



## ADVANCEMENTS IN ALUMINIZED MATERIALS FOR THE FIREFIGHTING INDUSTRY

### Overview:

If you have ever worn aluminized proximity gear, you are likely familiar with some of the commonly cited complaints about “Silvers”. Though there is clear, scientific, and irrefutable evidence that proximity gear provides superior protection from radiant heat and flash fire scenarios, many express concerns related to heat stress while wearing the gear in training, standby operations, or en route. Those responsible for purchasing and budget control express concern with added costs, durability, and short life spans. Overall, the firefighting community is dealing with negative perceptions and dated performance misperceptions about this important piece of life-saving gear.

Until 2007 all major US NFPA garment manufacturers relied on a single source for their aluminized shell materials. Because all brands of gear featured the same outer shell material, many firefighters developed a bias against all aluminized materials believing they all had to have a short life span, be uncomfortable, hot, expensive, and difficult to clean. Most of these issues were real but have since been solved by new technology developed by Newtex.

### The Newtex Solution:

With encouragement from leading NFPA firefighting garment manufacturers, Newtex entered the aluminized proximity shell market in 2006. Working with leaders in material science and the firefighting industry, we introduced Z-Flex® Silver™ aluminized fabrics for the firefighting market in 2007. This technologically advanced aluminization process and adhesive system solves many of the problems previously thought to be inherent in Silvers.

Our Solution for Durability: Z-Flex Silver features a base fabric with an innovative Mock-Knit weave structure. The fibers in this weave structure are designed to give and move with the adhesive and aluminization rather than pulling against it, as is the case in more delicate competitive aluminized fabrics. This advancement virtually eliminates the possibility of de-lamination.

Our Solution for Comfort: In addition to eliminating risk for de-lamination, the Mock-Knit weave structure also contributes to more comfortable garments. Because the fabric moves with the adhesive and laminate, the Z-Flex has similar qualities to a woven fabric instead of the stiff and restrictive feel of historic aluminized fabrics.

Our Solution to Heat Stress: We introduced Z-Flex® Air™, the first breathable aluminized material, in the spring of 2015. This micro-perforated shell provides all of the Thermal Protective Performance (TPP) of standard Z-Flex while increasing Total Heat Loss (THL) by 160%. Our Z-Flex Air P-202 breathable material is NFPA 1971:2013 component certified.

Our Solution to Cost: NFPA 1851 requires proximity shells to be retired after 5 years, without exception. This 5 year limit was set many years ago to account for the degradation in the rubber adhesive found in the competitive offering (Rubber hardens then cracks, causing delamination). The adhesive used in Z-Flex is a thermally stable adhesive system which remains pliable and effective well after the 5 year mark. We are actively engaged with the NFPA to update the standard to allow continued use upon recertification of suits at the 5 year point.

Our Solution to Cleaning: Ultrasonic cleaning has proven to be a safe and effective way to clean Z-Flex materials without compromising its Radiant Protective Performance (RPP). Though it is a safe, non-destructive, and inexpensive way to clean Z-Flex Aluminized materials, other aluminized materials are unable to be cleaned this way due to their adhesive systems and vacuum vapor deposition processes.

Learn more about Z-Flex Silver at [Newtex.com/Silver](http://Newtex.com/Silver)