

Why FiberTite® vs. PVC

Technological expertise can be discerned as easily as night and day.

Conventional PVC roofing technology requires the use of low molecular weight liquid plastisol polymers applied to lightweight fabrics to create a flexible membrane. Over time, UV, heat and environmental contaminants draw the plastisol (plasticizer) to the surface of the membrane where it's washed away by wind and rain. This plasticizer migration reduces flexibility and leaves the membrane susceptible to damage from thermal shock, hail impact and foot traffic. Additional effects of plasticizer migration on the insitu aging process can make the membrane difficult to repair, and subsequently impossible to maintain. FiberTite Roofing Systems are engineered using an alternate technology whereby a flexible solid polymer, Ketone Ethylene Ester (KEE), is used as the foundation of their coating's chemistry. This coating technology is bonded to some of the heaviest polyester fabrics in the industry. The result is a high performance roofing membrane that remains flexible and retains its physical attributes over time.

	FiberTite (36 mil)	PVC-Based Roofing Membranes (45-50 mil)
CHEMISTRY	<p>FiberTite was used as the benchmark membrane for the development of ASTM D6754-02 Standard Specification for KEE Based Sheet Roofing. The standard provides that properly compounded KEE coatings that utilize a minimum 50% KEE polymer content and are applied to high quality base fabrics can exceed the design service life expectations at 70% of the thickness required of conventional "PVC" roofing membranes.</p> <p>FiberTite's formula for success is rooted in a half-century of Seaman Corporation high performance coated fabric technology and specifically derived from a combination of the selected attributes from Seaman's world renowned Shelter-Rite architectural fabrics, where the fabric is the roof, and XR-5 Geomembrane fabrics, the product of choice when protecting the environment from hazardous waste is at stake.</p>	<p>Conventional PVC roofing membranes require a 20 to 25% liquid polymer content by weight to achieve flexibility. The disparity between the low molecular weight plastisol and the high molecular weight PVC resin create flexibility but also a weak link.</p> <p>The historical Achilles' heel for PVC roofing membranes is plasticizer migration. Heat, UV and rain alone will draw these plasticizers out of the membrane over time. The resulting membrane roof system becomes less pliable and prone to damage from thermal shock, foot traffic, hail impact and wind. To compensate for the inevitable loss of plasticizers, PVC membranes tend to be thicker, providing a larger reservoir for the retention of plastisol and hopefully extending time it takes for the plasticizers to migrate away.</p>
UV RESISTANCE	<p>Intense UV exposure can extract liquid plasticizers from conventional PVC membranes over time. KEE is a solid and permanent polymer ensuring long-term resistance to harsh UV exposure.</p>	<p>UV exposure disrupts the ability of the liquid plastisol molecules to remain hinged to the PVC molecules. Eventually these chains break and the plastisol exits the sheet.</p>
CHEMICAL RESISTANCE (ASTM ANIMAL FAT, COMPRESSOR OIL, JET FUEL A)	<p>Chemical discharge and environmental fallout are detrimental to many roofing systems across the country. Exposure to contaminants accelerates the migration of liquid plasticizers from conventional PVC roofing membranes. KEE is not only flexible; it has inherent chemical resistant properties. Subsequently, FiberTite's KEE membranes provide superior resistance to a broad array of chemicals including grease and fatty acids. Chemical exposures listed on the Warranty Request Form are automatically included into the terms of coverage.</p>	<p>Numerous chemicals, greases, fats and environmental contaminants accelerate the extraction of liquid plastisol, decreasing the longevity of the PVC roof system. Most PVC membrane manufacturers specifically exclude "exposure to chemicals" from their warranties.</p>
PUNCTURE RESISTANCE (ASTM 4833)	<p>Puncture generally applies to penetration by a blunt object. FiberTite maximizes puncture resistance by using the industry's heaviest fabrics to create an internal barrier to puncture within the membrane.</p>	<p>PVC membranes generally forgo the expense of using "fiber" as an internal puncture barrier in favor of using mass or thickness to provide the illusion of durability. Independent testing confirms that the thicker PVC membranes are no match for FiberTite's internal "fiber" barrier.</p>

FiberTite (36 mil)

PVC-Based Roofing Membranes (45-50 mil)

TEAR STRENGTH (ASTM 751) TONGUE TEAR	The "fiber" in FiberTite is engineered using high denier polyester fibers, knitted into a tight 18x19 yarn pattern to create a virtual framework that ensures toughness.	Trading fiber for thickness to create the illusion of strength is prevalent among PVC membrane manufacturers. As they get thicker, they fail to exhibit proportional increase in tear strength. Even at .050-in. most fail to match FiberTite's test results.
PONDING WATER DAMAGE RESISTANCE	Although one of the fundamental purposes of a roof system is shedding water, sloping a roof to achieve 100% drainage is not always economically feasible. A structural evaluation should always be performed in cases where excessive ponding is anticipated. If ponding is unavoidable, the KEE backbone for the FiberTite compound resists attack from the algae, biomass, and environmental contamination that can accumulate in ponding water. FiberTite Roofing System Warranties contain no exclusions for ponding water.	Ponding water can have a three-fold detrimental effect on conventional PVC roofing membranes. Ponding water will magnify UV to intensify its effects. The "water" is often a concentration of chemical discharge and environmental fallout throughout the roof system. The concentration of these chemicals can accelerate plasticizer migration. Eventually, algae can form, feeding on the plastisol and eventually the membrane itself. Many PVC roofing membrane manufacturers specifically exclude the effects of ponding water from their warranties.
HAIL DAMAGE RESISTANCE	Moderate hail, generally stones of an inch or less in diameter, is a common occurrence and can be expected in many areas of the country. Hail is not specifically excluded in FiberTite Roofing System warranties.	Faced with the inevitable loss of plasticizers over time and the consequences thereof, most PVC roofing membrane manufacturers specifically exclude "all" hail from warranty coverage.
WIND DAMAGE RESISTANCE	Wind is inevitable, and FiberTite Roofing Systems are engineered to stay in place. Standard FiberTite Roofing System warranty exclusions for wind do not begin with gale force but rather hurricane force. Specially engineered systems are eligible for higher peak gust coverage up to 100 mile per hour.	Most PVC manufacturers begin their wind exclusions with "Gales." Wind speeds as low as 39 mph can be considered "Gale Force."
EASE AND QUALITY OF REPAIR	Since the KEE backbone for the compound is naturally thermoplastic and permanent, FiberTite Roofing Systems retain their viability to be heat welded throughout the life of the membrane.	As plasticizers migrate, PVC membranes can lose pliability and their subsequent ability to be effectively heat welded.
COATING ADHESION (ASTM 751)	If the coating separates from the reinforcement, the system fails. FiberTite Roofing Systems have achieved an inherent synergy between the industry's heaviest base fabrics and the industry's most durable coating. A proprietary process actually bonds the KEE coating to the polyester fabric.	Adhesion is a primary indicator for the technical expertise for integrating the coating and the fabric into one high performance unit. The greater the adhesion, the better the welds and the greater the membranes' resistance to possible delamination. Most PVC roofing membrane manufacturers have failed to master the art of truly integrating the coating and fabric into a truly monolithic membrane.
TENSILE STRENGTH (ASTM D882)	Thickness can promote a deceptive perception of strength. FiberTite Roofing Systems are engineered with strength at their core. Built with the heaviest and most tightly knit fabrics in the industry, is it any wonder that FiberTite Roofing Systems exhibit superior tensile/breaking strengths.	Typically, the lower the fiber content, the lower the tensile values.
TEAR STRENGTH AT 'REAL WORLD' ROOF TEMPERATURES (ASTM HIGH TEMP DEAD LOAD)	Load strain evaluation can be a good indicator of a membrane's endurance against the long-term effects of cyclical wind uplift and thermal shock. ASTM D751 now includes a means for evaluating roofing membranes under a high temperature dead load. FiberTite Roofing System membranes exhibit the benefits of a truly integrated fabric and coating system with unmatched dead load testing results.	Slippage, excessive elongation and actual pull-through of the fiber within the welds are indicators for the lack of true integration between the fiber and the coating.
FLAME RESISTANCE	Underwriters Laboratories have a test method for evaluating a membrane's flame resistance in a stand-alone procedure. Unlike E108 flame spread, UL 214 measures a membrane's burning characteristics after the ignition source is removed. FiberTite is self-extinguishing.	Most PVC roofing membranes exhibit similar self-extinguishing characteristics to those of FiberTite.

For more information, go to www.fibertite.com.

