Sun FireDefense Backgrounder

Like most innovations, Sun FireDefense started with one question. For founder and CEO of the advanced flame-retardant company, Jim Moseley, that question was- what material or solution can sustain, survive, and self-extinguish with prolonged exposure to 2000°F temperatures? What prompted this question? Moseley was looking for a formula that would protect homes and businesses from the ruinous heat of wildfires responsible for an estimated 11.2 billion dollars in the US between 2021 and 2022 alone. With the support and guidance of aerospace and fire prevention experts, thorough research, and a natural aptitude for understanding complex chemistry, Moseley developed a groundbreaking formula and aligned it with a suite of fire protection products and services that have the potential to save homeowners in the U.S. billions of dollars.

The development of flame retardant materials is not new. In approximately 400 BC, the Greeks created the first flame retardant materials using asbestos (derived from the Greek word for “inextinguishable”). We’ve since moved on from relying on this hazardous material, and as of late, intumescent coatings are the new standard in fire protection. While these coatings do the job, there’s still a problem- in most cases, once heat is applied to regular intumescent coatings, it expands and forms a very hard protective barrier that is difficult and damaging to remove, damaging the surface. For Moseley, this simply wouldn’t cut it.

Moseley found inspiration for his new flame retardant solution after learning about how the metallic substance Inconel reacts to heat. When intense heat is applied to the metal, it expands, and once the heat is removed, it contracts. It wasn’t until he reduced the metal to a powder and combined it with a liquid flame retardant that he saw the true potential for the spray. Unlike other intumescent coatings that expanded into a hard shield, damaging the surface when exposed to heat, his solution expanded *into* the surface it was applied to, blocking flame-fueling oxygen. Once the heat was removed, his solution contracted to its original state without damaging the surface. Additionally, his formula could survive multiple exposures to heat. With this test, the SPF 3000 formula was born.

The original plan for the SPF 3000 solution was to fortify fire blankets for firefighters, but a serendipitous encounter with former NYPD officer and 9/11 survivor William Hemena changed the course of Sun FireDefense forever. A fan of the improvements Moseley had made to fire blankets, Hemena suggested that if the beams in the Twin Towers had been wrapped in a similar fire blanket it would have bought them an hour or two to evacuate more people, possibly getting everyone out before the buildings eventually collapsed. It was the ‘Ah ha’ moment Moseley needed; he felt inspired to develop a formula suitable for commercial applications.

To prepare his product for the market, it was important for Moseley to test, adjust, and test again. When it came to tests and certifications, he was relentless, often testing for heat double that of wildfire. Moseley named his flame retardant SPF 3000 because he initially tested the solution at 3000°F. He followed with a lightning strike test held by the Department of Energy at the Bonneville Power Administration in 2017 and tested for flame spread at the American Society for Testing Materials once in 2016 and again in 2018. He had environmental consulting agency Turner Maclane evaluate the ecological impact of the solution in 2018 as well. Lastly, in 2018 rocket stands at Virgin

Orbit were outfitted with Sun FireDefense's FireShield Fabric meant to protect them from the almost 6000°F thrust of the rockets. Wildfire burns at just under 1,500°F.

Sun FireDefense's brilliance is not only in the now patented formula but in the suite of products it offers. Flame retardants, although important, are only one component of fire protection. Moseley spent years studying how fire spreads and adjusting his formula, mining the insights of experts like Craig Weeks (retired division chief with over 30 years of fire protection experience), Patrick Reitz (former Fire Chief for the Idyllwild Fire Protection District in California with over 33 years of experience in Emergency Services), and Chief Ken Riddle (more than 40 years of experience in fire and emergency services). They are all now part of the Sun FireDefense team as executives or advisors. With his team steeped in fire protection knowledge and experience, Moseley developed a home protection system and FireShield Fabric to round out their services.

Under the guidance of his advisors, Moseley developed the Sun FireDefense Home Protection System. This autonomous, state-of-the-art fire defense installation douses structures with water stored on the property. When a fire approaches, the fire sprinkler system is triggered automatically by perimeter heat sensors, coating your home in a hybrid solution that mixes into the water called Cold Fire (a non-toxic, biodegradable fire extinguisher fluid), adding an additional layer of safety to your home. He also perfected his Fire Shield Fabric and uses it as a flexible flame retardant. The fabric is coated with SPF 3000, will not burn, and provides long-lasting insulation for heat up to 2300°F. It's often used to secure vents and structural openings and manufactured into covers and frames for windows.

With a mold-breaking suite of fire protection products and services and a team overflowing with fire protection experts and practitioners, Moseley is confident that Sun FireDefense will change how we handle wildfire protection, and for a good reason. His products and services have already saved homes from California's deadly and devastating Skirball and Woosley fires. And with the number of homes being destroyed by wildfires in California on an exponential increase, a new and improved approach to fire protection is needed. Necessity, after all, is the mother of invention, and after 2400 years, it looks like Sun FireDefense has finally gotten fire protection under control.