

LAB TESTED. FIELD PROVEN.

GORE-TEX CROSSTECH® PROTECTIVE BARRIERS—
YOUR BEST CHOICE FOR REDUCING HEAT STRESS

GORE-TEX
PRODUCTS



PROVEN IN HUMAN STUDY CONDUCTED BY A THIRD PARTY

- ◆ The GORE-TEX CROSSTECH® PARALLON® liner system and the GORE-TEX CROSSTECH® black moisture barrier delivered the highest breathability—significantly better than the competition.
- ◆ All of the firefighters were able to complete the trial while wearing gear with GORE-TEX CROSSTECH® protective barriers; on the contrary, 40 percent could not finish the test when wearing the competitive barrier because their heart rates exceeded their maximum rates established prior to the trial.
- ◆ RET results directly correlated with the participants' physiological responses, whereas THL did not.

A group of firefighters wearing turnout gear completed a defined work/rest cycle in a controlled environment as their body core temperatures, heart rates, and skin temperatures were monitored. Over a period of several weeks, the same participants repeated the trial three times so they could wear each set of gear containing one of the three different protective barriers. And, the results were exceptional.

INCREASE IN BODY CORE TEMPERATURE

U.S. military research has shown that once a body core temperature of 100°F is reached, each increase of only 0.1°F is physiologically significant, leading to an increased risk of heat exhaustion. At the end of the human trial, the average increase of body core temperature varied depending on the protective barrier in the gear. The GORE-TEX CROSSTECH® PARALLON® liner system performed the best, followed closely by the GORE-TEX CROSSTECH® black moisture barrier; however, the increase with the competitive barrier was the largest.

RESPONSE TO WORK/REST CYCLE

Rest cycles are crucial to enable your body to recover from the strain of the challenging environments in which you work. When the participants were wearing the GORE-TEX CROSSTECH® PARALLON® liner system or GORE-TEX CROSSTECH® black moisture barrier, the rest periods were more effective; when they wore the competitive barrier, their temperatures continued to rise rapidly. In fact, 40 percent of them were pulled out during the second work cycle because their heart rates exceeded their maximum rates, which were established before the trial began.

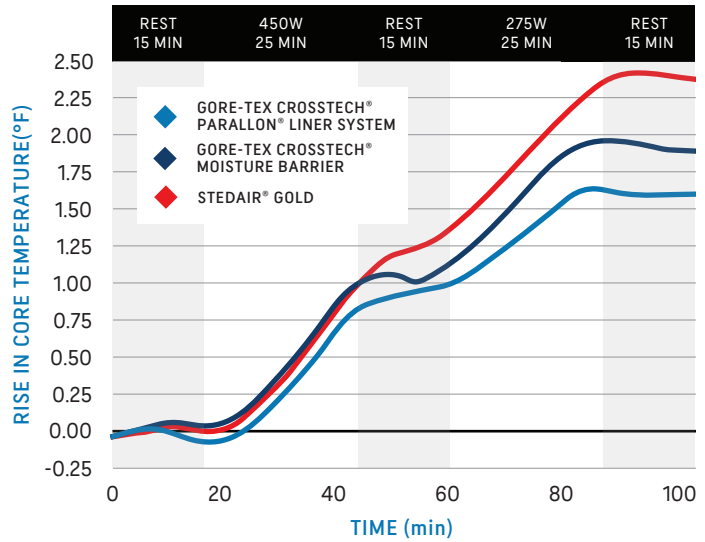
RET (RESISTANCE TO SWEAT EVAPORATION) VS. THL (TOTAL HEAT LOSS)

Testing the performance of the materials in your gear can provide valuable information for gear selection. The THL test has done a great deal of good for the firefighter, helping to improve how well gear can shed excess body heat; but it evaluates performance in a relatively mild environment, similar to a conditioned office space. And, it has been found that THL does not provide very useful information about how gear performs, particularly in warm or sunny conditions. The RET test can provide some of this valuable insight, which could be important to you in your gear selection.

Before the trial began, each turnout gear composite was measured for THL and RET. While THL did not predict the differences seen in the human trials, the RET testing did. In fact, the THL results, which are what is commonly available to fire departments today, indicated that there should be NO difference in performance between the gear tested in this study. However, the trial confirmed that there were significant differences—the Gore technologies were more breathable and had a lower burden on the firefighters, as demonstrated by lower core temperatures, lower skin temperatures, and lower heart rates.

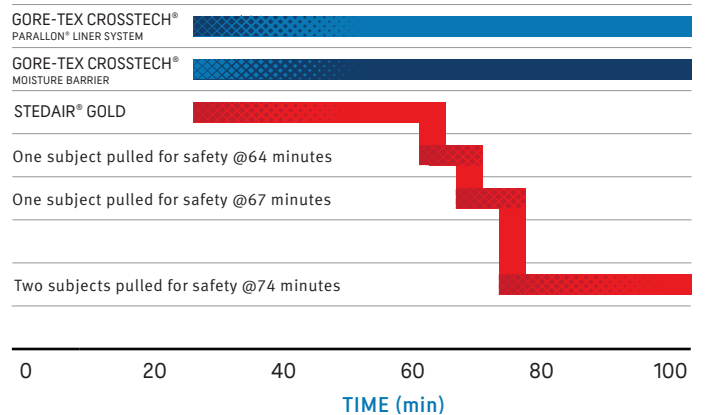
SMALL INCREASES MATTER

GORE-TEX CROSSTECH® protective barriers maintained lower body core temperatures.



IMPACT OF HEART RATE

When wearing the competitive barrier, 40% of the participants were pulled due to the heart rates exceeding their maximum rate.



RET vs. THL

RET results directly correlated with the participants' physiological responses, whereas THL did not.

	GORE-TEX CROSSTECH® PARALLON® Liner System	GORE-TEX CROSSTECH® Black Moisture Barrier	Stedair® Gold Moisture Barrier
THL Value (Higher = Better)	238	252	248
RET Value (Lower = Better)	21.2	28.4	66.3
Avg. Increase in Body Core Temp. (Lower = Better)	1.62	1.91	2.27