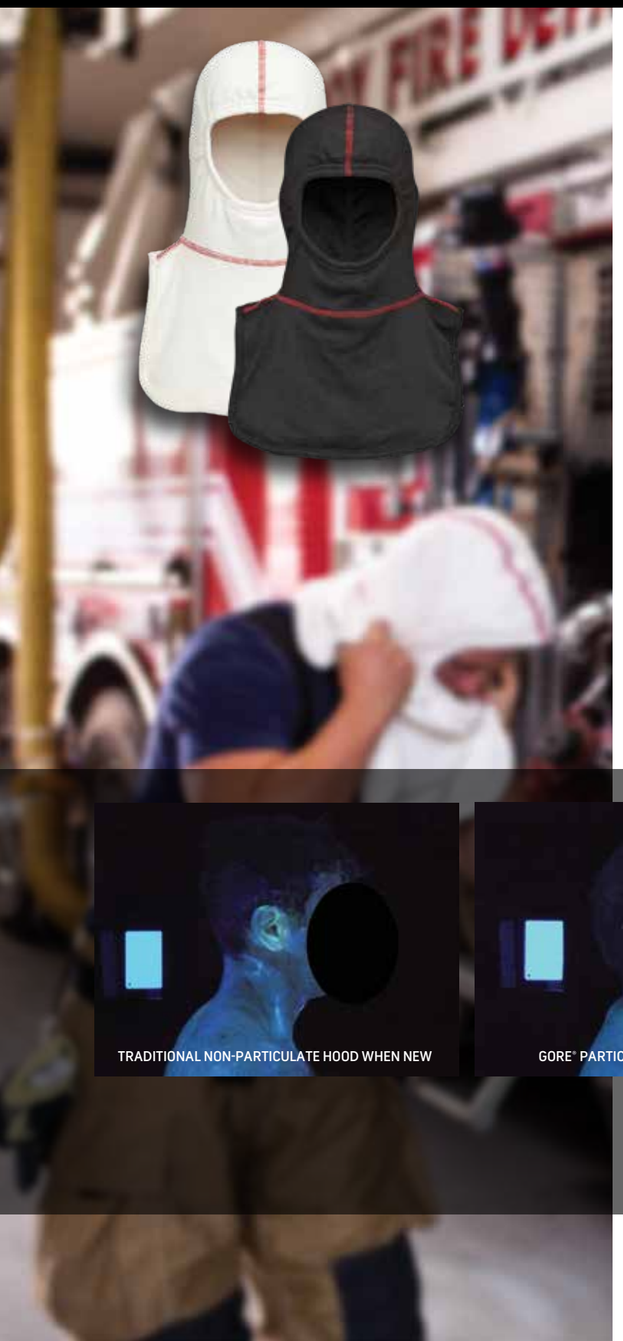
PROVEN QUALITY

Using the GORE® whole glove leak tester, gloves are filled with pressurize air to ensure they are waterproof. If even the smallest bubble appears in the water trough, the glove cannot be sold.



Rob Pheris
Chem Perm Lab

GORE® PARTICULATE HOODS



THE GORE® PARTICULATE HOOD IS THE ONLY HOOD[1] THAT

- Blocks more potentially harmful particulates[2] than any other hood (99.9%),
- maintains its 99.9% particulate-blocking performance after 100 wash cycles,
- has an inspection opening that enables you to visually inspect the integrity of the entire barrier layer, and
- has proven its system-level reliability and durability with human FAST[3] testing on both new hoods and hoods washed 100 times.

BETTER PARTICULATE-BLOCKING PERFORMANCE AFTER 100 WASH CYCLES THAN COMPETITIVE HOODS[1], EVEN WHEN THEY ARE NEW

**FAST Results for Hoods Properly Donned –
Areas of bright fluorescence indicate particulate ingress**

TRADITIONAL NON-PARTICULATE HOOD WHEN NEW

GORE® PARTICULATE HOOD WHEN NEW

GORE® PARTICULATE HOOD AFTER 100 WASH CYCLES

ASK THE COMPETITION FOR THE PARTICULATE-BLOCKING DATA AND FAST TEST RESULTS OF THEIR HOODS AFTER 100 WASH CYCLES.

[1] Excludes hoods using moisture barriers [2] Particulates in the 0.1 to 1.0-micron range, per NFPA 1971, 2018 Edition
FAST is Florescent Aerosol Screening Test, which was performed at RTI International.

GORE® CHEMPAK® PRODUCTS

NON-ENCAPSULATED LEVEL A SUIT

The protection of a responder's skin from exposure to hazardous materials is the key attribute that defines Level A performance, not a totally encapsulated design.

PATENTED HEAT STRESS MANAGEMENT

Gore's patented wet-down method effectively dissipates heat generated by the responder, allowing them to remain engaged longer. (US Patent 7,730,557)

MEETS AND EXCEEDS NFPA CERTIFICATIONS

Multi-threat suits are certified to the NFPA 1994, Class 1, 2, 2R and NFPA 1992 Standards to provide a high level of protection against a broad range of toxic industrial chemical and biological agents, including the newly declassified fourth generation nerve agents.

FLASH FIRE PROTECTION

The protective barrier is laminated between two layers of flame-resistant textiles, one of which is a high-strength textile that resists cuts, tears, and punctures.

ENHANCED FUNCTIONALITY

Multi-threat suits provide unencumbered movement, increased range of motion, improved peripheral vision, and excellent dexterity so you can effectively complete the mission.

NFPA Standard	Respirator*	OSHA/EPA Level
NFPA 1991	SCBA	A
NFPA 1994 Class 1	SCBA	A
NFPA 1994 Class 2/2R	SCBA	B
NFPA 1992	SCBA	B
NFPA 1994 Class 3/3R	APR/PAPR	C
NFPA 1994 Class 4/4R	APR/PAPR	C
NFPA 1999	P100/HEPA	C

* SCBA = self contained breathing apparatus
APR = air-purifying respirator
PAPR = powered air-purifying filter with 99.99% efficiency
HEPA = high efficiency particulate air (filter)

Ray Davis
Gore Environmental Chamber

PROVEN DURABILITY BACKED BY GORE WARRANTIES

As you work in extreme conditions, your protective barriers in your gear are exposed to abrasion, bending, and flexing. As your department adopts more stringent care and maintenance programs, we want to ensure our products stand up to these challenges and maintain their protective qualities.

Therefore, we test beyond the NFPA 1971 minimum requirements to provide you with durable, long-lasting protection. For example, we test our barriers using a Wet Flex and Abrasion to leakage test, which is an accelerated lab test to help understand its in-use durability. And, we challenge our barriers by preconditioning them with 25 wash/dry cycles and five convective heat cycles – 2 ½ times greater than what the standard requires – before testing for the liquid and viral penetration resistance.

Gore stands behind the durability, reliability, and performance of its complete line of protective barriers. As a result of their proven performance in the lab and in the field, all of our protective barriers are covered by comprehensive warranties. Repair and replacement of a GORE® product covered in our warranty program is performed by a Verified ISP or the original garment manufacturer.

	GORE® PARALLON™ LINER SYSTEM	GORE® CROSSTECH® BLACK MOISTURE BARRIER	GORE® CROSSTECH® 3-LAYER MOISTURE BARRIER	GORE® RT 7100 MOISTURE BARRIER
Materials & Labor	**5 Years** Materials and labor for body-side layer*	**5 Years** Materials and labor	**7 Years** Materials and labor	**4 Years** Materials and labor

*The body-side layer of the GORE® PARALLON™ liner system is tested as the moisture barrier per NFPA 1971 Standard requirements.

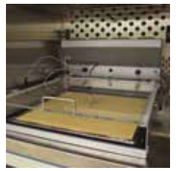
EXTENSIVE PRODUCT TESTING

PROVING OUR COMMITMENT

Every new product containing GORE materials is put through the paces in our Gore testing lab. If it survives there, then it's put to the ultimate test for performance and comfort in actual field use. Finally, if It passes the entire gauntlet of tests, then it earns the right to carry the GORE® brand. Your Safety. Your Performance. Our Commitment.

MATERIAL TESTS | **SYSTEM TESTS** | **HUMAN TESTS** | **FIELD USE**


THL*


Ret


MVTR


Mechanical Flex


NC State University


End Users


TPP*


Stored Energy*


Vertical Flame*


Centrifuge


Gore Environmental Chamber


Garments


ChemPen*


Suter


Extreme Heat*


Glove Liner Retention*


Footwear


Durability - Washers


Martindale Abrasion


Gelbo Flex


Whole Glove Leak

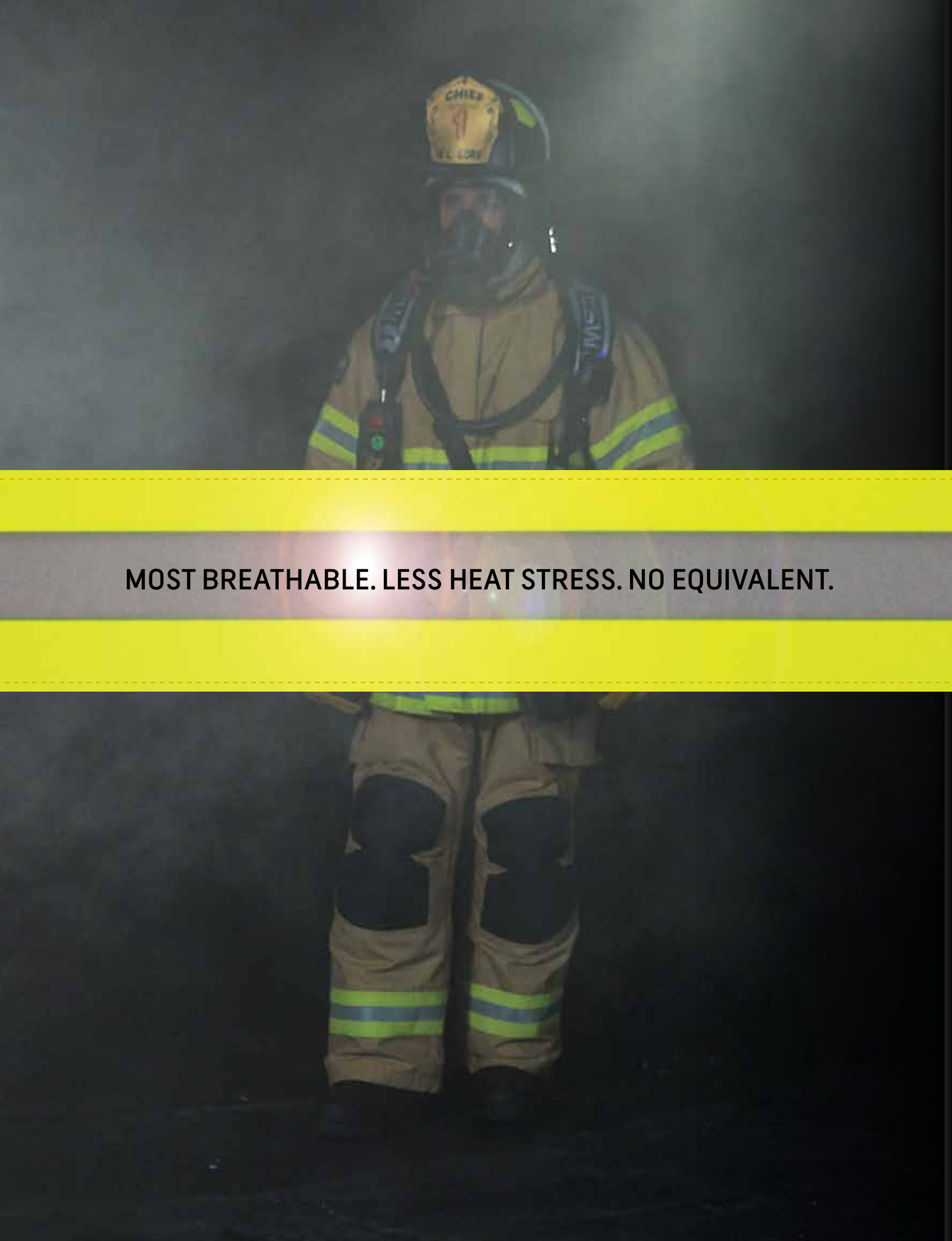

Gloves


Mechanical Leak


Wyzenbeek Abrasion Test


Pyroman

*Tests that are currently included in the NFPA Standard



MOST BREATHABLE. LESS HEAT STRESS. NO EQUIVALENT.

GORE FABRICS' COMMITMENT TO RESPONSIBLE USAGE OF MATERIALS

According to Oeko-Tex: "If a textile article carries the STANDARD 100 label, you can be certain that every component of this article, i.e. every thread, button and other accessories, has been tested for harmful substances and that the article therefore is harmless for human health."

Warning: No products, including garments and accessories, protect completely, even when new; their protective performance will decline with wear, tear, abrasion, and other damage associated with use.

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W. L. Gore & Associates
800.431.GORE (4673)
GoretexProfessional.com