ROOFING SYSTEM



Sure-Weld FleeceBACK Membranes **Integrating Technologies**

Carlisle has integrated the weldability and reflectivity benefits of Sure-Weld thermoplastic membranes with the durability and strength of Carlisle's patented FleeceBACK technology. Owners appreciate the reflectivity ratings coupled with resulting energy efficiency; environmentalists value the membrane formulation, as it does not contain chlorinated ingredients or plasticizers; and contractors appreciate the welding ease and installation expediency.

Membranes are produced using the latest extrusion technology to bond polyester fleece backing to reinforced Sure-Weld TPO sheeting. Sure-Weld membrane is comprised of a TPO polymer base, a strong, polyesterreinforced fabric center (scrim) and a tough thermoplastic polyolefin compounded top ply.

Sure-Weld FleeceBACK membrane is produced by factory laminating 55mils of polyester fleece backing to Sure-Weld TPO membrane to create Sure-Weld FleeceBACK 100 or Sure-Weld FleeceBACK 115. The resulting 12'-wide, single-ply, heat weldable membrane is durable, exhibits superior weathering characteristics and resists damage from frequent foot traffic. Sure-Weld FleeceBACK 100 membrane provides 33% greater puncture resistance and 18% greater breaking strength than standard TPO. Sure-Weld FleeceBACK 100 or 115 membrane also exceeds the puncture resistance of most modified-bitumen sheets in the Dynamic Puncture Resistance of Roofing Membrane test ASTM D5635-94 and have 75% fewer seams than modified systems due to the 12'-width.

Carlisle manufactures Sure-Weld membranes with industry leading topply over scrim thickness to enhance long-term weathering and improve welding characteristics. In addition to providing consistent bond strength, the process provides a nonfleece selvage edge for welding the membranes together using robotic heat welding equipment.

ENERGY STAR® Partner



Sure-Weld FleeceBACK membrane carries the ENERGY STAR® rating and label. The membrane exceeds ENERGY STAR®'S stringent program specifications that are based upon solar reflectance and

heat emittance. Using Sure-Weld FleeceBACK membranes helps reduce the amount of energy required to operate air conditioning equipment with resulting cost savings.

The Sure-Weld FleeceBACK Roofing System

Carlisle's Sure-Weld FleeceBACK Roofing System features the use of our patented low-rise, two-component expanding polyurethane FAST[™] Adhesive for fully adhered application. FAST Adhesive is applied using state-of-the-art proportioning pumps to deliver the two components to a mixing spray gun for distribution onto the substrate. When both parts are mixed at the gun and applied to the roof, a catalytic reaction occurs causing FAST Adhesive to expand or foam. The Sure-Weld FleeceBACK membrane is then laid into

the foamed adhesive, after it develops string/body, and is then rolled with a weighted roller to ensure full adhesion. Within 15-20 minutes FAST Adhesive cures to form a tenacious bond between the substrate and the Sure-Weld FleeceBACK membrane. FAST Adhesive is also used to secure insulation boards to the deck for a totally non-penetrating system application.

Each layer of FAST Adhesive is approximately 1/16"- to 1/8"-



FAST Adhesive is spray applied to the existing substrate, then insulation boards are set into the wet adhesive.

thick providing additional redundant waterproofing characteristics to the roofing assembly. The expanding nature of FAST Adhesive also provides additional R-value of 0.33 to 0.50 per layer. When FAST Adhesive is specified for insulation attachment, thermal bridging of mechanical fasteners is eliminated (NRCA estimates this to be a 3% to 8% loss in R-value). FAST Adhesive also helps seal the insulation joints while avoiding the loss of up to 10% of the R-value to further maintain and enhance the integrity of the roof deck. Water is used as the blowing agent in FAST Adhesive, which is V.O.C. free and is not labeled as a flammable product.

Due to the low noise and low odor associated with the system, Sure-Weld FleeceBACK systems are an excellent choice for reroofing occupied buildings with minimal disruption.

Sure-Weld FleeceBACK membrane can also be utilized in any approved Sure-Weld Mechanically-Fastened design due to the internal scrim reinforcement. The fleece backing provides extra protection when reroofing over smooth BUR, mod-bit or other irregular surfaces.

Wind Resistance

Superior wind-uplift resistance is delivered with Carlisle's high performance FAST Adhesive. As a result of the superior wind uplift performance, the system offers an industry leading 80 mph standard wind speed warranty that can be upgraded to 120 mph with design enhancements. Contact Carlisle Design and Review for specific code approvals.

Warranty Coverage

Sure-Weld FleeceBACK Roofing Systems are protected by Carlisle's exclusive warranties. Available in 10-, 15- and 20-year terms, Golden Seal Total Roofing System Warranties assure building owners of an exceptional roof, properly installed by a Carlisle authorized contractor. Optional hail and reflectivity warranties are also available.

With more than 40 years of single-ply experience, Carlisle's newest innovation, Sure-Weld FleeceBACK, provides owners with an unrivaled combination of performance strengths.



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Membrane ROOFING SYSTEM

CARLISLE'S URE-WELD. FLEECEBACK

Sure-Weld FleeceBACK				
Physical Property	Test Method	SPEC. (Pass)	Sure-Weld Typical	
Thickness Over Fleece, Min, in. (mm) SWFB 100 SWFB 115	ASTM D 751 Annex	.0405 (1.012) .054 (1.350)	.045 (1.143) .060 (1.524)	
Weight, lb. m/ft ² (km ²) SWFB 100 SWFB 115			0.28 (1.4) 0.39 (1.9)	
Breaking Strength, min, Ibf (kN)	ASTM D 751 Grab Method	225 (1.0)	400 (1.8)	
Elongation, at Break of Internal Fabric, %	ASTM D 751		25	
Tearing Strength, min, lbf (N)	ASTM D 751 B Tongue Tear	55 (245)	130 (578)	
Brittleness Point, max, °F (°C)	ASTM D 2137	-40 (-40)	-50 (-46)	
Resistance to Heat Aging* Properties after 4 weeks @ 240°F (116°C) for Sure-Weld	ASTM D 573			
Breaking Strength, min, lbf (kN) Elongation, at Break of Internal Fabric, %	ASTM D 751 ASTM D 751	225 (1.0)	400 (1.8) 25	
Linear Dimensional Change, max %	ASTM D 1204	±1.0	-0.5	
Ozone Resistance*, 100pphm, 168 hours	ASTM D 1149	No Cracks	No Cracks	
Resistance to Water Absorption* After 7 days immersion @ 158°F (70°C) Change in mass, max, %	ASTM D 471	4.0**	2.0**	
Resistance to Outdoor (Ultraviolet) Weathering* Xenon-Arc, 17,640 kJ/m ² total radiant exposure at 0.7. W/m ² irradiance 176°F (80°C) black panel temp.	ASTM G 26 Conditions	No Cracks No Loss of Breaking or Tearing Strength	No Cracks No Loss of Breaking or Tearing Strength	
Resistance to Microbial Surface Growth, Rating (1 is very poor, 10 is no growth)	ASTM D 3274 2 yr S. Florida		9-10 typical	
Field Seam Strength, lbf/in. (kN/m) Seam Tested in Peel	ASTM D 1876	40 (7.0) min.	60 (10.5) typical	
Water Vapor Permeance, Perms	ASTM E 96	0.10 max.	0.05 typical	
Puncture Resistance, lbf (kN) SWFB 100 SWFB 115	FTM 101 Method 2031	250 (1.1) min.	400 (1.8) typical 450 (2.0) typical	

* Not a Quality Control Test due to the time required for the test or the complexity of the test.

However, all test are run on a statistical basis to ensure overall long-term performance of the sheeting.

FAST Adhesive Typical Properties and Characteristics:

Base	100-A and 100-LV A Polymeric Isocyanate	100-B Polyols, Surfactants and Catalysts	100-LV B Polyols, Surfactants and Catalysts
Mixing Ratios by Volume	1:1 Part A to Part B		
Viscosity (CPS @ 25C)	250	1100	300-500
Avg.Net Weight	10.25 lbs/gal	9 lbs./gal	9 lbs./gal
Packaging	15-gallon drum (57L) 50-gallon drum (190L)	15-gallon drum (57L) 50-gallon drum (190L)	15-gallon drum (57L) 50-gallon drum (190L)
Shelf Life	1 year	6 months*	9 months*
Temperature Requirements (Substrate & Ambient)		min. 40°F	min. 32°F (Heated Equipment) min. 60°F (Unheated Equipment)

* Can be extended to one year by adding FAST Catalyst after six months.



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