



CARLISLE'S  
**FLEECEBACK<sup>®</sup>**  
ROOFING SYSTEMS

DURABILITY • PUNCTURE RESISTANCE • LONG-TERM PERFORMANCE



## The History of Carlisle's FleeceBACK

Carlisle pioneered EPDM roofing membranes more than 45 years ago and has established a strong track record of superior product durability and long-term weather resistance. We have expanded that expertise into TPO membranes and become the world's leading supplier of thermoplastic polyolefin roofing.

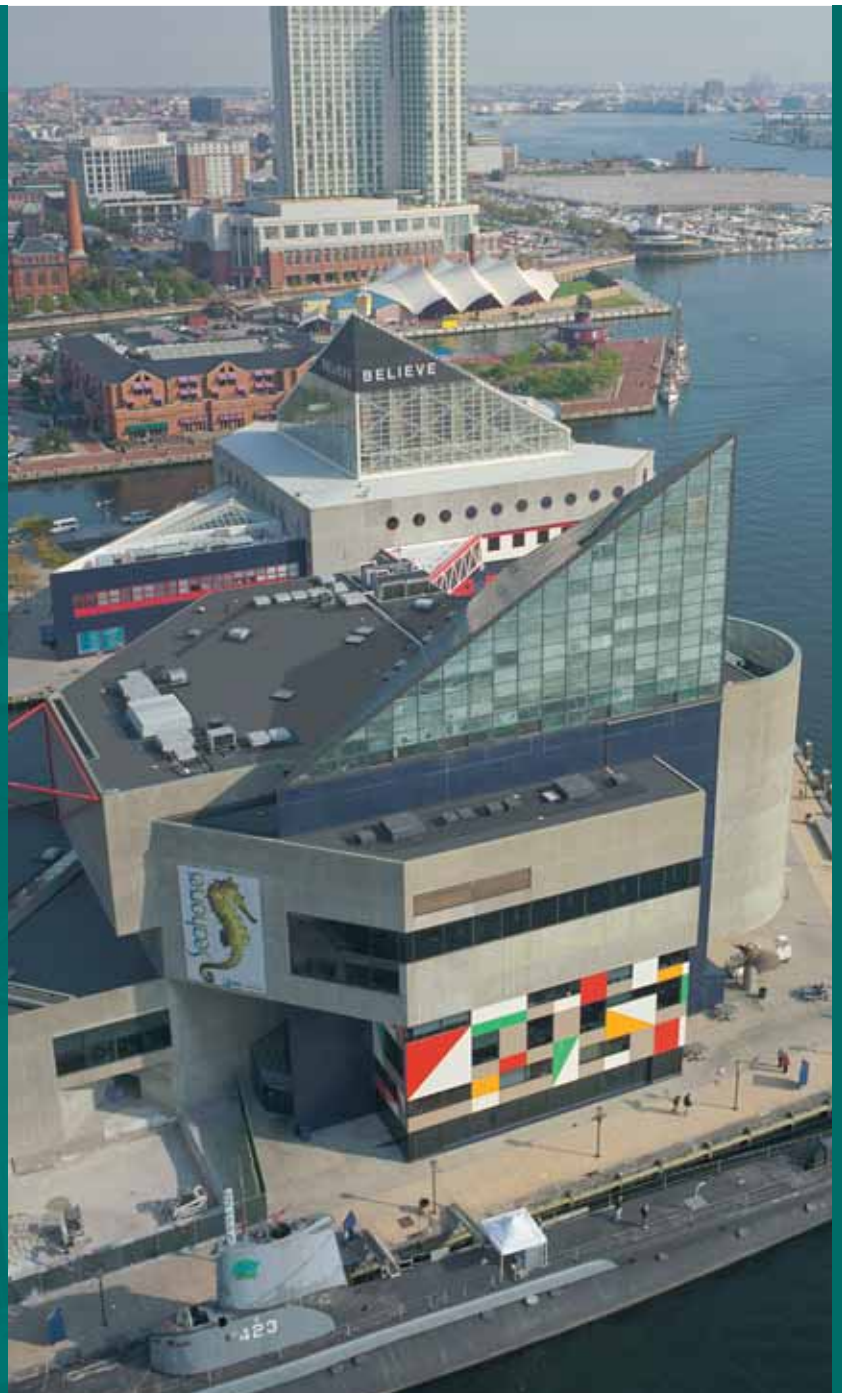
As a testament to the pure value and long-term performance advantages of the FleeceBACK and FAST™ Adhesive system, Carlisle selected FleeceBACK to protect its own corporate facilities covering almost half a million square feet.

## FleeceBACK EPDM Roofing Systems with Flexible FAST Adhesive

To date, Carlisle has produced over 10 billion square feet of roofing membrane including 225 million square feet of FleeceBACK membrane, Carlisle's puncture-resistant membrane introduced 20 years ago. EPDM is well known for its superior UV and ozone-weathering performance. Durability assessments of roofing membranes found EPDM as "the only membrane with no reduction in flexural fatigue resistance for all tests/locations." A recent study of aged EPDM showed that after 26 years of real world exposure, EPDM still retained excellent tensile strength, tear resistance and weathering resistance. EPDM just doesn't get brittle with age.

Flexible FAST Adhesive is a patented impact resistant, energy absorbing, elongating foam adhesive offering up to 150% elongation and 33-50% greater puncture resistance than non-flexible adhesives.

FleeceBACK Sure-Seal roofing systems are tough, durable and have superior wind uplift and hail resistance.





CARLISLE'S

# FLEECEBACK®

# SURE-SEAL® SURE-WHITE®

## Fleece Adds Toughness and Durability

- External fleece reinforcement creates a very thick 100-, 115- and 145-mil sheet
- Choice of Sure-Seal (black) or Sure-White (white) EPDM
- FleeceBACK 100 offers 40% greater puncture resistance than 60-mil EPDM and 180% greater tear resistance
- Flexible FAST adds 33-50% greater puncture resistance than standard FAST
- Greater puncture resistance than Modified Bitumen
- 67% fewer seams than Modified Bitumen with 10' sheet
- 34% fewer seams than Modified Bitumen with 5' sheet
- Passes UL-2218 Class 4 hail-resistance test
- Passes FM's severe hail test
- Passes National Bureau of Standards-23 Ice Ball test up to 3" diameter hail at 32° F

## Superior Wind Uplift and Fire Ratings Available

- Using FAST™ Adhesive for insulation attachment
  - FM 1-945, 1-915, 1-660, 1-645, 1-465, 1-370, 1-240
  - UL-580 Class 90 wind uplift after 4 hours cycling
  - UL-1897, passes 180 psf uplift over steel deck
- Using Carlisle fasteners for insulation attachment
  - FM 1-285, 1-270, 1-150, 1-120, 1-90
- Direct to Lightweight Insulating Concrete
  - FM 1-270, Lightweight poured over concrete deck
  - FM 1-180, Lightweight poured over steel deck
- UL Class A Fire Rating
- Dade County approved

## Factory-Applied Tape

- Factory-Applied Tape is bonded to the sheet in a factory-controlled setting
- Improves reliability and consistency
- Seaming productivity enhanced by 75%

## Thermal Efficiency

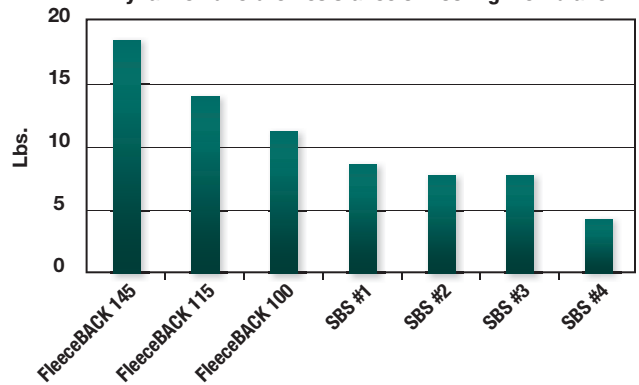
- Each layer of insulating FAST Adhesive adds R-value of 0.2 to 0.5
- Thermal bridging of fasteners can be eliminated saving 3-8% R-value
- Helps seal insulation joints saving up to 10% R-value
- Uses larger 4' x 8' insulation boards reducing insulation joints by 34%
- Compatible with 725TR Air & Vapor Barrier



## Environmentally Friendly

- FAST Adhesive is VOC and solvent free
- No HCFC's – uses water as the blowing agent
- Low odor and noise – great for reroofing occupied buildings
- Conserves natural resources – weighs 75% less than Mod-Bit
- FleeceBACK 145-mil is ideal for garden and plaza roofs

ASTM D5635-04a  
"Dynamic Puncture Resistance of Roofing Membrane"



## Membrane Options

Color: Black, white

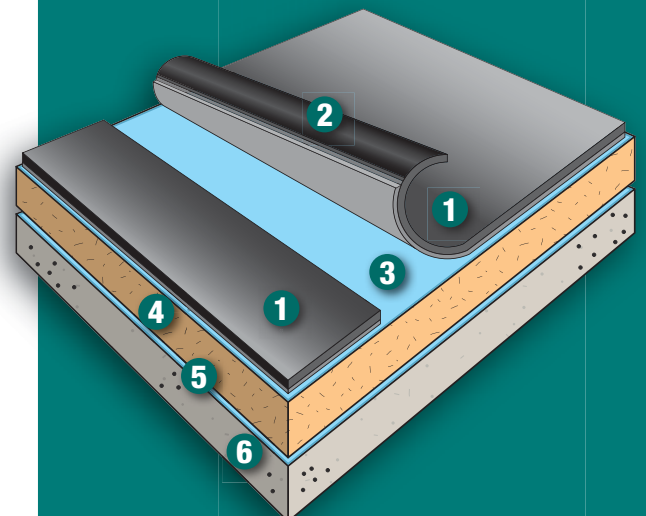
Thicknesses (mils): EPDM + Fleece:  
100, 115 and 145

Standard widths: 5' and 10'

Standard lengths: 40', 50' and 100'

## Typical Application

1. FleeceBACK membrane with Factory-Applied Tape
2. Factory-Applied Tape
3. Flexible FAST Adhesive
4. Acceptable ISO insulation
5. Insulating FAST Adhesive
6. Structural deck





Devos Place, Grand Rapids, Michigan, selected 100-mil FleeceBACK Sure-Weld membrane in gray for their nearly 250,000-square-foot project.

### FleeceBACK TPO Roofing Systems with FAST Adhesive

Carlisle has become recognized as the industry leader in the rapidly growing thermoplastic roofing segment. This is due to our commitment to research and development and to engineering and manufacturing excellence, resulting in the highest-quality TPO membrane available today.

Sure-Weld FleeceBACK is enhanced with OctaGuard XT™ Weathering Package, a unique eight-component blend of antioxidants, UV absorbers, as well as light and heat stabilizers that results in the most dependable, long-term performance characteristics in the industry.

Carlisle's TPO is subjected to the same rigorous testing as Carlisle's EPDM membrane. We test our TPO membrane at 176°F (80°C), the same temperature we have tested EPDM at for 45 years, ensuring field performance and weatherability.

Highly reflective white TPO FleeceBACK reduces air conditioning costs and Spectro-Weld™ TPO FleeceBACK is the perfect solar ready roof membrane due to its industry leading solar reflectance of 0.88 (ASTM C1549).



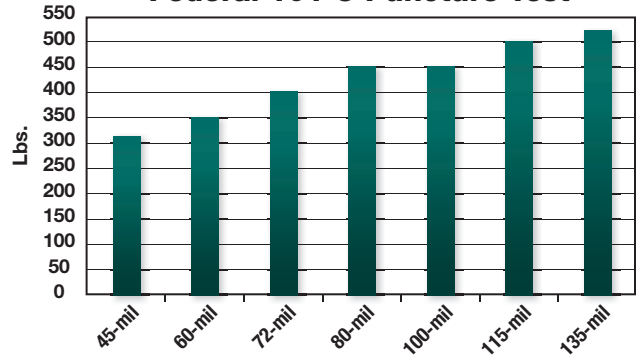
CARLISLE'S

# FLEECEBACK® SURE-WELD®

## Toughness and Durability

- External fleece reinforcement creates a very thick 100-, 115- and 135-mil sheet
- Standard colors include white, gray and tan
- Sure-Weld FleeceBACK membranes offer greater puncture resistance and greater breaking strength than non-fleeced TPO membranes
- Greater puncture resistance than Modified Bitumen
- 75% fewer seams than Modified Bitumen with 12' wide sheet
- 45% fewer seams than Modified Bitumen with 6' wide sheet
- Passes FM's severe hail test
- Passes National Bureau of Standards-23 Ice Ball test up to 3" diameter hail at 32° F

TPO Membranes  
Federal 101 C Puncture Test



## Superior Wind Uplift and Fire Ratings Available

- Using FAST™ Adhesive for insulation attachment
  - FM 1-990, 1-915, 1-660, 1-645, 1-465, 1-370, 1-240
  - UL-580 Class 90 wind uplift after 4 hours cycling
  - UL-1897, passes 180 psf uplift over steel deck
- Using Carlisle fasteners for insulation attachment
  - FM 1-285, 1-270, 1-150, 1-120, 1-90
- Direct to Lightweight Insulating Concrete
  - FM 1-270, Lightweight poured over concrete deck
  - FM 1-180, Lightweight poured over steel deck
- UL Class A Fire Rating
- Dade County approved

## Heat-weldable seams

- Robotic welding ensures consistency and reliability
- Peel strengths exceed 50 lbs. per inch
- The easiest welding TPO sheet on the market

## Thermal Efficiency

- Each layer of insulating FAST Adhesive adds R-value of 0.2 to 0.5
- Thermal bridging of fasteners can be eliminated saving 3-8% R-value
- Helps seal insulation joints saving up to 10% R-value
- Uses larger 4' x 8' insulation boards reducing insulation joints by 34%
- Compatible with 725TR Air & Vapor Barrier

## Environmentally Friendly

- ENERGY STAR® and Cool Roof Rating Council (CRRC) approved
- No chlorine or plasticizers used
- Resists biological growth
- FAST Adhesive is VOC and solvent free
- No HCFC's – uses water as the blowing agent
- Low odor and noise – great for reroofing occupied buildings
- Conserves natural resources – weighs 75% less than Mod-Bit



## Membrane Options

Colors: White, gray, tan

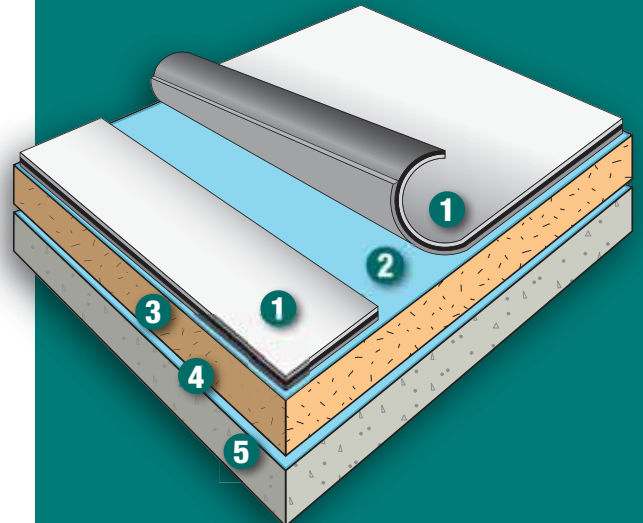
Thicknesses (mils): TPO + Fleece:  
100, 115 and 135

Standard widths: 6' and 12'

Standard lengths: 50' and 100',  
(75' for 135-mil)

## Typical Application

1. FleeceBACK Sure-Weld reinforced membrane
2. Flexible FAST Adhesive
3. Acceptable insulation
4. Insulating Flexible FAST Adhesive
5. Approved roof deck



CARLISLE'S

# FLEXIBLE FAST™ ADHESIVE



Flexible FAST Adhesive is applied to metal deck



Insulation is set into Flexible FAST Adhesive



Flexible FAST is spray applied to insulation



Clear poly backing is removed from the Factory-Applied Tape before seams are rolled

## Flexible FAST Adhesive Eliminates Thermal Bridging

The foaming nature of Flexible FAST Adhesive offers an additional R-value of 0.20 to 0.50 per layer. The National Roofing Contractors Association estimates that 3-8% of your R-value is lost due to fasteners and plates and up to 10% is lost due to joints in the insulation. When Flexible FAST Adhesive is specified for insulation attachment, thermal bridging of mechanical fasteners is eliminated and it helps seal joints in the insulation while maintaining or enhancing the integrity of the roof deck.



Flexible FAST can eliminate thermal bridging of the fasteners and insulation joints that is causing the snow to melt and draining energy from the building.

## The impact resistant Flexible FAST Adhesive creates a tenacious bond with the fibers of the fleece while adding puncture resistance.

Carlisle's FleeceBACK Fully Adhered Roofing System features our patented impact resistant, low-rise, two component, insulating polyurethane adhesive. Flexible FAST Adhesive is applied using state-of-the-art heated proportioning pumps delivering both components to a mixing spray gun for distribution onto the surface. FleeceBACK membrane and/or insulation is set into the foamed adhesive and rolled with a weighted roller.

Within 15 minutes Flexible FAST Adhesive cures to form a tenacious, mechanical bond between the substrate and FleeceBACK membrane. Flexible FAST Adhesive is considered one of the best insulation adhesives on the market resulting in a non-intrusive system application. The energy absorbing, impact resistant Flexible FAST Adhesive is typically 1/8" thick (after foaming) providing 33-50% greater puncture resistance than non-flexible adhesives.

As a two-component, foaming adhesive, Flexible FAST can also come in handy to provide air seals around pipes, penetrations and perimeters.

A wide window of application temperatures is available from 25° F to 120° F. Another nice feature of Flexible FAST Adhesive is that it can be spray applied or extruded in ribbons depending on the warranty requirements. And because water is used as the blowing agent, Flexible FAST Adhesive is VOC free and is not labeled as a flammable product.



## Satisfied Building Owners

**Schools** - Thomas Jefferson, Benjamin Franklin Early Ed, Liberty H.S., Mark Twain Jr. & Sr. High

**Universities** - Univ. of Pennsylvania, Princeton, Yale, Temple, Vanderbilt, Swarthmore, Dickinson, BYU, Kent State

**Govt. Buildings** - U.S. Army, Navy, Air Force, FAA, FDA, DOJ, U.S. Post Office

**Hospitals** - Good Samaritan Hospital, Methodist Hospital, Missouri Baptist Med. Ctr., S. Nassua Community Hospital, VA Medical Center, Yale New Haven Hospital, HCA

**Industry** - Boeing, Dupont, Howard Hughes Corp., Newport News, Wyeth, Merck, Glaxo, State Farm, Bank One, NBC, Verizon, Union Carbide, U-Haul, Amana

## FAST Adhesive is compatible with the widest array of decks, insulations and existing roofs.

### Decks

- Steel, Wood and Concrete
- Gypsum and Cementitious Wood Fiber
- Lightweight Insulating Concrete

### Insulations/Underlayments

- HP Polyiso and SecurShield Insulation
- Extruded Polystyrene Insulation
- Expanded Polystyrene Insulation
- Sprayed Polyurethane Foam Insulation
- Oriented Strand Board
- HP Wood Fiberboard and SecurShield HD™
- DensDeck® and Securock™
- Carlisle-725TR Air and Vapor Barrier

### Existing Roofs

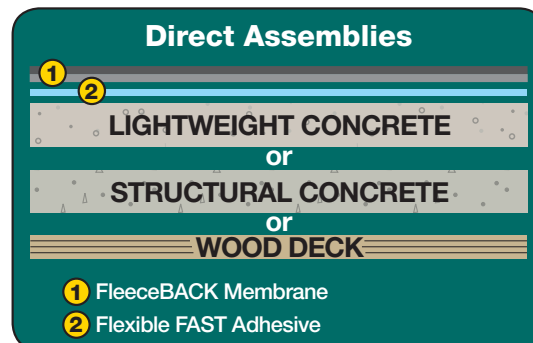
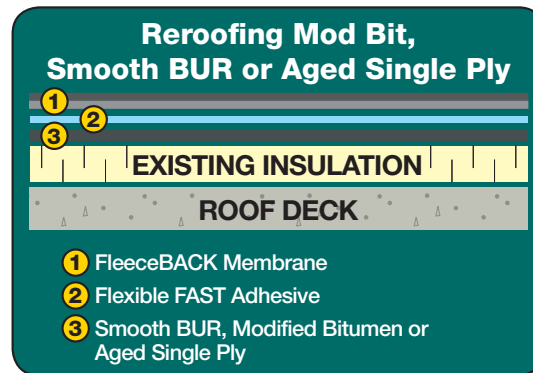
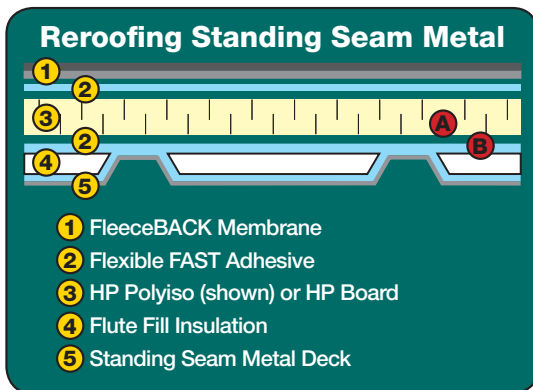
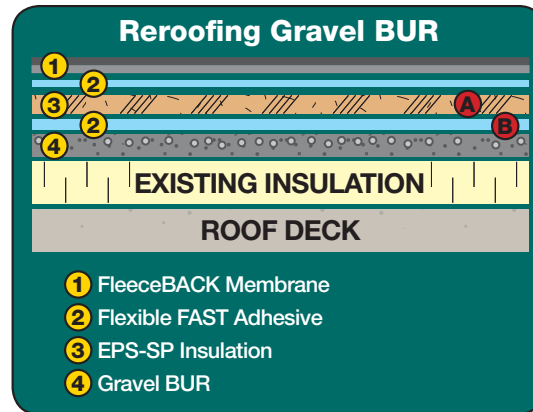
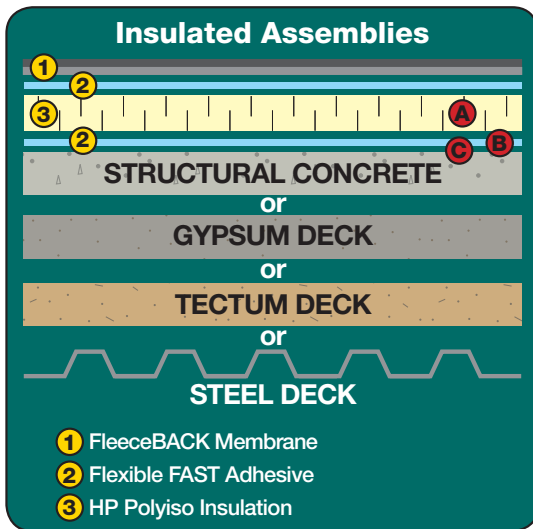
- Smooth or Granulated Modified Bitumen
- Smooth or Gravel BUR
- Mineral Cap Sheet
- Coal Tar Pitch
- Acrylic-Coated SPF
- Standing Seam Metal
- Aged EPDM or Hypalon membrane

Carlisle-725TR Air and Vapor Barrier FleeceBACK can also be installed using Aqua Base 120 Adhesive, a water-based, roller-applied adhesive and Sure-Weld FleeceBACK can also be mechanically fastened. See individual system sheets for warranty requirements and more information.

## Carlisle Warranties

- 10-, 15-, 20-, 30-year Total System Warranties
- Wind speed coverage of 80 mph and higher leads the industry
- Hail resistance warranty available
  - Up to 1" hail coverage using FleeceBACK 100
  - Up to 2" hail coverage using FleeceBACK 115
  - Up to 3" hail coverage using FleeceBACK 145
- Puncture resistance warranty available using FleeceBACK 115 or thicker membrane
- Enhanced hail and puncture coverage with Flexible FAST
- Not voided for ponded water
- Not pro-rated, no dollar limit
- Transferable, not limited to original owner
- Fully inspected by Carlisle field service representatives

# Typical FleeceBACK Assemblies:



- Note:**
- A** Multiple layers of insulation are acceptable.
  - B** HP Fasteners can be substituted for Flexible FAST Adhesive based on pullout values.
  - C** Optional Carlisle-725TR vapor retarder

INVESTING IN ROOFING SOLUTIONS FOR OVER 45 YEARS

