

1. What is GORE® PARALLON™ liner system?

The GORE® PARALLON™ liner system is a multi-barrier construction that replaces the conventional moisture barrier and thermal liner combinations used in traditional turnout gear. It consists of three separate layers, with both the innermost and outermost layers receiving seam tape. It has been designed to work with a wide range of outer shells. This is the first offering of a GORE® PARALLON™ liner system, with intentions that additional offerings will be developed and provided in the future.

2. What does it do?

Enables turnout gear to deliver a new level of breathability, across a wider range of conditions, to minimize the heat stress burden on the firefighter.

Provides thermal protection closer to when the gear was dry, even when wet, in ordinary heat exposures (i.e., subflash conditions), helping to minimize significant loss in indicated time to burn.

And despite being a new and non-traditional multi-barrier construction, it achieves and exceeds the NFPA 1971 Standard, 2013 edition.

3. Is GORE® discontinuing their current moisture barriers?

No. The GORE® PARALLON™ liner system is a new, additional product from Gore. The current moisture barriers (GORE® CROSSTECH® black moisture barrier, GORE® CROSSTECH® 3-layer moisture barrier, and GORE® RT7100 moisture barrier) will still continue to be offered.

4. When will the GORE® PARALLON™ liner system be available?

The product is not commercially available yet, but the target is full commercial availability in the late summer / early fall. In the meantime Gore is working with our manufacturing partners to prepare.

5. Is gear with the GORE® PARALLON™ liner system even more breathable than gear with CROSSTECH® moisture barriers?

Yes. Turnout gear with the GORE® PARALLON™ liner system is the most breathable liner system option available for gear compliant with the NFPA 1971 Standard; even more so than gear containing CROSSTECH® black moisture barrier, which offers the highest level of breathability in conventional turnout gear today.

6. How can you say that the GORE® PARALLON™ liner system has higher breathability when its THL numbers are close to conventional gear options today?

The THL test is an indication of heat loss in a relatively moderate environment, similar to a “stuffy” office (77°F, 65%RH, no sun or other radiant). When looking at the breathability of the GORE® PARALLON™ liner system across a wide range of conditions, beyond just the THL test conditions, the breathability advantage of the GORE® PARALLON™ liner system is clear. One of those conditions can be evaluated using the Ret test (“R-E-T”), which is a standard test widely used in comfort science, including evaluations of performance outdoor apparel. It evaluates the resistance to evaporative heat loss (i.e., the ability of your sweat vapor to pass through the gear and cool the body). Lower resistance means higher breathability. And while the Ret test provides additional insight into how gear performs in conditions beyond the THL test, it also doesn’t

incorporate other common challenges like exposure to the sun. Gore has the capability to look at the breathability and overall heat loss across a wide range of conditions.

7. Is there any human trial testing that confirms the benefits of the higher breathability of the GORE® PARALLON™ liner system?

Limited human impact testing has confirmed the benefits of the GORE® PARALLON™ liner system's breathability to help reduce body core temperature; more so than conventional gear. Just small increases in body core temperature, above a certain level, have proven to impact safety and effectiveness of operators. And your body's ability to sweat and that sweat to evaporate are key to helping to keep body core temperatures lower. The more breathable the gear, the greater the chance that sweat will evaporate to help the body stay cooler, reducing the amount of heat stress.

8. How can the GORE® PARALLON™ liner system offer enhance/improved thermal protection if its TPP numbers are close to conventional gear composites?

Turnout gear with the GORE® PARALLON™ liner system is able to maintain its thermal protection better when wet, particularly from sweat, in ordinary fireground heat exposure (i.e., "subflashover" – note that the TPP test simulates a flashover exposure). Testing (using the same equipment and heat levels as are used in the Stored Thermal Energy test within the NFPA 1971 Standard, 2013 edition) shows that when conventional turnout composites get wet, they can lose a significant amount of time until an indicated 2nd degree burn. The GORE® PARALLON™ liner system better maintains the thermal protection offered when the gear was dry.

9. Does the multi-barrier construction of the GORE® PARALLON™ liner system essentially protect the insulation from both the outside and the inside sources of moisture?

Yes, that is part of how it delivers its improvement.

10. So the GORE® PARALLON™ liner system now has multiple film layers? Doesn't that make the gear less breathable now?

No. Quite the opposite, in fact. Exceptional heat stress management is achieved by using a combination of Gore's unique barrier technologies that work in different ways. The innermost barrier layer is designed to deliver maximum sweat vapor transmission (breathability) in the microclimate near the body. The outer barrier layers are designed to offer high breathability farther from the body across a broad range of environments. The result is a liner system that is actually more moisture vapor breathable, minimizing the heat stress for the firefighter.

11. What is the durability? What is the warranty?

The product is intended to provide both a durability and a warranty commensurate with Gore's CROSSTECH® black moisture barrier, although additional evaluations are still pending. Note that for 1851 compliance, only the innermost barrier will need to comply with the 1851 requirements associated with the moisture barrier.

12. Beyond the performance advantages, what about the basic technical data?

This additional information, particularly the THL and TPP, will be provided as soon as possible from the UL testing conducted as part of the certification process.

13. Other turnout gear products speak about improved moisture management in various ways. How does the GORE® PARALLON™ liner system differ from those other products?

Effective moisture management is important, and the technologies and performance of the GORE® PARALLON™ liner system are unique. The multi-barrier construction, and the degree of breathability and aspects of enhanced thermal protection, are not available with other liner solutions.

14. What has been done in terms of field trials?

The GORE® PARALLON™ liner system has been a part of fire academy evaluations, as well as being currently used in an ongoing trial in a major metro department (for approximately the last 8 months).