



## Agenda Commentary

**Item Title/ Subject:** Acme Gutter Repair

**Staff Source:** City Manager, Steve Hewitt

**Date:** October 13, 2011

**History/Background Information:** There is a weak design in the building over the building at Acme. The guttering system doesn't drain properly and isn't sealed. This causes leaks when any moisture occurs. During cold temperatures ice and snow create issues that must be resolved. This has been an issue for a number of years. Staff has seen facility damage due to this continuous problem.

**Subject Summary:** This is a major repair that must be addressed. This will coat the gutter preventing moisture from leaking on the interior building (the interior building wasn't built with water proof roofing, nor was it structurally built for roofing). A unique idea that isn't designed to handle the weather elements. Nevertheless, rather than spending thousands of dollars each year on repairs, we hope to eliminate the issue. This is the first major step, before continued investment in other areas can be reviewed, this must be properly repaired.

*\*\*On a separate note, I would like to find a design team that can give us a feasibility study looking at the future of Acme (indoor facility). I've reviewed the past issues due to the design. The concept is great and many many people in the community utilize the facility. I believe we have a responsibility to provide a better quality product. I do not want to continue patching the problems, I want to get to the source and have a plan that allows our community to have something to be proud of. The facility is nearly 10 years old. Typically you would need to make some adjustments after a decade, but nothing major. The fact that we continue to address major issue, proves our design had major flaws and we need a team to help meet our long-term needs. Expect in the near future I bring back a plan that looks at a feasibility study for the long-term needs of Acme.*

**Recommendation:** Staff recommends the repair. Staff got quotes from three different companies. (Nurnberg, Jake Hunn, D&L) Nurnberg was the only quote that could include all the repairs needed. Recommendation is to have Nurnberg repair the gutter system.

**Price/Cost:** \$22,380. This is a budgeted capital item.

# Memo

To: Clinton City Council  
Cc: Steve Hewitt  
From: Jordan Parman  
Re: Acme Guttering

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Acme Brick Park's Recreation Center is in need of repairs to the current roof system. The original set-up of our guttering system has decayed over the last few years to result in severe water problems inside the basketball court area and inside the fitness center in any wet weather including rain, snow, ice and even high humidity. The problem is caused from improper drainage from the two main existing gutters which run the length of the building. The gutter does not have enough pitch to allow water to drain to the end of the gutter and out of the building so water stands in the gutters and leaks into the building. Our maintenance staff at Acme Brick Park has done what it can to alleviate the situation but professional help is necessary to do the job right. In speaking to roofing and guttering professionals, we believe we have found a solution.

The first step in the process must be to fix the two gutters that run the length of the building to water-proof them. From years of falling ice, the gutters have been damaged and holes have been formed, causing any water that stands in them to leak into the facility. To fix this, the roof of the building must first be cut back to expose enough of the gutter to do the necessary work. Professionals can then coat the gutters with spray-on rubberized coating to protect them from further damage and to prevent water from leaking through any existing holes. To allow water to escape the gutters, several downspouts can later be added by maintenance staff.

According to roofing and guttering professionals, these steps will prevent water from entering the building through the gutters and these improvements will last a long time.

Bids have been collected from area companies able to do this work. The bids were collected in January, 2011 but after being contacted, the companies had agreed to keep the bid price the same. After talking to Mark Stapleton and reviewing the bids, Nuremburg Roofing is able to do all of the work that our maintenance staff is unable to do and, therefore, is the best choice.



## PROPOSAL

January 4, 2011

City Of Clinton  
ACME Brick Park  
South 28th Street  
Clinton, OK

RE: Repair existing gutter system at ACME Brick Park, approximately 634 LF. Scope of work consist of.

### DESCRIPTION

- Cut off excess metal panel at east and west slopes (over hanging gutter).
- Power wash existing gutter removing all previous patch material, dirt, and debris.
- Install 115 Mil Fleece-Back TPO Membrane fully adhered with Carlisle FAST Adhesive.
- Install aluminum termination bar and water cut off at top of gutter liner.
- Fabricate and install new 24 Ga. flashing and counter flashings.
- Using Sure-Weld Coated Metal, fabricate Inserts for new downspouts.

**TOTAL = \$22,380.00**

\*\*\*Interior bracing of gutter to be done by others\*\*\*

\*\*\*Foam closure strips for R-Panel and new downspouts to be done by others\*\*\*

Nurnberg Roofing Company \* 1551 Exchange Ave. \* Oklahoma City, OK. 73108  
(800) 522-5048 Office \* (580) 343-2038 Fax  
<http://www.Nurnbergroofing.com> \* [nurnbergroofing@aol.com](mailto:nurnbergroofing@aol.com)

**CARLISLE SURE-WELD™ COATED METAL**

**GENERAL:**

Sure-Weld Coated Metal is a galvanized steel sheet that is coated with a layer of non-reinforced Sure-Weld flashing. The sheet is cut into the appropriate width and used to fabricate metal drip edges or other roof perimeter edging profiles. Sure-Weld membrane may be welded directly to the coated metal edging, eliminating the need to strip in the metal with a separate piece of membrane. The metal is available in 4 foot by 10 foot (1.2 m by 3.1 m) sheets and comes packaged 10 or 25 sheets per pallet.

Sheet Size:	4 foot by 10 foot (1.2 m by 3.0 m)
Weight:	1.1 lb/ft <sup>2</sup> (5.4 kg/m <sup>2</sup> )
Color:	Gray, tan and white
Flashing Thickness:	0.035 inches (0.9 mm) nominal
Steel Thickness:	0.024 inches (0.6 mm) nominal (24 gauge)
Steel Type:	Hot Dipped Galvanized Steel – G90 Conforms to ASTM A 653
Packaging:	10 or 25 sheets per pallet

**CAUTIONS AND WARNINGS:**

Store coated metal in a cool, shaded area and cover with light-colored, breathable, waterproof tarpaulins. Sure-Weld Coated Metal that has been exposed to the weather for approximately 7 days or longer prior to use must be prepared with Weathered Membrane Cleaner prior to hot air welding.

**INSTALLATION:**

1. Install Sure-Weld Coated Metal with 1/8" to 1/4" (3-6 mm) between adjoining sections.
2. Install 2" (5 cm) wide duct tape over joints in Sure-Weld Coated Metal
3. Heat weld 6" (15.5 cm) wide piece of Sure-Weld non-reinforced flashing over joint.
4. Position Sure-Weld reinforced membrane and heat weld to the Sure-Weld Coated Metal with a minimum 1-1/2" (4 cm) weld.

\*Refer to Carlisle specifications and details for specific application requirements.

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3/07

# CARLISLE'S **FAST**<sup>TM</sup> ADHESIVE

## Product Data

### 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	150-300	300-500
Avg. Net Weight	10.25 lbs/gal	8.75 lbs/gal	8.75 lbs/gal
Packaging	15-gallon drum (57 L) 50-gallon drum (190 L)	15-gallon drum (57 L) 50-gallon drum (190 L)	15-gallon drum (57 L) 50-gallon drum (190 L)
Shelf Life	1 year	9 months*	1 year
Temperature Requirements (Substrate & Ambient)		min. 25°F (Heated Equipment) min. 60°F (Unheated Equipment)	min. 25°F (Heated Equipment) min. 60°F (Unheated Equipment)

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

Typical R-value added for FleeceBACK membrane attachment

0.20 to 0.50 R-value

R-value may be higher as more adhesive is used on uneven surfaces

### LEED Information

Pre-consumer Recycled Content	0%
Post-consumer Recycled Content	0%
Manufacturing Location	Houston, TX
VOC Content	0 g/L
Solar Reflectance Index	N/A

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# CARLISLE'S **FAST**<sup>™</sup> ADHESIVE

## Product Data

9. Use spray booths, windscreens and/or lower spray pressure with spatter tips when spraying in windy conditions.
10. Precautions must be taken to prevent FAST Adhesive vapors or overspray from entering buildings during application. All air -intake vents on roofs must be closed during application of FAST Adhesive.
11. Use desiccant dryers on Part A drums to avoid formation of crystals from exposure to moisture in the air.
12. KEEP OUT OF THE REACH OF CHILDREN.

### Coverage Rate

(sq. ft. may vary due to jobsite conditions)

50-gallon sets	Spray	4" o.c.	6" o.c.	12" o.c.
FB to a smooth flat surface	10,000	9,000	12,500	17,500
Insulation to a smooth flat surface	9,000	8,500	11,250	15,750
Insulation to wood fiber decks	8,500	5,500	8,125	11,375
Insulation to gravel BUR	5,000	4,500	7,500	N/A

15-gallon sets	Spray	4" o.c.	6" o.c.	12" o.c.
FB to a smooth flat surface	3,000	2,700	3,750	5,250
Insulation to a smooth flat surface	2,700	2,500	3,375	4,725
Insulation to wood fiber decks	2,000	1,650	2,500	3,500
Insulation to gravel BUR	1,800	1,500	2,250	N/A



Heated Predator III Spray Rig's unique design allows for easy maneuverability on the job and output of 2 gallons/min.

### FAST Adhesive Substrate Compatibility

Insulation/Underlayments	Roof Decks	Existing Roofing Materials
- HP Polyiso	Yes	- Concrete
- HP Recovery Board	Yes	- Cellular LLWL Concrete
- Expanded Polystyrene (EPS)	Yes (1)	- NYS LLWL Concrete
- Extruded Polystyrene	Yes (2)	- Gypsum
- New Sprayed Foam	Yes	- Cementitious Wood Fiber
- Scarified SPF	Yes	- Wood
- DensDeck	Yes	- Painted Steel
- Securock®	Yes	- Galvanized Steel
- Oriented Strand Board	Yes	- Acoustical Steel
		- Smooth BUR
		- Gravel BUR
		- Mineral Cap Sheet
		- Granular Modified-Bitumen
		- Smooth Modified-Bitumen
		- Coal Tar Pitch
		- Aluminum Coated BUR
		- Acrylic Coated SPF
		- Silicone Coated SPF
		- Aged EPDM or Hypalon

1. EPS Insulation cannot be used directly beneath Sure-Seal® (Black) FleeceBACK membrane unless a light-colored coating is specified. Both Sure-White™ and Sure-Weld® FleeceBACK membrane may be installed directly over minimum 1.5 lb. density EPS, however to obtain UL & FM codes an overlayment of HP Recovery Board, DensDeck, Securock or HP Polyiso Insulation is required.
2. For Insulation attachment only.
3. For new galvanized steel decks, power-washing may be necessary to remove finishing oil residue if present.
4. For acoustical steel decks, fill the flutes with fiberglass or other suitable fill insulation and tack in place with strips of duct tape 3' o.c. or other adhesive prior to spraying the deck with FAST Adhesive.
5. Existing Smooth BUR must be Type III or IV asphalt if the Sure-Seal (Black) FleeceBACK membrane is to be installed directly without insulation.
6. A minimum ½" HP Recovery Board or Insulation is required over properly prepared gravel BUR. FleeceBACK membrane cannot be installed directly over a gravel/slag surface.
7. An Insulation providing the necessary R-value must be specified to prevent the coal tar pitch from softening. Sure-Seal (Black) FleeceBACK membrane cannot be installed directly to coal tar pitch.
8. Any loose coatings must be removed by power-washing or by physical abrasion prior to the application of FAST Adhesive. A test installation over the aluminum-coated smooth BUR is recommended to ensure the aluminum coating is fully adhered.
9. Silicone-coated SPF must be scarified (coating removed) prior to the application of FAST Adhesive.
10. Power-washing aged EPDM or Hypalon membrane is required prior to the application of FAST Adhesive.

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# CARLISLE'S **FAST**<sup>TM</sup> ADHESIVE

# Product Data

## Fleeceback Installation

- Unroll FleeceBACK sheet and position. Fold sheets in half width-wise.
- Apply FAST Adhesive to the substrate achieving a light-yellow-colored foam.
  - For fully adhered applications, spray adhesive to obtain full coverage (approx. 1/8" to 1/4" thick after foaming).
  - For extruded applications, apply adhesive at 4", 6" or 12" on center with a minimum 1/2" wet bead.
- Allow adhesive to rise and develop string/body (approx. 1.5-2 minutes), then place FleeceBACK membrane into FAST Adhesive. String time will vary based on environmental conditions like temperature and humidity.
- Roll membrane with a roller (not to exceed 150 lbs.) to ensure fleece embedment. If adhesive contaminates the splice area, immediately remove with weathered membrane cleaner.

## Insulation Attachment

- Apply FAST Adhesive to the substrate achieving a light-yellow-colored foam.
  - For fully adhered applications, spray adhesive to obtain full coverage (approx. 1/8" to 1/4" thick after foaming).
  - For extruded applications, apply adhesive at 4", 6" or 12" on center with a minimum 1/2" wet bead. For steel decks, extrusion of FAST must run parallel with and be on top of the steel deck flutes.

Bead Spacing parameters for 5-, 10-, or 15-year 55-mph warranties. (Contact Carlisle Project Review for bead spacing on higher mph warranty or 20 and 30 year warranty projects).

Building Height	Bead Spacing (Perimeter)	Bead Spacing (Field)
0' - 25'	6" o.c. (4' perimeter)	12" o.c.
25' - 50'	6" o.c. (6' perimeter)	12" o.c.
50' - 75'	6" o.c. (12' perimeter)	12" o.c.
75' - 100'	6" o.c. (18' perimeter)	12" o.c.

100' or greater: Contact Carlisle for bead spacing requirements

- Factory Mutual bead spacing guidelines in the perimeter and corner may differ from the table above.
- Place insulation boards (maximum 4' x 4' insulation boards when FAST Adhesive is extruded at 12" o.c. or when boards exceed 4" thickness) into FAST Adhesive after allowing it to rise and develop string/body (approx. 1.5-2 min.). String time will vary based on environmental conditions like temperature and humidity. Do not allow the adhesive to over-cure prior to setting insulation boards.

- Designate one person to walk boards into place and then roll the boards between 5-7 minutes from the initial adhesive application. Boards may be temporarily weighted or relief-cut where necessary to keep the boards in constant contact with the adhesive until the adhesive cures.
- Adding FAST Catalyst is recommended for insulation attachment to speed set-up time. Catalyst should be added according to the chart provided on the FAST Catalyst can.
- At the beginning of the insulation attachment process and periodically throughout the day, check the adhesion of boards to ensure a tight bond is created and maximum contact is achieved.

\*REVIEW CURRENT CARLISLE SPECIFICATIONS AND DETAILS FOR APPLICATION REQUIREMENTS.

## Precautions

- Review the application Material Safety Data Sheet for complete safety information prior to use.
- The foam produced is an organic material. It must be considered as combustible and may constitute a fire hazard. The foam adhesive must not be left exposed or unprotected. Shield from heat and sparks.
- Do not smoke during application.
- Use with adequate ventilation. Avoid breathing vapors. Wear a NIOSH- or MSHA-approved respirator for organic vapors with prefilters and solvent-resistant cartridges or supplied airline respirators while spraying. Proper safety training is essential for all persons involved in the installation process. If vapor is inhaled, remove to fresh air and administer oxygen if breathing is difficult. Consult a physician immediately.
- Avoid contact with eyes. Safety glasses or goggles are required.
- If FAST adhesive is splashed in eyes, immediately flush eyes with plenty of clean water for at least 15 minutes. Contact a physician immediately.
- Avoid contact with skin. Wear long-sleeved shirts and long pants. Wash hands thoroughly after handling. In case of contact with skin, thoroughly wash affected area with soap and water or corn oil. NOTE: Permeation-resistant gloves that meet ANSI/ISEA 105-2005 are required when handling the material or during application.
- Job-site storage temperatures in excess of 90°F (32°C) may affect product shelf life. Should the components be stored at temperatures lower than 70°F (21°C), restore to room temperature prior to use. Do not allow FAST Adhesive to freeze (storage below 0°F (-18°C) for at least 3 days).

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# CARLISLE'S **FAST**<sup>TM</sup> ADHESIVE

## Product Data



FAST Adhesive is spray-applied to the existing substrate, then insulation boards are set into the adhesive after it develops string/body.

### Overview

Carlisle's FleeceBACK<sup>TM</sup> Fully Adhered Roofing Systems feature the use of FAST Adhesive, a low-rise, two-component, insulating polyurethane. FAST Adhesive is sprayed or extruded using state-of-the-art proportioning pumps to deliver the two components to a mixing spray gun for distribution onto the substrate. Parts A & B are mixed in the gun and applied to the roof. A catalytic reaction takes place, causing the FAST Adhesive to expand and foam. FleeceBACK membrane is then laid into the foamed adhesive after developing string/body and rolled with a weighted roller to ensure the fibers of the fleece are embedded into the adhesive. Within 15 minutes, FAST Adhesive cures to form a tenacious bond between the substrate and the FleeceBACK membrane. FAST Adhesive is also used to secure insulation boards to the deck for a totally non-penetrating system application.

### Features and Benefits

#### • Energy Efficient and Environmentally Sound

Each layer of FAST Adhesive expands to 1/16" - to 1/8" -thick and provides an additional R-value of 0.20 to 0.50 per layer. When FAST Adhesive is specified for insulation attachment in place of mechanical fasteners, the 3-8% loss in R-value can be eliminated. The NRCA estimates that up to 10% of R-value can be lost due to joints in the insulation. The expanding nature of FAST adhesive helps to seal insulation joints. Water is used as the blowing agent in FAST Adhesive, making it VOC compliant and not labeled as a flammable product.

#### • Superior Wind Uplift

Superior wind-uplift resistance is delivered with code-rated assemblies ranging from FM 1-90 up to FM 1-990, Dade County, UL 1897 and UL 580 approvals. As a result of the extraordinary wind uplift performance, the FleeceBACK/FAST Adhesive System offers an industry leading 80-mph standard wind-speed warranty that can be upgraded to 120 mph with design enhancements.

#### • Expedient Installations without Interruption

Due to the low noise and low odor associated with the system, the FleeceBACK/FAST assembly is an excellent choice for roofing occupied buildings, as there is minimal disruption. Because of these benefits, schools, universities and hospitals are some of the biggest users of the FleeceBACK/FAST assembly. The speed of application with FAST Adhesive affords project completion in a timely manner.

#### • System Warranties

A full range of system warranties are available ranging from 10-, 15-, 20- and 30-year terms, are No Dollar Limit, are transferable and are not voided for ponded water. In summary, the combination of 45 years of single-ply experience, fleece backing reinforcement and Carlisle's insulating adhesive technology results in an extremely tough and durable roofing composite system with superior wind-uplift performance that can be applied with minimal business disruption and without penetrating the deck.

### Application\*

1. The surface to which adhesive is to be applied shall be dry and free of fins, protrusions, sharp edges, loose and foreign materials, oil and grease. Depressions greater than 1/4" (6 mm) shall be filled with FAST Adhesive or other approved patching material. All sharp projections shall be removed.
2. Seal gaps between the wall and concrete deck with Carlisle 72STR or other suitable material to avoid condensation issues.
3. For reroofing sprayed-in-place (SPF) urethane roofs, all wet areas must be removed. The surface must then be scarfed or perforated, depending on the coating, before applying FAST Adhesive.
4. Apply FAST Adhesive when the substrate and ambient temperature are 25°F (-4°C) or above when spraying with heated equipment. Set rig pressure between 40-60 psi for extrusion and 80-100 psi for spraying.
5. Set pre-heater and hose temperature to 120°F (49°C). Temperature settings will vary with conditions.

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## CARLISLE'S SPECTRO-WELD™ FLEECEBACK® TPO MEMBRANE

LEED Info	
Pre-consumer Recycled Content	10%
Post-consumer Recycled Content	0%
Manufacturing Location	Senatobia, MS
Solar Reflectance Index	White: 113

Radiative Properties for ENERGY STAR, Cool Roof Rating Council (CRRC), and LEED.		
Physical Property	Test Method	White
ENERGY STAR - Initial solar reflectance	Solar Spectrum Reflectometer	Pending
ENERGY STAR - Solar reflectance after 3 years	Solar Spectrum Reflectometer (after cleaning)	Pending
CRRC - Initial solar reflectance	ASTM C1549	0.88
CRRC - Solar reflectance after 3 years	ASTM C1549 (uncleaned)	Pending
CRRC - Initial thermal emittance	ASTM C1371	0.89
CRRC - Initial thermal emittance after 3 years	ASTM C1371 (uncleaned)	Pending
LEED - Thermal emittance	ASTM E408	0.95
Solar Reflectance Index (SRI)	ASTM E1890	113

Carlisle Extreme Testing - Heat Aging			
ASTM Test	ASTM Requirement	Spectro-Weld Results	
ASTM Test	240°F 670 hours or 4 weeks	5,376 hours or 32 weeks*	
Carlisle Extreme Test	275°F N/A	1,344 hours or 8 weeks	

\*Comparable to 1,024 weeks (20 years) at 185°F for 8 hrs./day.

Heat Aging accelerates the oxidation rate that roughly doubles for each 10°C (18°F) increase in roof membrane temperature. Oxidation (reaction with oxygen) is one of the primary chemical degradation mechanisms of roofing materials.

Carlisle Extreme Testing - Environmental Cycling	
-10 days heat aging at 240°F (116°C) followed by 5 days water immersion at 158°F (70°C) or with another specimen set	
-5 eight-hour cycles in Kesternich sulfur dioxide chamber (sulfurous acid fog) followed by 5040 kJ/m <sup>2</sup> (2000 hrs. at 0.70 W/m <sup>2</sup> irradiance) xenon-arc exposure	

Environmental Cycling subjects the membrane to repeated cycles of heat aging, hot-water immersion or acid fog followed by xenon-arc exposure. The acid fog accelerates acid etching that may occur from acid rain if the roof membrane is not resistant to acidic conditions.

### Spectro-Weld FleeceBACK Membranes

#### Typical Properties and Characteristics

Physical Property	Test Method	SPEC. (Pass)	Spectro-Weld
Tolerance on Nominal Thickness, %	ASTM D751	+/-10	+/-10
Thickness over Fleece, mil (2.92 mm)	ASTM D4637 Annex	.045 (1.14)	.060 (1.52)
Weight, lbm/ft <sup>2</sup> (115-mil)	—	—	0.34
Breaking Strength, min, lbf (kN)	ASTM D751 Grab Method	90 (0.4)	400 (1.8)
Elongation at break of internal fabric, %	ASTM D751	—	25
Tearing Strength, min, lbf (kN)	ASTM D751 B Tongue Tear	10 (45)	55 (245)
Puncture Resistance, Joules	ASTM D5635	—	22.5
Puncture Resistance, lbf	FTM 101C Method 2031	400	500
Brittleness point, max, °F (°C)	ASTM D2137	-40 (-40)	-50 (-45)
Linear Dimensional Change, %	ASTM D1204	± 1 max	-0.2 typical
Field Seam Strength, lbf/in. (kN/m)	ASTM D1876		
ASTM D1876 tested in peel			
115-mil		25 (4.4)	60 (10.5)
Water Vapor Permeance, perms	ASTM E96	—	0.10 max
ASTM E96 proc. B	Proc B		0.05 typical
Resistance to Microbial Surface Growth, Rating (1 is very poor, 10 is no growth)	ASTM D3274	—	9-10 typical
Properties after heat aging -ASTM D573, 670 hrs. at 240 °F	ASTM D673		
Breaking strength, % retained	—	—	90 min.
Elongation reinf. % retained	—	—	90 min.
Tearing Strength, % retained	—	—	90 min.
Weight Change, %	—	—	± 1.0 max
Ozone Resistance	ASTM D1148	No cracks	No cracks
100 ppm, 168 hours			
Resistance to Water Absorption	ASTM D471	+4	+2
After 7 days immersion @ 158°F (70°C)			
Change in mass, max, %			
Resistance to Outdoor (Ultraviolet) Weathering	ASTM G155	No cracks	No cracks
Xenon-Arc, total radiant exposure at 0.70 W/m <sup>2</sup> irradiance, 80°C black panel temp.		No loss of breaking or tearing strength	No loss of breaking or tearing strength
115-mil			20,160 kg/m <sup>2</sup>

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## CARLISLE'S **SPECTRO-WELD™ FLEECEBACK®** **TPO MEMBRANE**



### Overview

Spectro-Weld FleeceBACK TPO membrane is designed for appropriate photovoltaic (PV) applications where its industry leading 0.88 solar reflectance will maximize sunlight-to-energy conversion while minimizing heat gain into the building. Once the highly reflective Spectro-Weld TPO is reinforced and enhanced with fleece, the total sheet thickness is 115-mil, creating a very tough, durable and versatile sheet that is ideal for re-roofing or new construction. Spectro-Weld is chlorine- and plasticizer-free with excellent chemical resistance to acids, bases, restaurant oil and greases.

Spectro-Weld with Octaguard XT™ weathering package technology withstands extreme durability testing intended to simulate exposure to severe climates. Sure-Weld is based on advanced polymerization technology that combines the flexibility of ethylene-propylene (EP) rubber with the heat weldability of polypropylene.

### Intended Uses

FleeceBACK TPO membranes are intended to be used with Adhered or Mechanically-fastened roofing systems. Spectro-Weld FleeceBACK TPO is ideally suited for Solar panel applications due to its added reflectivity, toughness/durability and projects demanding superior wind uplift resistance.

### Features and Benefits

- Solar reflectance of 0.88 (ASTM C1549), higher than any competitive TPO
- Superior wind uplift performance and ratings (up to an FM 1-945) due to a mechanical bond between fleece and adhesive
- 75% fewer seams than Modified Bitumen

- Wide window of weldability
- Fleece reinforcement adds toughness, durability and enhanced puncture resistance
  - 115-mil delivers 33% greater puncture resistance and 33% greater breaking strength than 80-mil TPO
  - Greater puncture resistance than Modified Bitumen
- Excellent hail damage resistance
  - Passes FM's severe hail test
  - Passes UL-2218 Class 4 rating
  - Passes National Bureau of Standards – 23 Ice Ball test up to 3" diameter hail with the membrane cooled to 32°F

### Installation

#### Adhered Roofing System

Insulation is mechanically fastened or adhered with Flexible FAST™ Adhesive to the roof deck. When adhering insulation with FAST Adhesive, the adhesive is applied to the substrate and allowed to rise and foam. Once FAST™ Adhesive develops string/body/gel (typically 2 minutes) place insulation into the adhesive and walk it in. Roll the insulation with a 30" wide 150-pound weighted roller to ensure full embedment. Spray-apply or extrude Flexible FAST Adhesive to the substrate and allow foam to develop string/body/ gel (typically 2 minutes) prior to setting FleeceBACK into the FAST Adhesive. Roll FleeceBACK membrane with a 30" wide 150-pound weighted roller to ensure full embedment. Splices are hot-air welded. *Consult Carlisle specifications for complete installation information.*

### Precautions

1. Use proper stacking procedures to ensure sufficient stability.
2. Exercise caution when walking on wet membrane.
3. U.V. resistant sunglasses are required for Sure-Weld membranes.
4. White surfaces reflect heat and may promote slippery conditions due to frost and ice accumulation.
5. Care must be exercised when working close to a roof edge when the surrounding area is snow covered.
6. FleeceBACK membrane rolls must be tarped and elevated to keep dry prior to installation. If the fleece gets wet use a wet vac system to help remove moisture from the fleece.
7. Spectro-Weld membrane exposed to the weather must be prepared with Weathered Membrane Cleaner prior to hot-air welding.

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