



## Overview

Carlisle pioneered and patented the energy-absorbing, impact-resistant Flexible FAST Adhesive for use with FleeceBACK® membranes and to secure insulation boards to the deck for a totally non-penetrating system application. This industry-leading breakthrough in urethane adhesive technology offers built-in elongation and energy-absorbing properties that work in conjunction with the FleeceBACK membrane to enhance puncture and hail resistance. Flexible 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 Flexible FAST Adhesive to expand or 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, Flexible FAST Adhesive cures to form a tenacious bond between the substrate and the FleeceBACK membrane.

## Features and Benefits

### • Added Puncture Resistance

In side-by-side dynamic puncture tests, Flexible FAST Adhesive increased puncture resistance between 33-50% compared to traditional FAST Adhesive. The energy absorbing nature of the Flexible FAST foam makes this an ideal product for use in Roof Garden, Plaza Paver and Solar Panel applications in conjunction with FleeceBACK membrane.

### • Energy Efficient and Environmentally Sound

Each layer of Flexible FAST Adhesive expands to 1/16" - 1/8" thick and provides an additional R-value of 0.20 to 0.50 per layer. 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, when Flexible FAST Adhesive is specified for insulation attachment in place of mechanical fasteners, the 3-8% loss in R-value can be eliminated. Water is used as the blowing agent in Flexible FAST Adhesive, making it VOC compliant and not labeled as a flammable product.

### • Superior Wind Uplift

Superior wind-uplift resistance is delivered with uplift pressures ranging from 90-945 psf depending on the substrate. As a result of its extraordinary wind-uplift performance, the FleeceBACK/FAST Adhesive System offers an industry-leading 80mph standard wind-speed warranty that can be upgraded to 120mph 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 reroofing 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 Flexible FAST Adhesive affords project completion in a timely manner. Flexible FAST offers a significant reduction in free MDI: from 32% to 23% compared to traditional urethane adhesives.

### • System Warranties

A full range of system warranties are available including 10-, 15-, 20- and 30-year terms, which are No Dollar Limit, transferable and not voided for ponded water. In summary, the combination of 45 years of single-ply experience, fleece backing reinforcement and Carlisle's impact-resistant 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 no deck penetrations.

**Investing in Roofing Solutions for Over 45 Years**

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## 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 Flexible FAST Adhesive or other approved patching material. All sharp projections shall be removed.
2. Seal gaps between the wall and concrete deck with Carlisle 725TR, 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 Flexible FAST Adhesive.
4. Apply Flexible 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.

## FleeceBACK Installation

1. Unroll FleeceBACK sheet and position. Fold sheets in half width-wise.
2. Apply Flexible FAST Adhesive to the substrate achieving a light-blue-colored foam.
  - a. For fully adhered applications, spray adhesive to obtain full coverage (approx. 1/8" to 1/4" thick after foaming).
  - b. For extruded applications, apply adhesive at 4", 6" or 12" on center with a minimum 1/2" wet bead.
3. Allow adhesive to rise and develop string/body (approx. 1.5-2 minutes), then place FleeceBACK membrane into Flexible FAST Adhesive. String time will vary based on environmental conditions like temperature and humidity.
4. 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

1. Apply Flexible FAST Adhesive to the substrate achieving a light-blue-colored foam.
  - a. For fully adhered applications, spray adhesive to obtain full coverage (approx. 1/8" to 1/4" thick after foaming).
  - b. 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 warranties 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. (8' perimeter)	12" o.c.
50' – 75'	6" o.c. (12' perimeter)	12" o.c.
75' – 100'	6" o.c. (16' perimeter)	12" o.c.
<b>100' or greater: Contact Carlisle for bead spacing requirements</b>		

2. Factory Mutual bead spacing guidelines in the perimeter and corner may differ from the table above.
3. Place insulation boards (maximum 4' x 4' insulation boards when Flexible FAST Adhesive is extruded at 12" o.c. or when boards exceed 4" thickness) into Flexible 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.
4. 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.
5. 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.
6. 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

1. Review the Material Safety Data Sheet for complete safety information prior to use.
2. 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.
3. Do not smoke during application.
4. 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.
5. Avoid contact with eyes. Safety glasses or goggles are required.
6. If Flexible FAST adhesive is splashed in eyes, immediately flush eyes with plenty of clean water for at least 15 minutes. Contact a physician immediately.
7. 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.
8. Jobsite 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 Flexible FAST Adhesive to freeze (storage below 0°F (-18°C) for at least 3 days).
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 Flexible FAST Adhesive vapors or overspray from entering buildings during application. All air-intake vents on roofs must be closed during application of 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.



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

## 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	6,500	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



## Flexible FAST Adhesive Substrate Compatibility

Insulation/Underlayments		Roof Decks		Existing Roofing Materials	
- HP Polyiso	Yes	- Concrete	Yes	- Smooth BUR	Yes <sup>5</sup>
- HP Recovery Board	Yes	- Cellular Lt.Wt. Concrete	Yes	- Gravel BUR	Yes <sup>6</sup>
- Expanded Polystyrene (EPS)	Yes <sup>1</sup>	- NVS Lt.Wt. Concrete	Yes	- Mineral Cap Sheet	Yes
- Extruded Polystyrene	Yes <sup>2</sup>	- Gypsum	Yes	- Granular Modified-Bitumen	Yes
- New Sprayed Foam	Yes	- Cementitious Wood Fiber	Yes	- Smooth Modified-Bitumen	Yes
- Scarified SPF	Yes	- Wood	Yes	- Coal Tar Pitch	Yes <sup>7</sup>
- DensDeck®	Yes	- Painted Steel	Yes	- Aluminum-Coated BUR	Yes <sup>8</sup>
- Securock®	Yes	- Galvanized Steel	Yes <sup>3</sup>	- Acrylic-Coated SPF	Yes
- Oriented Strand Board	Yes	- Acoustical Steel	Yes <sup>4</sup>	- Silicone-Coated SPF	No <sup>9</sup>
				- Aged EPDM or Hypalon	Yes <sup>10</sup>

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 membranes 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 Flexible 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 Flexible 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 Flexible FAST Adhesive.
10. Power-washing aged EPDM or Hypalon membrane is required prior to the application of Flexible FAST Adhesive.

## Flexible FAST Adhesive Typical Properties and Characteristics:

Base	A-Side Polymeric Isocyanate	B-Side Surfactants and Catalysts
Mixing Ratios by Volume	1:1 Part A to Part B	
Viscosity (CPS @ 25C)	400	700
MDI Content	23%	
Avg. Net Weight	10.25 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)
Shelf Life	6 months	6 months*
Temperature Requirements (Substrate & Ambient)		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

Physical Property	Test Method	Results
Elongation	ASTM D412	150%
Modulus at 150% Elongation	ASTM D412	20 psi
Dynamic Puncture Resistance - OSB	ASTM D5635-04a	33% greater than standard FAST
Dynamic Puncture Resistance - HP Recovery Board		40% greater than standard FAST
Dynamic Puncture Resistance - Polyiso		50% greater than standard FAST

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REPRINT CODE: 605010 - "Flexible FAST Adhesive Product Data Sheet" - 020210 © 2009 Carlisle.