



GORE-TEX

Multi-Hazard GORE-TEX PYRAD®

FABRIC
TECHNOLOGY

GARMENTS BY

 **STEEL GRIP** INC.



Pulp & Paper Safety Association
New Technology Showcase 2023

AGENDA

- Multi Hazard GORE-TEX PYRAD® PPE for thermal and liquid chemical splash
- How we confirm our works protection when you need it most
- GORE-TEX PYRAD® PPE is highly breathable to help mitigate worker heat stress
- Review of key safety standards
- Contact information

MULTI-HAZARD GORE-TEX PYRAD® - Liquid Chemical Protective Garment

Single Garment Providing Protection from Multiple Mill Hazards



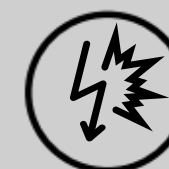
**Molten
Splash Protection**



**Liquid Chemical
Splash Protection**



**Flame Retardant
Flash Fire Protection**



**Arc Flash
Protection**

Human Comfort Factors



Light Weight



Breathable



**Quick Redry –
Fast Recovery**

NFPA
1992

Standard on
Liquid Splash-Protective
Ensembles and Clothing for
Hazardous Materials
Emergencies

2018



**MULTI-HAZARD GORE-TEX PYRAD® -
Liquid Chemical Protective Garment meet requirements of NFPA 1992**

ENSURING FITNESS FOR USE

Gore commits to deliver products that meet our customer's expectation and are fit to their intended use:

- Delivering products that meet requirement according to standards.
- Understanding material science, final product end-use and end-user needs.

Arc testing



PYROMAN™



Chemical penetration



Molten Splash



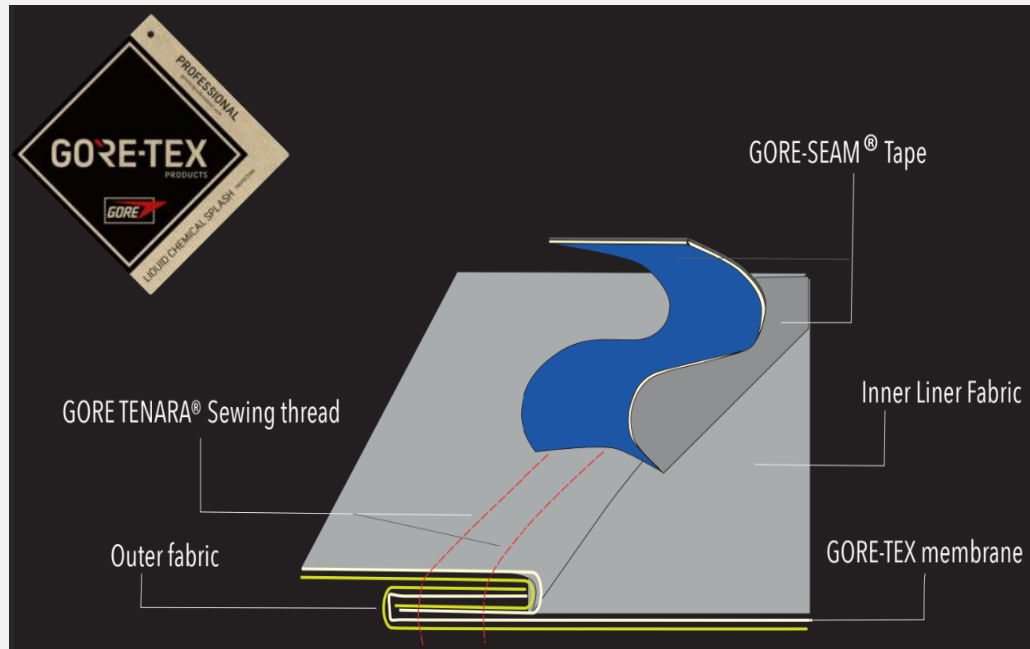
Thermal comfort



ENSURING OUR PRODUCTS PERFORM RIGHT EVERY TIME: GORE CERTIFIED FACTORIES MUST MEET STRINGENT QUALITY REQUIREMENTS

Seams are vulnerable areas prone to chemical penetration.

- Multi Hazard GORE-TEX PYRAD® fabric are finished with **GORE-SEAM® Tape** and sewn with **GORE TENARA®**



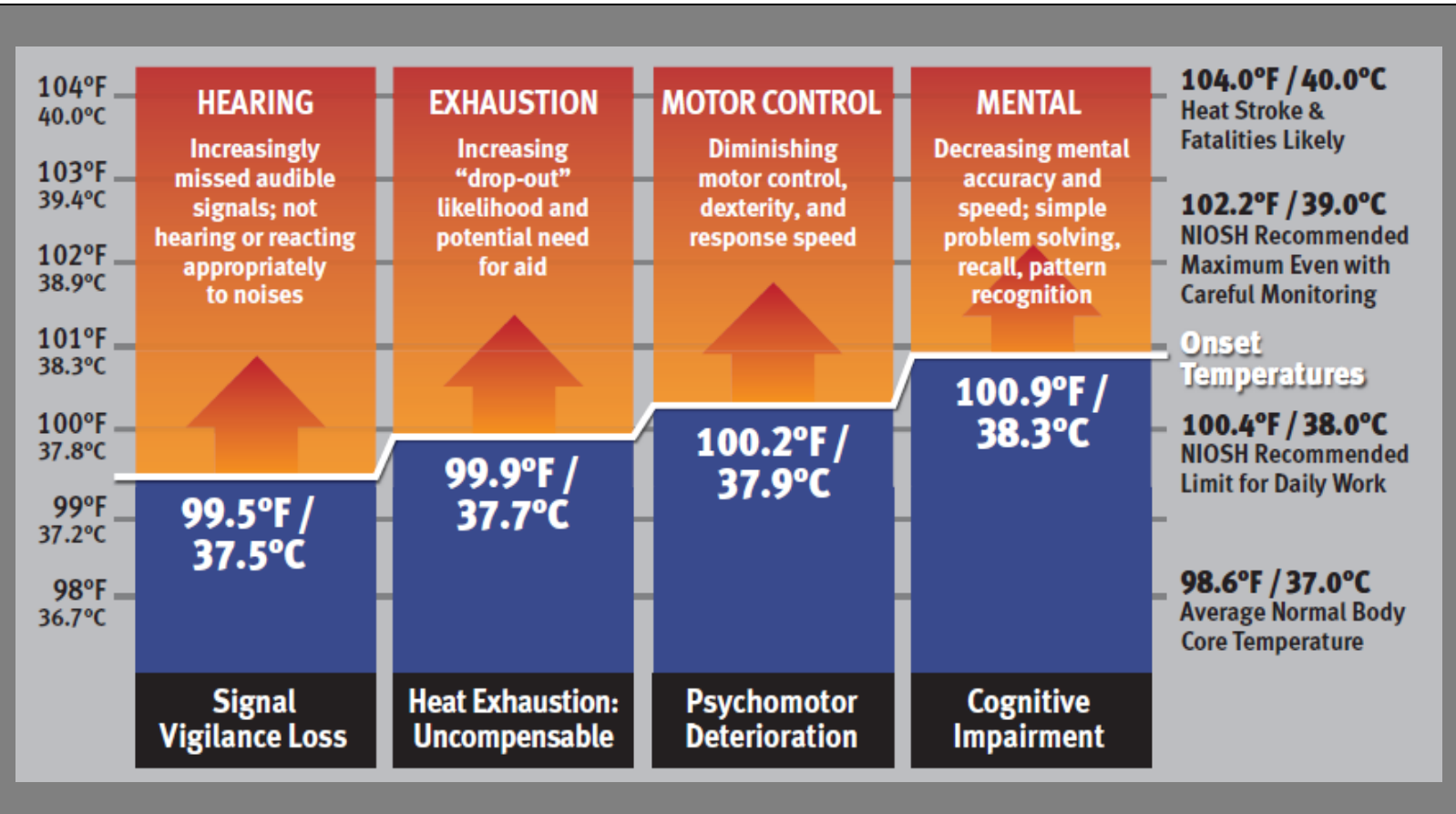
**Liquid-proofness
(Hydrostatic Head Tester)**



Garment seams are thermally stable and chemically inert



PERFORMANCE IMPACTS RESULTING FROM OF HEAT STRAIN



- Small changes in core temperature can make large differences in human comfort and performance
- Sense of scale: There is only 1°C difference between 'normal' core temperature and the NIOSH recommended core temperature limit for daily work. The difference between this limit and a high likelihood of Heat Stroke/Fatalities is only 2°C
- Typical meaningful threshold for meaningful core temperature differences in a heat stress scenario is 0.1 – 0.15 °C

PPE TO MITIGATE HEAT STRESS

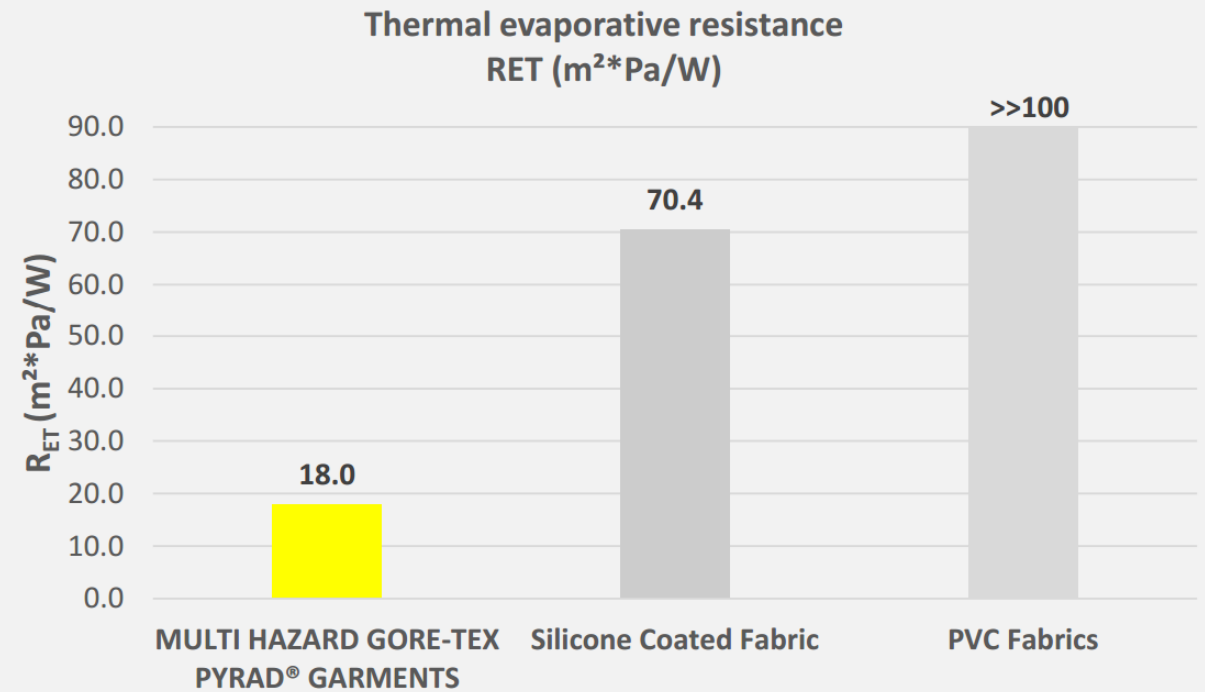
Laminate Breathability – ISO 11079

Evaporative Resistance (Ret)

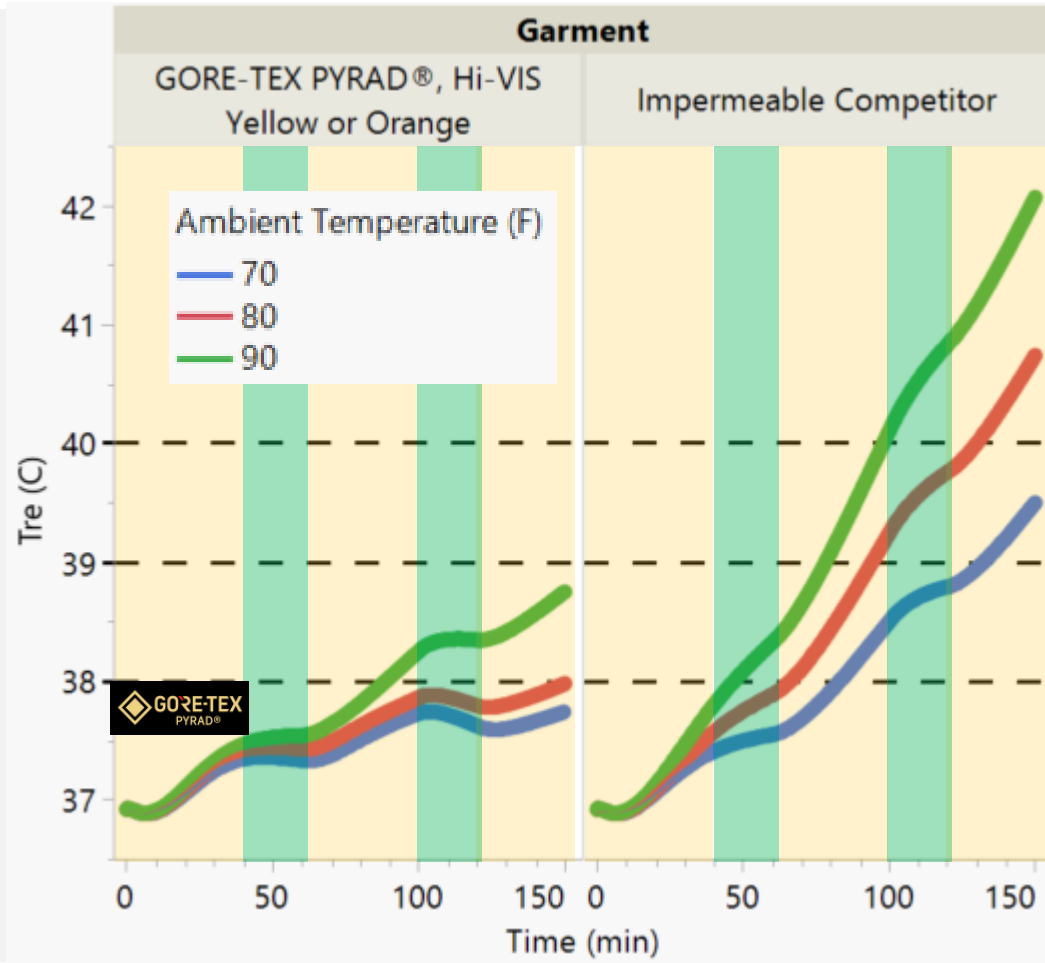
Hohenstein Breathability Rating Scale

Rating	R_{et} (m ² Pa/W)
Extremely Breathable	<6
Very Breathable	6-13
Breathable	13-20
Low Breathability	20-30
Not Breathable	>30

K. H. Umbach, "Physiological and Technological Aspects of Clothing of Water-Repellent Textile Constructions Permeable to Water Vapor at the Same Time," Hohenstein Technical Report, Research Project AIF-NO 5296



Gore Provides Industry with Physiological Modeling to better understand how to Mitigate Heat Stress when wearing liquid splash protective PPE



Breathable Liquid Chemical Protection

STANDARD COMPLIANCE: MULTI HAZARD GORE-TEX PYRAD® (FR)

Section	Description	Multi Hazard GORE-TEX PYRAD®
Fabric	Weight	8.5 oz/yd ²
Chemical Splash Protection	NFPA 1992/1990, Standard on Liquid Splash-Protective Ensembles and Clothing for Hazardous Materials Emergencies	3 rd . Party Certified Garments by UL
Chemical Splash Protection	ASTM F903, Method C Liquid Penetration	3 rd . Party tested for 60 minutes - Pass
Arc Flash Properties	ASTM F1506, Protection against flame and electric arc hazards	Certified with arc rating ≥ 25 cal/cm ² (ATPV)
Heat & Flame resistance	ASTM F1930 for incidental flash fire	Average Predicted Total Area Burn Injury of Standard Coverall $\leq 15\%$ Average Predicted Third Degree Burn of Std. Coverall $\leq 1\%$
Flame resistance Vertical flame test	ASTM D6413 Initial and after 25x washing cycles AATCC 135, 3, III, Aiii	(for warp and weft) Char length ≤ 6 inches Melt and drip = none after-flame ≤ 2.0 sec
Hot Liquid Splash Resistance	ASTM F955, Molten Substance Pour Testing	see chemical penetration and hot liquid data check list
Hi Visibility	ANSI/ISEA 107 CSA Z96	Fluorescent Yellow: meet
Care instructions	Machine wash warm 40° C (max 60° C) / 105° F (max 140° F) using liquid detergent, rinse twice.	Air dry or tumble dry – Once Dry, tumble dry for 20 minutes more



MULTI-HAZARD GORE-TEX PYRAD® Garments



GOING FURTHER,
TOGETHER.

Key Takeaways:

- Certified garment design meeting safety guidelines of NFPA 1992/1990
- Single Garment Providing Protection from Multiple Mill Hazards
- Gore sets stringent quality requirements to ensure consistent performance
- Garments supplied by Steel Grip can be made in custom sizes with integrated hi-visibility



Call to Action: Stop by our booth and enter to WIN a free Multi Hazard GORE-TEX PYRAD® Garment

GORE-TEX Professional Contact:

Jim Ellis
N.A. Sales Manager
Technical Fabrics Workwear at
GORE-TEX Professional
jellis@wlgore.com
T +1 410 506 5079
M +1 443 907 5751

W. L. Gore & Associates, Inc.
Together, improving life



STEEL GRIP Contact:

Tyler S. Martin
Territory Manager
800-397-8390 Ext. 170
tyler@steelgripinc.com