



**UNCOVERING THE
COMPLETE STORY
ABOUT **TECGEN71**
OUTER SHELL**

T E C H N I C A L B U L L E T I N

What is TECGEN71?

TECGEN71 is a rip twill 6.5 oz/yd² outer shell that is constructed of:



Face:
60/40 Kevlar®/Nomex®

Inside:
carbon-based TECGEN®

Availability:
Fire-Dex only

Exposed flaws of carbon fabrics

While positioned as a lighter weight option, TECGEN71 is in fact no lighter weight than other proven outer shells used in the fire service today. TECGEN71 is simply offered with light thermal liners and moisture barriers.

The same result can be achieved by using those thermal liners and moisture barriers with existing lightweight outer shells, containing proven fibers like PBI, Kevlar® and Nomex®...but without the flaws of the carbon-based TECGEN® fiber.

Carbon-based fabrics were introduced in the 1990s, however, they haven't seen any traction in the fire service. That is mostly due to the issues inherent to the properties of the carbon fiber itself.

Carbon is used in many industries, however, one of its distinct characteristics is that it is very brittle.

A handful of carbon-blended fabrics and other products, such as hoods, have been launched in the past but failed to prove their overall durability and performance in the field. The only outer shell available on the market today is TECGEN71.

One of the most alarming flaws of TECGEN71 is lack of durability.

While ALL fabrics are affected by UV exposure, TECGEN71 initial tear strength is significantly lower than standard fabrics and rapidly decreases after minimal exposure to UV.



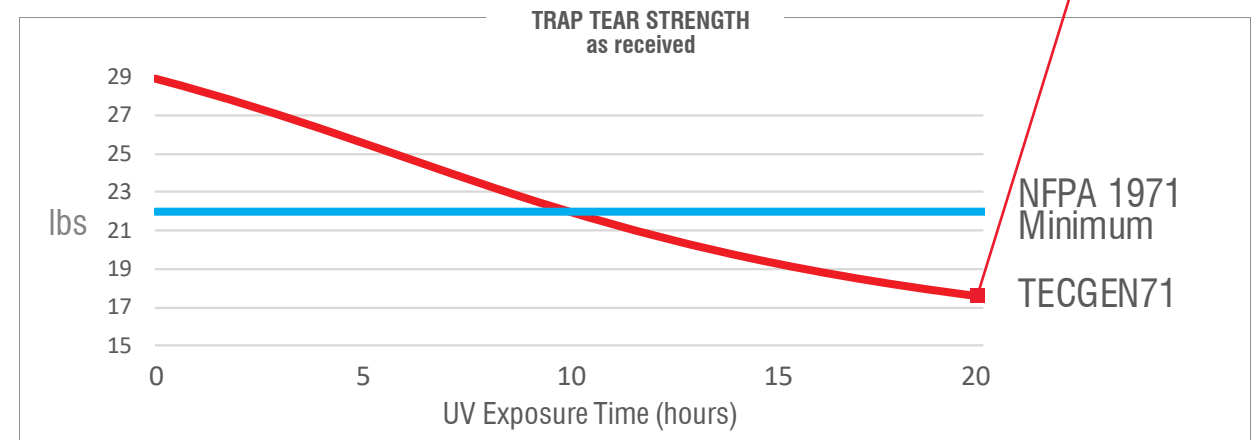
Wearing fabric that tests poorly can lead to a shorter life-span for turnout gear, other garment failures and increased risk of burns.

On their website, Fire-Dex emphasizes the importance of durability and tear strength testing for all outer shells.

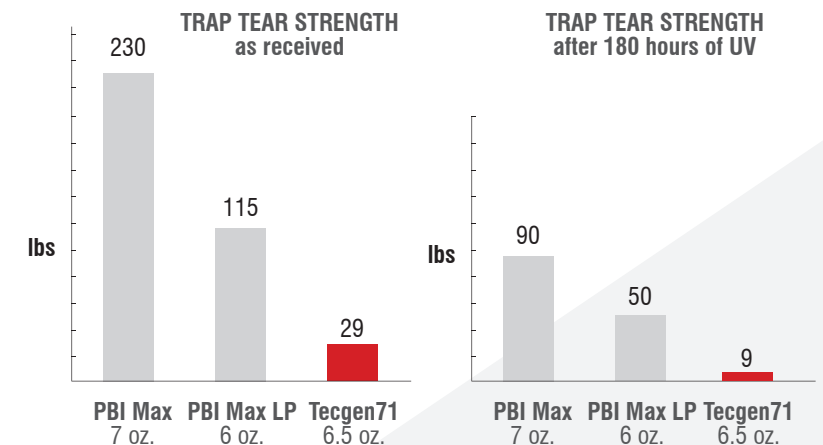
URL: <https://www.firedex.com/product/tecgen71/>

Fire-Dex recognizes the importance of exceeding the NFPA 1971 minimum requirement of 22 lb of tear strength, however the test data results for TECGEN71 tell a different story.

Test results show that after only 20 hours of exposure to UV, TECGEN71 strength falls to **17 lbs.**



Tear Strength Comparison

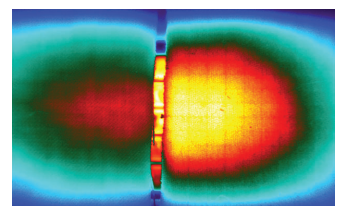


The high thermal conductivity of TECGEN71 can increase heat stress.

Another factor to consider when choosing an outer shell is **thermal conductivity**. Highly conductive fibers, like carbon fiber, will increase the rate at which heat is transferred into the gear. TECGEN71 outer shell transfers heat through the garment significantly faster than PBI, thus making the firefighter hotter, faster.

While Fire-Dex is focused on heat stress, TECGEN71 falls short of being the answer.

The thermal image below depicts PBI Max and TECGEN71, simultaneously exposed to approximately 0.5 cal/cm²-s of radiant heat for 15 seconds



PBI Max TECGEN71

FIELD-TESTING IS A MUST

Numerous laboratory tests are performed on turnout gear fabrics to evaluate their performance, however only so much can be replicated in a laboratory.

The real test is true wear and tear in the field.

That's why it is imperative for any department considering TECGEN71 to perform an extensive field evaluation to assess how the outer shell performs, under various environment and firefighting conditions.

The results can make the difference between the right and wrong decision for your protective needs...



ask
to
evaluate