

# Sure-Flex™ PVC Roofing Systems

## Code Approval Guide

August, 2020

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**Carlisle SynTec, a division of Carlisle Construction Materials LLC**

**CODE APPROVAL GUIDE**

August, 2020

**INTRODUCTION**

This Code Approval Guide addresses both general information pertaining to Underwriters Laboratories (UL) and FM Approvals (FM) test criteria as well as specific UL and FM code approvals achieved with Carlisle's Sure-Flex Adhered and Mechanically-Fastened Roofing Systems. Various independent test laboratory results along with national building code approvals are also identified in this guide. Code approvals available with Carlisle's FleeceBACK™, Hot Mopped, Sure-Weld and Sure-Seal® Roofing Systems are identified in separately published Code Approval Guides.

Code ratings are categorized by roof system type (Mechanically-Fastened, Adhered) and are separated into 2 sections; UL Approvals and FM Approvals. Underwriters Laboratories rated roof assemblies are grouped according to deck type (non-combustible or combustible) and are further categorized by the severity of fire exposure (Class A, B or C). FM Approvals approved assemblies are categorized according to deck type and the specific type of construction (new, tear-off or retrofit).

The listed assemblies contained in this guide are grouped generically based on deck classification. Specific substrate requirements for each Carlisle Roofing System can be identified in the respective Carlisle Specifications.

In the UL and FM Approvals throughout this guide, when multiple layers of insulation are referenced, the product listed first identifies the insulation directly below the membrane. For example; a listing of HP Recovery Board/Polyisocyanurate indicates the HP Recovery Board is installed directly under the membrane. A listing of Gypsum Board/Polystyrene indicates the Gypsum Board is installed directly under the membrane.

## **General Guidelines for Underwriters Laboratories and FM Approvals Code Compliance**

These guidelines are intended to focus on the essential criteria to be followed when an Underwriters Laboratories (UL) and/or FM Approvals (FM) approved assembly is specified. Generally, the Carlisle published specifications reflect the minimum requirements necessary to obtain the applicable Carlisle warranty. Code requirements are not specifically covered in the Carlisle specifications and are considered to be above and beyond the provisions of the Carlisle warranty.

Individuals specifying an approved assembly or selecting various products to achieve a specific UL/FM rating must recognize the importance of ensuring proper component selection to fully comply with the most current listings published. **All materials used in the roofing system must be UL and/or FM approved and must have been tested together as part of a complete roofing assembly.**

In addition to the code approval listings in this guide, information pertaining to approved assemblies can also be obtained directly from UL and FM as follows:

1. *Underwriters Laboratories On-Line Certifications Directory (ul.com).*
2. *FM Approvals RoofNav website (roofnav.com).* FM RoofNav assembly numbers can be obtained from this website.

### **Underwriters Laboratories, FM Approvals and ANSI/SPRI WD-1 Clarifications/Enhancements:**

#### Underwriters Laboratories

1. The criteria required to obtain **UL external fire ratings** (Class A, B or C) can be identified in this guide or can be searched for on the UL website using the UL Category Code TGFU. UL ratings approved for use on combustible decks are also acceptable on non-combustible decks.
2. For **UL internal fire ratings** (hourly constructions - P Numbers), search the UL website using the UL Category Code BXUV.

#### FM Approvals

Uplift ratings listed in this guide are for the field of the roof. Additional requirements/enhancements are required by FM in the perimeter and corner areas, for deck securement and for perimeter nailer/edge attachment. Refer to FM Property Loss Prevention Data Sheets 1-28, 1-29 and 1-49 for specific requirements. On FM insured projects, the local FM insuring agent **MUST** review and approve the proposed roofing assembly prior to installation. When FM is not the insuring entity for the building, use the **Approved American National Standard ANSI/SPRI WD-1** for design purposes.

**Note: All Carlisle Roof Systems referenced within this document meet Class 1 construction and Severe Hail (SH) ratings.**

### **Approved American National Standard ANSI/SPRI WD-1**

The ANSI/SPRI Wind Design Standard Practice for Roofing Assemblies should be referenced when a project is not FM insured. This document was developed as a consensus National Standard and provides a methodology for designing for wind uplift resistance of roofing system assemblies. Insulation fastening patterns are included in this document. The fastening patterns are approved for use by Carlisle.

### **RECOVERS**

Recover approvals in this document are based on the following existing roofing system assumption - the existing Smooth Asphalt BUR, Modified Bitumen or single-ply system was FM Approved at the time of installation.

### **SUMMARY**

Due to complexity of the code documents and the variety of information that must be reviewed, it is important to consult with Carlisle and other respective manufacturers concerning the most current available approvals.

- **Prior to project bid** - Products specified by the architect must be thoroughly investigated to determine if the specified rating can be achieved and local building codes must be consulted regarding any additional requirements.
- **Prior to installation** - Project managers should review the code requirements with field construction personnel to ensure compliance with project requirements.

**Upon completion of the roofing installation, each project is inspected by a Carlisle Technical Representative to ensure compliance with Carlisle's current specification requirements for the issuance of the applicable warranty. However, this inspection is not for the purpose of verifying code compliance.**

Sure-Flex™ (PVC) Mechanically-Fastened Roofing System

**UL Approval - Non-Combustible - ANSI/UL 790 Spread of Flame Test (Class A)**

**Membrane** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane

**Type:** .050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane

**Non-Combustible:** Steel; St. Concrete; Gypsum; Tectum (Min. 2" thick)

System ID	Deck Type	Insulation	Cover Board	Maximum Slope
1	Non-Combustible	InsulBase, SecurShield, SecurShield HD, SecurShield HD Plus or SecurShield HD Composite- any combination, any thickness	N/A	2-1/2"
2		Any UL Classified EPS or XPS Insulation, any thickness	Minimum 1/2" SecurShield HD, SecurShield HD Plus or SecurShield HD Composite	1"
3		Minimum 1" layer of InsulBase, SecurShield, or SecurShield HD Composite over any UL Classified EPS or XPS Insulation, maximum 1.25 pcf, any thickness	N/A	1"
4		Insulfoam SP or Insulfoam SP over Insulfoam EPS, any thickness and density.	N/A	1"
5		Insulfoam HD Composite or Insulfoam HD Composite over Insulfoam EPS, any thickness and density.	N/A	1"
6		Any UL Classified Insulation, any thickness (OPTIONAL)	Minimum 1/4" SECUROCK® Gypsum-Fiber or Glass Mat Roof Boards	Unlimited
7		Any UL Classified Insulation, any thickness (OPTIONAL)	Minimum 1/4" Dens Deck/DensDeck Prime Roof Boards	Unlimited
8		Any UL Classified Insulation, any thickness (OPTIONAL)	Minimum 1/2" HP Recovery Board	1"
9		Any UL Classified Insulation, any thickness (OPTIONAL)	Minimum 7/16" APA Rated OSB or minimum 1-1/2" StormBase	1"
10		Any UL Classified Insulation, any thickness (OPTIONAL)	Minimum 1/2" EcoStorm VSH	2-1/2"
11	Precast concrete with grouted joints	N/A	N/A	1"

Sure-Flex™ (PVC) Mechanically-Fastened Roofing System

**UL Approval - Combustible - ANSI/UL 790 Spread of Flame Test - Class A**

**Membrane** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane

**Type:** .050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane

**Combustible:** 7/16-in. (minimum) thick non-veneer APA-rated sheathing (oriented strand board panels, structural particleboard panels, composite panels or waferboard panels); 15/32-in. (minimum) thick plywood 3/4 in. (minimum) wood; Tectum (less than 2" thick)

System ID	Thermal Barrier/ Base Sheet	Insulation	Cover Board (2)	Maximum Slope
<b>Combustible (7) - ANSI/UL 790 Spread of Flame Test-Class A</b>				
1	Minimum 1/4" SECUROCK® Gypsum Fiber or Glass Mat Roof Boards (1)	Any UL Classified Carlisle Polyisocyanurate Insulation, any combination, any thickness.	N/A	2-1/2"
2	Minimum 1/4" DensDeck or DensDeck Prime Roof Boards (1)	Any UL Classified Carlisle Polyisocyanurate Insulation, any combination, any thickness.	N/A	2-1/2"
3	N/A	Minimum 3" layer or two layers of 1-1/2" SecurShield or SecurShield HD Composite. (1)(3)	N/A	1/2"
4	N/A	Minimum 2-1/2" layer of any UL Classified Carlisle Polyisocyanurate Insulation, any combination. (1)	Minimum 1/2" SecurShield HD or SecurShield HD Plus	1/2"
5	Carlisle FR Base Sheet	Minimum 1.4" layer of any UL Classified Carlisle Polyisocyanurate Insulation, any combination. (1)	Minimum 1/2" SecurShield HD or SecurShield HD Plus	1/2"
6	N/A	Minimum 4" layer of any UL Classified EPS Insulation. (1)(6)	Minimum 1/2" SecurShield HD or SecurShield HD Plus	1/2"
7	N/A	Any UL Classified Insulation, any thickness (OPTIONAL)	Minimum 3/8" SECUROCK® Gypsum Fiber Roof Board (1)	2"
8	N/A	Any UL Classified Insulation, any thickness (OPTIONAL)	Minimum 1/2" SECUROCK® Gypsum Fiber Roof Board (1)	4"
9	One Ply of Type G2	Any UL Classified Insulation, any thickness (OPTIONAL)	Minimum 1/4" SECUROCK® Gypsum Fiber Roof Board (1)	3"
10	N/A	Any UL Classified Insulation, any thickness (OPTIONAL)	Minimum 1/4" SECUROCK® Glass Mat Roof Board (1)	Unlimited
11	N/A	Any UL Classified Insulation, any thickness (OPTIONAL)	Minimum 1/4" Dens Deck/DensDeck Prime Roof Boards (1)	Unlimited
12	Three layers of Carlisle FR Base Sheet	Any UL Classified Carlisle Polyisocyanurate Insulation, any combination, any thickness (OPTIONAL)	N/A	1/2"
13	N/A	Any UL Classified Polyiso Insulation, any thickness (OPTIONAL)	SecurShield HD (all insulation and roof deck joints must be staggered 12")	1'
14	N/A	Any UL Classified Polyiso Insulation, any thickness (OPTIONAL)	Minimum 1" SecurShield, SecurShield NH or SecurShield HD Composite. (1)(3) (all insulation and roof deck joints must be staggered 12")	1/2"
15	Carlisle FR Base Sheet 1S (Optional)	Minimum 1" layer of SecurShield, SecurShield NH or SecurShield HD Composite over a minimum 3-1/2" layer of any UL Classified EPS Insulation. (1)(3) (all insulation and roof deck joints must be staggered 12")	N/A	1/2"
16	N/A	Minimum 2" UL Classified Carlisle Polyiso	Minimum 1/2" EcoStorm VSH	1"

Sure-Flex™ (PVC) Mechanically-Fastened Roofing System

**UL Approval - Combustible - ANSI/UL 790 Spread of Flame Test - Class B**

**Membrane** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane

**Type:** .050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane

**Combustible:** 7/16-in. (minimum) thick non-veneer APA-rated sheathing (oriented strand board panels, structural particleboard panels, composite panels or waferboard panels); 15/32-in. (minimum) thick plywood 3/4 in. (minimum) wood; Tectum (less than 2" thick)

System ID	Thermal Barrier/ Base Sheet	Insulation	Cover Board	Maximum Slope
<b>Combustible - ANSI/UL 790 Spread of Flame Test-Class B</b>				
1	N/A	Minimum 1.9" layer of SecurShield or SecurShield HD Composite. (7)(8)	N/A	1/2"
2	N/A	Minimum 1.4" layer of any UL Classified Carlisle Polyisocyanurate Insulation. (7)	Minimum 1/2" SecurShield HD or SecurShield HD Plus	1/2"
3	One Layer of Carlisle FR Base Sheet	Any UL Classified Carlisle Polyisocyanurate Insulation, any combination, any thickness. (OPTIONAL)	N/A	1/2"
4	Inverted G3 cap sheet	N/A	N/A	1/2"

Sure-Flex™ (PVC) Mechanically-Fastened Roofing System

**UL Approval - Combustible and Non-Combustible - ANSI/UL 790 Spread of Flame Test - Class C**

**Membrane** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane  
**Type:** .050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane

**Combustible:** 7/16-in. (minimum) thick non-veneer APA-rated sheathing (oriented strand board panels, structural particleboard panels, composite panels or waferboard panels); 15/32-in. (minimum) thick plywood 3/4 in. (minimum) wood; Tectum (less than 2" thick)

**Non-Combustible:** Steel, St. Concrete, Gypsum or Tectum (Min. 2" thick)

System ID	Thermal Barrier/Base Sheet	Insulation	Cover Board	Maximum Slope
<b>Combustible - ANSI/UL 790 Spread of Flame Test-Class C</b>				
1	N/A	Any combination, any thickness of UL Classified Carlisle Polyisocyanurate Isulation	N/A	Unlimited
2	N/A	1/2" Min. HP Recovery Board	N/A	1"
<b>Non-Combustible - ANSI/UL 790 Spread of Flame Test-Class C</b>				
1	N/A	Any combination, any thickness of UL Classified Carlisle Polyisocyanurate Isulation	N/A	Unlimited

**Existing UL Rating Retained - Non-Combustible or Combustible  
(Directly over existing Class A, B or C)**

System ID	Deck Type	Insulation	Cover Board	Maximum Slope
1	N/A	Smooth Asphalt BUR (Type II or IV Asphalt)	N/A	1/2"
2	N/A	Mineral Surfaced Cap Sheet	N/A	1/2"
3	N/A	Modified Bitumen	N/A	1/2"
4	N/A	Sprayed-in-Place Urethane	N/A	1/2"
5	N/A	Single-Ply (28)	N/A	1/2"

Sure-Flex™ (PVC) Mechanically-Fastened Roofing System for InsulBase and SecurShield  
 Factory Mutual (FM) Approvals

**FM Approval - Field Sheet Securement Criteria (10)(11)**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
 .050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)(120" only)

Membrane Width	Fastener/Plate (10)	Fastener Spacing	FM Ratings over Min. 22 Gauge	FM Ratings over Min. 22 Gauge
			Grade C Steel (33 ksi)	Grade E Steel (80 ksi) (11) or Structural Concrete
120"	HP-X/Piranha	6"		1-75 (307057-0-0)
	HP-Xtra/Piranha Xtra	12"		1-60 (307052-0-0)
	HP-X/Oval Barbed	6"		1-90 (323786-0-0)
81"	HP-X/Piranha	6"		1-105 (143334-0-0)
		12"	1-75 (143339-0-0)	1-90 (143340-0-0)
	HP-Xtra/Piranha Xtra	12"	1-75 (336447-0-0)	1-90 (143337-0-0)
	HP-X/Piranha	18"	1-60 (143349-0-0)	1-60
	HP-Xtra/Piranha Xtra	18"	1-60 (143336-0-0)	1-60
60"	HP-X/Piranha	12"	1-90 (393514-0-0)	1-90
		6"	1-120 (394663-0-0)	1-150 (393538-0-0)
40-1/2"	HP-X/Piranha	6"	1-165 (143335-0-0)	1-165
		12"	1-120 (353942-0-0)	1-120

**FM Approvals – Induction Welding Securement Criteria**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
 .050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)(120" only)

FM Approvals – Induction Welding Securement			
Deck Type	Fastener/Plate	Rating	Fasteners per 4' x 8' Board
			Field
Min. 22 Gauge Grade C Steel (33 ksi)	HP-X / RhinoBond PVC Plate	1-90 (341110-0-0)	6
		1-105 (341109-0-0)	8
		1-165 (387207-0-0)	16
	HP-Xtra / RhinoBond PVC Plate	1-135 (346217-0-0)	8
Min. 22 Gauge	HP-X / RhinoBond PVC Plate	1-120 (341108-0-0)	8
Grade E Steel (11) (80 ksi)	HP-X / RhinoBond PVC Plate	1-195 (387224-0-0)	16

FM Approvals – Induction Welding Linear Securement					
Deck Type	Fastener	Plate	Row Spacing	Fastener Spacing in Rows	Rating
Min. 22 Gauge Grade E Steel (80 ksi)	HP-X	RhinoBond PVC PLATE	5'	6"	1-180 (323359-0-0)
			5'	12"	1-105 (323363-0-0)
			5'	18"	1-75 (323361-0-0)
			10'	6"	1-120 (323358-0-0)
			10'	12"	1-60 (323357-0-0)



Sure-Flex™ (PVC) Mechanically-Fastened Roofing System for InsulBase and SecurShield Recover  
Factory Mutual (FM) Approvals

**FM Approval - Field Sheet Securement Criteria (10)(11)**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)(120" only)

Membrane Width	Fastener/Plate (10)	Fastener Spacing	FM Ratings over Min. 22 Gauge	FM Ratings over Min. 22 Gauge
			Grade C Steel (33 ksi)	Grade E Steel (80 ksi) (11) or Structural Concrete
120"	HP-X/Piranha	6"		1-75
	HP-Xtra/Piranha Xtra	12"		1-60
	HP-X/Oval Barbed	6"		1-90
81"	HP-X/Piranha	6"		1-105 (303455-0-0)
		12"	1-75 (381198-0-0)	1-90 (303465-0-0)
	HP-Xtra/Piranha Xtra	12"	1-75	1-90 (303462-0-0)
	HP-X/Piranha	18"	1-60 (303466-0-0)	1-60
	HP-Xtra/Piranha Xtra	18"	1-60 (303458-0-0)	1-60
60"	HP-X/Piranha	12"	1-90 (393577-0-0)	1-90
		6"	1-120 (303576-0-0)	1-150 (303581-0-0)
40-1/2"	HP-X/Piranha	6"	1-165 (303456-0-0)	1-165
		12"	1-105 (303463-0-0)	1-105

**FM Approvals – Induction Welding Securement Criteria**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)(120" only)

FM Approvals – Induction Welding Securement			
Deck Type	Fastener/Plate	Rating	Fasteners per 4' x 8' Board
			Field
Min. 22 Gauge Grade C Steel (33 ksi)	HP-X / RhinoBond PVC Plate	1-90 (341113-0-0)	6
		1-105 (341112-0-0)	8
		1-165 (387429-0-0)	16
	HP-Xtra / RhinoBond PVC Plate	1-135 (383685-0-0)	8
Min. 22 Gauge	HP-X / RhinoBond PVC Plate	1-120 (341111-0-0)	8
Grade E Steel (11) (80 ksi)	HP-X / RhinoBond PVC Plate	1-195 (387435-0-0)	16

Sure-Flex™ (PVC) Mechanically-Fastened Roofing System for Dens-Deck and Securock  
Factory Mutual (FM) Approvals

**FM Approval - Field Sheet Securement Criteria (10)(11)**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)(120" only)

Membrane Width	Fastener/Plate (10)	Fastener Spacing	FM Ratings over Min. 22 Gauge	FM Ratings over Min. 22 Gauge
			Grade C Steel (33 ksi)	Grade E Steel (80 ksi) (11) or Structural Concrete
120"	HP-X/Piranha	6"		1-75
	HP-Xtra/Piranha Xtra	12"		1-60
	HP-X/Oval Barbed	6"		1-90
81"	HP-X/Piranha	6"		1-105 (236903-0-0)
		12"	1-75 (237573-0-0)	1-90 (237591-0-0)
	HP-Xtra/Piranha Xtra	12"	1-75	1-90 (236919-0-0)
	HP-X/Piranha	18"	1-60 (237596-0-0)	1-60
	HP-Xtra/Piranha Xtra	18"	1-60 (236915-0-0)	1-60
60"	HP-X/Piranha	12"	1-90	1-90
		6"	1-120	1-150 (393538-0-0)
40-1/2"	HP-X/Piranha	6"	1-165 (236904-0-0)	1-165 (236904-0-0)
		12"	1-105 (237538-0-0)	1-105

**FM Approvals – Induction Welding Securement Criteria**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)(120" only)

FM Approvals – Induction Welding Securement			
Deck Type	Fastener/Plate	Rating	Fasteners per 4' x 8' Board
			Field
Min. 22 Gauge Grade C Steel (33 ksi)	HP-X / RhinoBond PVC Plate	1-90 (341230-0-0)	6
		1-105 (341229-0-0)	8
		1-165 (387203-0-0)	16
	HP-Xtra / RhinoBond PVC Plate	1-135 (346233-0-0)	8
Min. 22 Gauge	HP-X / RhinoBond PVC Plate	1-120 (341228-0-0)	8
Grade E Steel (11) (80 ksi)	HP-X / RhinoBond PVC Plate	1-195 (387215-0-0)	16

FM Approvals – Induction Welding Linear Securement					
Deck Type	Fastener	Plate	Row Spacing	Fastener Spacing in Rows	Rating
Min. 22 Gauge Grade E Steel (80 ksi)	HP-X	RhinoBond PVC PLATE	5'	6"	1-180 (434606-0-0)
			5'	12"	1-105 (434605-0-0)
			5'	18"	1-75 (424604-0-0)
			10'	6"	1-120 (434603-0-0)
			10'	12"	1-60 (434602-0-0)

Sure-Flex™ (PVC) Mechanically-Fastened Roofing System for SecurShield HD  
 Factory Mutual (FM) Approvals

**FM Approval - Field Sheet Securement Criteria (10)(11)**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
 .050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)(120" only)

Membrane Width	Fastener/Plate (10)	Fastener Spacing	FM Ratings over Min. 22 Gauge	FM Ratings over Min. 22 Gauge
			Grade C Steel (33 ksi)	Grade E Steel (80 ksi) (11) or Structural Concrete
120"	HP-X/Piranha	6"		1-75
	HP-Xtra/Piranha Xtra	12"		1-60
	HP-X/Oval Barbed	6"		1-90
81"	HP-X/Piranha	6"		1-105
		12"	1-75	1-90
	HP-Xtra/Piranha Xtra	12"	1-75	1-90
	HP-X/Piranha	18"	1-60	1-60
	HP-Xtra/Piranha Xtra	18"	1-60	1-60
60"	HP-X/Piranha	12"	1-90	1-90
		6"	1-120	1-150
40-1/2"	HP-X/Piranha	6"	1-165	1-165
		12"	1-120	1-120

**FM Approvals – Induction Welding Securement Criteria**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
 .050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)(120" only)

FM Approvals – Induction Welding Securement			
Deck Type	Fastener/Plate	Rating	Fasteners per 4' x 8' Board
			Field
Min. 22 Gauge Grade C Steel (33 ksi)	HP-X / RhinoBond PVC Plate	1-90 (340690-0-0)	6
		1-105 (340680-0-0)	8
		1-165 (387204-0-0)	16
	HP-Xtra / RhinoBond PVC Plate	1-135 (346232-0-0)	8
Min. 22 Gauge	HP-X / RhinoBond PVC Plate	1-120 (340668-0-0)	8
Grade E Steel (11) (80 ksi)	HP-X / RhinoBond PVC Plate	1-195 (387216-0-0)	16

FM Approvals – Induction Welding Linear Securement					
Deck Type	Fastener	Plate	Row Spacing	Fastener Spacing in Rows	Rating
Min. 22 Gauge Grade E Steel (80 ksi)	HP-X	RhinoBond PVC PLATE	5'	6"	1-180 (434596-0-0)
			5'	12"	1-105 (434595-0-0)
			5'	18"	1-75 (434594-0-0)
			10'	6"	1-120 (434593-0-0)
			10'	12"	1-60

Sure-Flex™ (PVC) Mechanically-Fastened Roofing System for SecurShield HD Recover  
Factory Mutual (FM) Approvals

**FM Approval - Field Sheet Securement Criteria (10)(11)**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)(120" only)

Membrane Width	Fastener/Plate (10)	Fastener Spacing	FM Ratings over Min. 22 Gauge	FM Ratings over Min. 22 Gauge
			Grade C Steel (33 ksi)	Grade E Steel (80 ksi) (11) or Structural Concrete
120"	HP-X/Piranha	6"	-	1-75
	HP-Xtra/Piranha Xtra	12"	-	1-60
	HP-X/Oval Barbed	6"	-	1-90
81"	HP-X/Piranha	6"	-	1-105
		12"	1-75	1-90
	HP-Xtra/Piranha Xtra	12"	1-75	1-90
	HP-X/Piranha	18"	1-60	1-60
	HP-Xtra/Piranha Xtra	18"	1-60	1-60
60"	HP-X/Piranha	12"	1-90	1-90
		6"	1-120	1-150
40-1/2"	HP-X/Piranha	6"	1-165	1-165
		12"	1-120	1-120

**FM Approvals – Induction Welding Securement Criteria**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)(120" only)

FM Approvals – Induction Welding Securement			
Deck Type	Fastener/Plate	Rating	Fasteners per 4' x 8' Board
			Field
Min. 22 Gauge Grade C Steel (33 ksi)	HP-X / RhinoBond PVC Plate	1-90 (341113-0-0)	6
		1-105	8
		1-165	16
Min. 22 Gauge Grade E Steel (11) (80 ksi)	HP-Xtra / RhinoBond PVC Plate	1-135	8
		HP-X / RhinoBond PVC Plate	1-120
Min. 22 Gauge Grade E Steel (11) (80 ksi)	HP-X / RhinoBond PVC Plate	1-120	8
		1-195	16

### FM Class A Roof Deck Construction and Insulation Approvals (14)

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
 .050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)(120" only)

Deck Type	Insulation	Insulation Thickness	Maximum Slope for ASTM E-108 Class "A" Rating	
			Sure-Flex PVC	Sure-Flex PVC KEE HP
<b>New Construction/Tear-off:</b>  Steel (Minimum 22 gauge)  Structural Concrete	<b>Carlisle HP Recovery Board</b> or FM Approved High Density Wood Fiberboard	1/2" Min.	1"	2-1/2"
	<b>Carlisle HP Recovery Board (min. 1/2"), DensDeck Prime (min. 1/4") or Securock (min. 1/4") Over:</b> FM Approved Insulation (12)	Refer to FM RoofNAV website	5" (with DensDeck Prime overlay)	5" (with DensDeck Prime overlay)
<b>Retrofit (No Tear-off) (13):</b>  Structural Concrete	<b>Carlisle SecurShield HD</b> or SecurShield HD Plus Over: FM Approved Insulation (12)	1/2" Refer to FM RoofNAV website	1"	2"
	<b>Carlisle Polyisocyanurate InsulBase</b>	1" - 12"	1"	1-1/2"
	<b>Carlisle Insulfoam SP (12)</b>	2" - 12"	2"	2"
<b>Retrofit (No Tear-off) (13):</b>  Steel (Minimum 22 gauge)	<b>Carlisle HP Recovery Board</b>	1/2" - 1"	1"	2-1/2"
	<b>Carlisle SecurShield HD</b> or SecurShield HD Plus	1/2"		
	<b>Carlisle Polyisocyanurate InsulBase</b>	1" Max.	1"	1-1/2"

Sure-Flex™ (PVC) Mechanically-Fastened Roofing System

**ANSI-SPRI 4474 Approvals**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
 .050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)(120" only)

Membrane Width	Fastener/Plate (15)	Fastener Spacing	Ratings over Min. 22 Gauge	
			Grade C Steel (30 ksi)	Grade E Steel (80 ksi) or Structural Concrete
120"	HP-X/Piranha	6"	1-75	1-75
	HP-Xtra/Piranha Xtra	12"	1-60	1-60
	HP-X/Oval Barbed	6"	1-90	1-90
81"	HP-X/Piranha	6"	1-105	1-105
		12"	1-75	1-90
	HP-Xtra/Piranha Xtra	12"	1-90	1-90
	HP-X/Piranha	18"	1-60	1-60
	HP-Xtra/Piranha Xtra	18"	1-60	1-60
40-1/2"	HP-X/Piranha	6"	1-165	1-165
		12"	1-120	1-120

## Sure-Flex™ (PVC) Metal Retrofit Roofing System

### Underwriters Laboratories (UL) Approvals

The UL ratings achieved with the Metal Retrofit Roofing System are identical to the approvals listed for the Sure-Flex™ Mechanically-Fastened Roofing System over non-combustible decks depending on the membrane selected. [Click here for ratings.](#)

### FM Approvals

As referenced in FM Approvals Loss Prevention Data Sheet 1-31, the method of recovering an existing metal roof system with a single-ply mechanically fastened roofing system where the membrane is secured through the existing metal roof directly to the structural purlins is recognized as an appropriate recovery system when installed per the recommendations of FM.

As a standard FM Approvals requirement, additional membrane and insulation securement is necessary in the corner and/or perimeter areas as outlined in FM Property Loss Prevention Data Sheets 1-28, 1-29 and 1-31. These bulletins should be reviewed in their entirety for specific requirements concerning insulation types, fastening enhancements and other items that may be necessary.

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
 .050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)(120" only)

### FM Approvals – Metal Retrofit

Purlin Spacing	Fastener/Plate	Spacing	Rating	Coverboard	Sure-Flex PVC and Sure Flex KEE HP		
60 Inches	HP Purlin/ Piranha	6"	1-105	HD	379904-0-0		
				Recovery Board			
				Insulbase			
				DD/SR	272712-0-0		
		12"	Jan-90	12"	Jan-90	HD	281330-0-0
						Recovery Board	
						Insulbase	
						DD/SR	272720-0-0
		18"	1-60	18"	1-60	HD	281332-0-0
						Recovery Board	
						Insulbase	
						DD/SR	272723-0-0

### FM Approvals – Induction Welding Metal Retrofit

Deck Type	Fastener	Plate	Row Spacings	Fastener Spacing in Rows	Rating	Coverboard	Sure-Flex PVC	Sure-Flex KEE HP	
Structural Steel Purlin (Metal Retrofit)	HP Purlin	RhinoBond PVC Plate	5'	6"	1-180	HD	408587-0-0	408587-0-0	
						Recovery Board	373493-0-0	373495-0-0	
						Insulbase	373491-0-0	373491-0-0	
						DD/SR	373492-0-0	373492-0-0	
			5'	12"	1-105	1-105	HD	408586-0-0	408586-0-0
							Recovery Board	373488-0-0	373489-0-0
							Insulbase	373490-0-0	373490-0-0
							DD/SR	373487-0-0	373487-0-0
			5'	18"	1-75	1-75	HD	408585-0-0	408585-0-0
							Recovery Board	373485-0-0	373486-0-0
							Insulbase	373482-0-0	373482-0-0
							DD/SR	373479-0-0	373479-0-0
			10'	6"	1-120	1-120	HD	408582-0-0	408582-0-0
							Recovery Board	373480-0-0	373481-0-0
							Insulbase	373482-0-0	373482-0-0
							DD/SR	373479-0-0	373479-0-0
			10'	12"	1-60	1-60	HD	408564-0-0	408564-0-0
							Recovery Board	373477-0-0	373478-0-0
							Insulbase	372618-0-0	372618-0-0
							DD/SR	372616-0-0	372616-0-0

Sure-Flex™ (PVC) Adhered Roofing System

UL Approval - Non-Combustible - ANSI/UL 790 Spread of Flame Test (Class A)

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
 .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
 .050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Non-Combustible:** Steel; St. Concrete; Gypsum; Tectum (Min. 2" thick)

System ID	Deck Type	Insulation	Cover Board	Maximum Slope
1	Non-Combustible	InsulBase, SecurShield, SecurShield HD, SecurShield HD Plus or SecurShield HD Composite- any combination, any thickness	N/A	2"
2		Any UL Classified EPS or XPS Insulation, any thickness	Minimum 1/2" SecurShield HD, SecurShield HD Plus or SecurShield HD Composite	2"
3		Minimum 1/2" layer of InsulBase, SecurShield, or SecurShield HD Composite over any UL Classified EPS or XPS Insulation, maximum 1-1/4" pcf, any thickness	N/A	2"
4		Insulfoam HD Composite or Insulfoam HD Composite over Insulfoam EPS, any thickness and density.	N/A	2"
5		Any UL Classified Insulation, any thickness (OPTIONAL)	Minimum 1/4" SECUROCK® Gypsum-Fiber Roof Boards	Unlimited
6		Any UL Classified Insulation, any thickness (OPTIONAL)	Minimum 1/4" DensDeck Prime Roof Boards	Unlimited
7		Any UL Classified Insulation, any thickness (OPTIONAL)	Minimum 1/2" HP Recovery Board	1-1/2"
8		Any UL Classified Insulation, any thickness (OPTIONAL)	Minimum 7/16" APA Rated OSB or minimum 1-1/2" StormBase	3"
9		Any UL Classified Insulation, any thickness (OPTIONAL)	Minimum 1/2" EcoStorm VSH	2-1/2"
10	Precast concrete with grouted joints	N/A	N/A	1-1/2"



Sure-Flex™ (PVC) Adhered Roofing System

**UL Approval - Combustible - ANSI/UL 790 Spread of Flame Test - Class A**

**Membrane** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
**Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
 .050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Combustible:** 7/16-in. (minimum) thick non-veneer APA-rated sheathing (oriented strand board panels, structural particleboard panels, composite panels or waferboard panels); 15/32-in. (minimum) thick plywood 3/4 in. (minimum) wood; Tectum (less than 2" thick)

System ID	Thermal Barrier/ Base Sheet	Insulation	Cover Board (17)	Maximum Slope
<b>Combustible (7) - ANSI/UL 790 Spread of Flame Test-Class A</b>				
1	Minimum 1/4" SECUROCK® Gypsum Fiber or Glass Mat Roof Boards (16)	Any UL Classified Carlisle Polyisocyanurate Insulation, any combination, any thickness.	N/A	2"
2	Minimum 1/4" DensDeck or DensDeck Prime Roof Boards (16)	Any UL Classified Carlisle Polyisocyanurate Insulation, any combination, any thickness.	N/A	2"
3	N/A	Minimum 3" layer or two layers of 1-1/2" SecurShield or SecurShield HD Composite. (16)(18)	N/A	1/2"
4	N/A	Minimum 1/2" layer SecurShield or SecurShield HD Composite over a 2-1/2" (minimum) layer of Carlisle InsulBase Insulation. (16)(19)	N/A	1/2"
5	Carlisle FR Base Sheet	Minimum 1.9" layer of SecurShield or SecurShield HD Composite. (16)(19)	N/A	1/2"
6	N/A	Minimum 2-1/2" layer of any UL Classified Carlisle Polyisocyanurate Insulation, any combination. (16)	Minimum 1/2" SecurShield HD or SecurShield HD Plus	1/2"
7	Carlisle FR Base Sheet	Minimum 1.4" layer of any UL Classified Carlisle Polyisocyanurate Insulation, any combination. (16)	Minimum 1/2" SecurShield HD or SecurShield HD Plus	1/2"
8	N/A	Minimum 4" layer of any UL Classified EPS Insulation. (16)(21)	Minimum 1/2" SecurShield HD or SecurShield HD Plus	1/2"
9	N/A	Minimum 1-1/2" layer of Insulfoam HD Composite over a minimum 3" layer of Insulfoam EPS. (16)(21)	N/A	1/2"
10	N/A	Minimum 2" layer of Insulfoam HD Composite over a minimum 2-1/2" layer of Insulfoam EPS. (16)(21)	N/A	1/2"
11	N/A	Any UL Classified Carlisle Polyisocyanurate Insulation, any combination, any thickness.	Minimum 1/4" SECUROCK® Gypsum Fiber Roof Board (16)	Unlimited
12	N/A	Any UL Classified Insulation, any thickness (OPTIONAL)	Minimum 3/8" SECUROCK® Gypsum Fiber Roof Board (16)	2"
13	N/A	Any UL Classified Insulation, any thickness (OPTIONAL)	Minimum 1/2" SECUROCK® Gypsum Fiber Roof Board (16)	4"
14	One Ply of Type G2	Any UL Classified Insulation, any thickness (OPTIONAL)	Minimum 1/4" SECUROCK® Gypsum Fiber Roof Board (16)	3"
15	N/A	Any UL Classified Insulation, any thickness (OPTIONAL)	Minimum 1/4" DensDeck Prime Roof Boards (16)	Unlimited
16	Three or Two layers of Carlisle FR Base Sheet	Any UL Classified Carlisle Polyisocyanurate Insulation, any combination, any thickness.	N/A	3/4"
17	N/A	Any UL Classified Polyiso Insulation, any thickness (OPTIONAL)	SecurShield HD (all insulation and roof deck joints must be staggered 12")	1'
18	N/A	Any UL Classified Polyiso Insulation, any thickness (OPTIONAL)	Minimum 1" SecurShield, SecurShield NH or SecurShield HD Composite. (1)(3) (all insulation and roof deck joints must be staggered 12")	1/2"
19	N/A	Minimum 2" layer of a UL Classified Carlisle Polyiso Insulation	Minimum 1/2" EcoStorm VSH	1"

Sure-Flex™ (PVC) Adhered Roofing System

**UL Approval - Combustible - ANSI/UL 790 Spread of Flame Test - Class B**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
 .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
 .050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Combustible:** 7/16-in. (minimum) thick non-veneer APA-rated sheathing (oriented strand board panels, structural particleboard panels, composite panels or waferboard panels); 15/32-in. (minimum) thick plywood 3/4 in. (minimum) wood; Tectum (less than 2" thick)

System ID	Thermal Barrier/Base Sheet	Insulation	Cover Board	Maximum Slope
<b>Combustible - ANSI/UL 790 Spread of Flame Test-Class B</b>				
1	N/A	Minimum 1.9" layer of SecurShield or SecurShield HD Composite. (22)(23)	N/A	1/2"
2	N/A	Minimum 1.4" layer of any UL Classified Carlisle Polyisocyanurate Insulation. (22)	Minimum 1/2" SecurShield HD or SecurShield HD Plus	1/2"
3	One Layer of Carlisle FR Base Sheet	Any UL Classified Carlisle Polyisocyanurate Insulation, any combination, any thickness. (OPTIONAL)	N/A	1/2"
<b>Non-Combustible - ANSI/UL 790 Spread of Flame Test-Class B</b>				
1	N/A	Polyisocyanurate InsulBase, SecurShield, any thickness.	N/A	2-1/2"

Sure-Flex™ (PVC) Adhered Roofing System

**UL Approval - Combustible and Non-Combustible - ANSI/UL 790 Spread of Flame Test - Class C**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
 .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
 .050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Combustible:** 7/16-in. (minimum) thick non-veneer APA-rated sheathing (oriented strand board panels, structural particleboard panels, composite panels or waferboard panels); 15/32-in. (minimum) thick plywood 3/4 in. (minimum) wood; Tectum (less than 2" thick)

**Non-Combustible:** Steel, St. Concrete, Gypsum or Tectum (Min. 2" thick)

System ID	Thermal Barrier/Base Sheet	Insulation	Cover Board	Maximum Slope
<b>Combustible - ANSI/UL 790 Spread of Flame Test-Class C</b>				
1	N/A	2" layer of any UL Classified Carlisle Polyisocyanurate Insulation	N/A	Unlimited
2	N/A	1/2" Recovery Board	N/A	1"
<b>Non-Combustible - ANSI/UL 790 Spread of Flame Test-Class C</b>				
1	N/A	Any layer of UL Classified Carlisle Polyisocyanurate Insulation	N/A	Unlimited

FM Approvals  
Design "A" Adhered Roofing Systems

**SecurShield HD Ratings - New Construction**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Membrane Adhesive:** Low VOC PVC Bonding Adhesive (LVOC) or HydroBond Water-Based PVC Bonding Adhesive (HydroBond)

**Base and Top Layer Adhesive:** FAST = Flexible FAST and Flexible FAST Dual Tank

Base Insulation Layer (Max. thickness 36")	Base Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Top Insulation Layer	Top Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Rating	Sure-Flex PVC	Sure-Flex KEE HP (LVOC Only)
					RoofNAV Number	
<b>Steel Deck (Min. 22 Gauge)</b>						
FM Approved	Loose laid	1/2" SecurShield HD	12 (2.67 sq. ft)	1-75	461352-0-0	-
FM Approved	Loose laid	1/2" SecurShield HD	16 (2 sq. ft)	1-90	385920-0-0	385924-0-0
Min. 1-1/2" InsulBase Polyiso	10 (3.2 sq. ft.)	1/2" SecurShield HD	6" ribbons of FAST	1-90	345060-0-0 (LVOC)	-
Min. 1-1/2" InsulBase Polyiso	10 (3.2 sq. ft.)	1/2" SecurShield HD	12" ribbons of FAST	1-90	462145-0-0 (LVOC)	462147-0-0 (LVOC)
Min. 1-1/2" InsulBase Polyiso	10 (3.2 sq. ft.)	1/2" SecurShield HD	6" ribbons of FAST	1-90	353920-0-0 (HydroBond)	-
Min. 2" InsulBase Polyiso	8 (4 sq. ft)	1/2" SecurShield HD	6" ribbons of FAST	1-90	353921-0-0 (LVOC)	353925-0-0 (LVOC)
Min. 2" InsulBase Polyiso	16 (2 sq. ft.)	1/2" SecurShield HD	12" ribbons of FAST	1-120	454528-0-0	454529-0-0
Min. 2" InsulBase Polyiso	20 (1.6 sq. ft.)	1/2" SecurShield HD	6" ribbons of FAST	1-135	454532-0-0	454533-0-0
Min. 2" InsulBase Polyiso	32 (1 sq. ft.)	1/2" SecurShield HD	4" ribbons of FAST	1-225	454541-0-0	454542-0-0
Min. 1-1/2" InsulBase Polyiso	24 (1.33 sq. ft.)	1/2" SecurShield HD	4" ribbons of FAST	1-165	446204-0-0	446205-0-0 (LVOC)
Min. 1/2" DensDeck Prime or Securock	8 (4 sq. ft)	SecurShield HD over InsulBase Polyiso	6" ribbons of FAST	1-90	-	450181-0-0
<b>Steel Deck (Min. 22 Gauge)/VapAir Seal 725 TR and Cav-Grip III or 702 Primer</b>						
Min. 1/2" Dens-Deck Prime or Securock	8 (4 sq. ft)	Min.1/2" SecurShield HD over Min. 1/2" InsulBase	12" ribbons of FAST	1-90	404126-0-0	404128-0-0 (LVOC)
Min. 1/2" DensDeck Prime or Securock	16 (2 sq. ft.)	Min.1/2" SecurShield HD over Min. 1" Insulfoam	6" ribbons of FAST	1-90	391966-0-0	-
<b>Steel Deck (Min. 22 Gauge)/SureMB 90TG or 120TG Bast Torch Applied</b>						
Min. 1/2" Dens-Deck Prime or Securock	8 (4 sq. ft)	Min.1/2" SecurShield HD over Min. 1/2" InsulBase	12" ribbons of FAST	1-90	-	-
<b>Concrete Deck</b>						
Min. 1/2" InsulBase Polyiso	12" ribbons of FAST	1/2" SecurShield HD	12" ribbons of FAST	1-225	424763-0-0 (Hydrobond)	-
Min. 1/2" InsulBase Polyiso	10 (3.2 sq. ft.)	1/2" SecurShield HD	12" ribbons of FAST	1-90	424668-0-0 (Hydrobond)	-
Min. 3/4" Optim-R	6" ribbons of FAST	1/2" SecurShield HD	6" ribbons of FAST	1-120	438110-0-0 (LVOC)	-
Min. 3/4" Optim-R	6" ribbons of FAST	1/2" SecurShield HD	6" ribbons of FAST	1-120	438112-0-0 (HydroBond)	438113-0-0 (LVOC)
Min. 2" Insulfoam EPS	12" ribbons of FAST	1/2" SecurShield HD	12" ribbons of FAST	1-285	429737-0-0 (HydroBond)	-
Min. 2" Insulfoam EPS	12" ribbons of FAST	1/2" SecurShield HD	12" ribbons of FAST	1-285	429725-0-0 (LVOC)	429726-0-0 (LVOC)
Min. 1-1/2" Insulfoam HD Comp	Full-Coverage FAST	-	-	1-225	424573-0-0 (Hydrobond)	-
Min. 1/2" InsulBase Polyiso	Hot Asphalt	1/2" SecurShield HD	Hot Asphalt	1-240	-	-

FM Approvals  
Design "A" Adhered Roofing Systems

**SecurShield HD Ratings - New Construction**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Membrane Adhesive:** Low VOC PVC Bonding Adhesive (LVOC) or HydroBond Water-Based PVC Bonding Adhesive (HydroBond)

**Base and Top Layer Adhesive:** FAST = Flexible FAST and Flexible FAST Dual Tank

Base Insulation Layer (Max. thickness 36")	Base Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Top Insulation Layer	Top Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Rating	Sure-Flex PVC	Sure-Flex KEE HP (LVOC Only)
					RoofNAV Number	
Min. 1/2" DensDeck Prime or Securock	8 (4 sq. ft.)	SecurShield HD over InsulBase Polyiso	6" ribbons of FAST	1-90	-	450180-0-0
Min. 1/2" InsulBase Polyiso	Loose laid	1/2" SecurShield HD	16 (2 sq. ft.)	1-90	434257-0-0 (LVOC)	434257-0-0 (LVOC)
Min. 2" ChannelDry EPS	Loose laid	Min. 2" Insulfoam HD Comp	6" ribbons of FAST	1-90	427788-0-0	427788-0-0
<b>Concrete Deck/VapAir Seal 725 TR and Cav-Grip III, 702-LV or 702 Primer</b>						
Min. 3/4" Optim-R	6" ribbons of FAST	1/2" SecurShield HD	6" ribbons of FAST	1-165 702	437593-0-0 (LVOC)	437597-0-0 (LVOC)
Min. 3/4" Optim-R	6" ribbons of FAST	1/2" SecurShield HD	6" ribbons of FAST	1-120 702	437596-0-0 (HydroBond)	-
Min. 1-1/2" InsulBase Polyiso or Min. 2" Insulfoam EPS	12" ribbons of FAST	1/2" SecurShield HD	12" ribbons of FAST	1-255	429729-0-0 (LVOC)	429730-0-0 (LVOC)
					429739-0-0 (HydroBond)	-
Min. 1/2" InsulBase Polyiso	6" ribbons of FAST	1/2" SecurShield HD	6" ribbons of FAST	1-315	-	-
Min. 1-1/2" InsulBase Polyiso	6" ribbons of FAST	1/2" SecurShield HD	6" ribbons of FAST	1-465	-	-
<b>Concrete Deck/SureMB 90TG and 120TG Base Torch Applied/Cut-Back Asphalt Primer</b>						
Min. 1/2" InsulBase Polyiso	12" ribbons of FAST	1/2" SecurShield HD	12" ribbons of FAST	1-240	-	-
Min. 1/2" InsulBase Polyiso or 1-1/2" Securshield	12" ribbons of FAST	1/2" SecurShield HD	12" ribbons of FAST	1-225	424798-0-0 (Hydrobond)	-
Min. 1/2" InsulBase Polyiso	6" ribbons of FAST	1/2" SecurShield HD	6" ribbons of FAST	1-315	-	-
Min. 1-1/2" InsulBase Polyiso	6" ribbons of FAST	1/2" SecurShield HD	6" ribbons of FAST	1-465	-	-
<b>Gypsum Deck Tear-Off</b>						
Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	1/2" SecurShield HD	12" ribbons of FAST	1-90	-	-
<b>Gypsum Deck Tear-Off/VapAir Seal 725TR and Cav-Grip III, 702-LV or 702 Primer</b>						
Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	1/2" SecurShield HD	12" ribbons of FAST	1-90	-	-
<b>Cellular Lightweight Insulating Concrete Over Steel Decking (Min. 22 Gauge)</b>						
FM Approved	Loose laid	1/2" SecurShield HD	12 (2.67 sq. ft.)	1-75	-	-
FM Approved	Loose laid	1/2" SecurShield HD	16 (2 sq. ft.)	1-90	-	-
-	-	1/2" SecurShield HD	12 (2.67 sq. ft.)	1-75	-	-
-	-	1/2" SecurShield HD	16 (2 sq. ft.)	1-90	-	-

FM Approvals  
Design "A" Adhered Roofing Systems  
**SecurShield HD Ratings - Recover**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Membrane Adhesive:** Low VOC PVC Bonding Adhesive (LVOC) or HydroBond Water-Based PVC Bonding Adhesive (HydroBond)

**Base and Top Layer Adhesive:** FAST = Flexible FAST and Flexible FAST Dual Tank

Base Insulation Layer (Max. thickness 36")	Base Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Top Insulation Layer	Top Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Rating	Sure-Flex PVC	Sure-Flex KEE HP (LVOC Only)
					RoofNAV Number	
<b>Steel Deck (Min. 22 Gauge)</b>						
-	-	1/2" SecurShield HD	12 (2.67 sq. ft)	1-75	-	-
-	-	1/2" SecurShield HD	16 (2 sq. ft)	1-90	395944-0-0	395945-0-0
-	-	1/2" SecurShield HD	6" ribbons of FAST	1-90	-	-
-	-	1/2" SecurShield HD	4" ribbons of FAST	1-150	-	-
<b>Concrete Deck</b>						
Min. 1/2" InsulBase Polyiso	6" ribbons of FAST	1/2" SecurShield HD	6" ribbons of FAST	1-150	-	-
-	-	1/2" SecurShield HD	6" ribbons of FAST	1-150	-	-
<b>Gypsum Deck</b>						
-	-	1/2" SecurShield HD	6" ribbons of FAST	1-90	-	-

FM Approvals  
Design "A" Adhered Roofing Systems

**SecurShield HD Plus Ratings - New Construction**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Membrane Adhesive:** Low VOC PVC Bonding Adhesive (LVOC) or HydroBond Water-Based PVC Bonding Adhesive (HydroBond)

**Base and Top Layer Adhesive:** FAST = Flexible FAST and Flexible FAST Dual Tank

Base Insulation Layer (Max. thickness 36")	Base Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Top Insulation Layer	Top Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Rating	Sure-Flex PVC	Sure-Flex KEE HP (LVOC Only)
					RoofNAV Number	
<b>Steel Deck (Min. 22 Gauge)</b>						
Min. 1-1/2" InsulBase Polyiso	Loose laid	1/2" SecurShield HD Plus	8 (4 sq. ft)	1-90	343627-0-0	343628-0-0
FM Approved	Loose laid	1/2" SecurShield HD Plus	18 (1.8 sq. ft)	1-120	371287-0-0 LVOC 369888-0-0 (HydroBond)	371288-0-0
FM Approved	Loose laid	1/2" SecurShield HD Plus	24 (1.33 sq. ft)	1-165	371285-0-0	-
FM Approved	Loose laid	1/2" SecurShield HD Plus	24 (1.33 sq. ft)	1-225 (30)	371286-0-0	-
Min. 1-1/2" InsulBase Polyiso	10 (3.2 sq. ft.)	1/2" SecurShield HD Plus	6" ribbons of FAST	1-90	-	-
Min. 2" InsulBase Polyiso	8 (4 sq. ft)	1/2" SecurShield HD Plus	6" ribbons of FAST	1-90	-	-
Min. 2" InsulBase Polyiso	16 (2 sq. ft.)	1/2" SecurShield HD Plus	12" ribbons of FAST	1-120	-	-
Min. 2" InsulBase Polyiso	20 (1.6 sq. ft.)	1/2" SecurShield HD Plus	6" ribbons of FAST	1-135	-	-
Min. 2" InsulBase Polyiso	32 (1 sq. ft.)	1/2" SecurShield HD Plus	4" ribbons of FAST	1-225	-	-
Min. 1-1/2" InsulBase Polyiso	24 (1.33 sq. ft.)	1/2" SecurShield HD Plus	4" ribbons of FAST	1-165	-	-
Min. 1/2" DensDeck Prime or Securock	16 (2 sq. ft.)	1/2" SecurShield HD Plus over InsulBase Polyiso	6" ribbons of FAST	1-90	-	-
<b>Steel Deck (Min. 22 Gauge)/VapAir Seal 725 TR and Cav-Grip III or 702 Primer</b>						
Min. 1/2" DensDeck Prime or Securock	8 (4 sq. ft.)	1/2" SecurShield HD Plus over InsulBase Polyiso	6" ribbons of FAST	1-90	-	-
<b>Steel Deck (Min. 22 Gauge)/SureMB 90TG or 120TG Base Torch Applied</b>						
Min. 1/2" DensDeck Prime or Securock	8 (4 sq. ft.)	1/2" SecurShield HD Plus over InsulBase Polyiso	6" ribbons of FAST	1-90	-	-
<b>Concrete Deck</b>						
Min. 1/2" InsulBase Polyiso	12" ribbons of FAST	1/2" SecurShield HD Plus	12" ribbons of FAST	1-225	387061-0-0 (LVOC)	387338-0-0
					424761-0-0 (HydroBond)	-
Min. 2" Insulfoam EPS	12" ribbons of FAST	1/2" SecurShield HD Plus	12" ribbons of FAST	1-285	429725-0-0 (LVOC)	429726-0-0
Min. 2" Insulfoam EPS	12" ribbons of FAST	1/2" SecurShield HD Plus	12" ribbons of FAST	1-285	429737-0-0 (HydroBond)	429726-0-0
Min. 1/2" InsulBase Polyiso	Loose laid	1/2" SecurShield HD Plus	16 (2 sq. ft.)	1-90	434258-0-0 (LVOC)	434258-0-0 (LVOC)
Min. 1/2" InsulBase Polyiso	Hot Asphalt	1/2" SecurShield HD Plus	Hot Asphalt	1-240	-	-
<b>Concrete Deck/VapAir Seal 725 TR and Cav-Grip III, 702-LV or 702 Primer</b>						
Min. 1/2" InsulBase Polyiso or Min. 2" Insulfoam	12" ribbons of FAST	1/2" SecurShield HD Plus	12" ribbons of FAST	1-255	429729-0-0 (LVOC)	429730-0-0
					429739-0-0 (HydroBond)	-
Min. 1/2" InsulBase Polyiso	6" ribbons of FAST	1/2" SecurShield HD Plus	6" ribbons of FAST	1-315	-	-

FM Approvals  
Design "A" Adhered Roofing Systems

**SecurShield HD Plus Ratings - New Construction**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Membrane Adhesive:** Low VOC PVC Bonding Adhesive (LVOC) or HydroBond Water-Based PVC Bonding Adhesive (HydroBond)

**Base and Top Layer Adhesive:** FAST = Flexible FAST and Flexible FAST Dual Tank

Base Insulation Layer (Max. thickness 36")	Base Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Top Insulation Layer	Top Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Rating	Sure-Flex PVC	Sure-Flex KEE HP (LVOC Only)
					RoofNAV Number	
Min. 1-1/2" InsulBase Polyiso	6" ribbons of FAST	1/2" SecurShield HD Plus	6" ribbons of FAST	1-465	-	-
<b>Concrete Deck/SureMB 90TG and 120TG Base Torch Applied/Cut-Back Asphalt Primer</b>						
Min. 1/2" InsulBase Polyiso	12" ribbons of FAST	1/2" SecurShield HD Plus	12" ribbons of FAST	1-225	393033-0-0 (LVOC)	393038-0-0
Min. 1/2" InsulBase Polyiso	12" ribbons of FAST	1/2" SecurShield HD Plus	12" ribbons of FAST	1-225	424798-0-0 (HydroBond)	-
Min. 1/2" InsulBase Polyiso	6" ribbons of FAST	1/2" SecurShield HD Plus	6" ribbons of FAST	1-315	-	-
Min. 1-1/2" InsulBase Polyiso	6" ribbons of FAST	1/2" SecurShield HD Plus	6" ribbons of FAST	1-465	-	-
<b>Gypsum Deck Tear-Off</b>						
Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	1/2" SecurShield HD Plus	12" ribbons of FAST	1-90	-	-
<b>Gypsum Deck Tear-Off/VapAir Seal 725TR and Cav-Grip III, 702-LV or 702 Primer</b>						
Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	1/2" SecurShield HD Plus	12" ribbons of FAST	1-90	-	-
<b>Cellular Lightweight Insulating Concrete Over Steel Decking (Min. 22 Gauge)</b>						
FM Approved	Loose laid	1/2" SecurShield HD Plus	12 (2.67 sq. ft)	1-75	-	-
FM Approved	Loose laid	1/2" SecurShield HD Plus	16 (2 sq. ft)	1-90	-	-
-	-	1/2" SecurShield HD Plus	12 (2.67 sq. ft)	1-75	-	-
-	-	1/2" SecurShield HD Plus	16 (2 sq. ft)	1-90	-	-



FM Approvals  
Design "A" Adhered Roofing Systems

**SecurShield HD Plus Ratings - Recover**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Membrane Adhesive:** Low VOC PVC Bonding Adhesive (LVOC) or HydroBond Water-Based PVC Bonding Adhesive (HydroBond)

**Base and Top Layer Adhesive:** FAST = Flexible FAST and Flexible FAST Dual Tank

Base Insulation Layer (Max. thickness 36")	Base Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Top Insulation Layer	Top Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Rating	Sure-Flex PVC	Sure-Flex KEE HP (LVOC Only)
					RoofNAV Number	
<b>Steel Deck (Min. 22 Gauge)</b>						
-	-	1/2" SecurShield HD Plus	8 (4 sq. ft)	1-90	396132-0-0	396133-0-0
-	-	1/2" SecurShield HD Plus	6" ribbons of FAST	1-90	-	-
-	-	1/2" SecurShield HD Plus	4" ribbons of FAST	1-150	-	-
<b>Concrete Deck</b>						
Min. 1/2" InsulBase Polyiso	6" ribbons of FAST	1/2" SecurShield HD Plus	6" ribbons of FAST	1-150	-	-
-	-	1/2" SecurShield HD Plus	6" ribbons of FAST	1-150	-	-
<b>Gypsum Deck</b>						
Min. 1-1/2" InsulBase Polyiso	Full-Coverage FAST	1/2" SecurShield HD Plus	Full-Coverage FAST	1-90	-	-

FM Approvals  
Design "A" Adhered Roofing Systems

**InsulBase Polyiso Ratings - New Construction**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Membrane Adhesive:** Low VOC PVC Bonding Adhesive (LVOC) or HydroBond Water-Based PVC Bonding Adhesive (HydroBond)

**Base and Top Layer Adhesive:** FAST = Flexible FAST and Flexible FAST Dual Tank

Base Insulation Layer (Max. thickness 36")	Base Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Top Insulation Layer	Top Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Rating	Sure-Flex PVC	Sure-Flex KEE HP (LVOC Only)
					RoofNAV Number	
<b>Steel Deck (Min. 22 Gauge)</b>						
Min. 1-1/2" InsulBase Polyiso	16 (2 sq. ft.)	-	-	1-90	187383-0-0 (LVOC)	-
Min. 2" InsulBase Polyiso	8 (4 sq. ft.)	-	-	1-90	187575-0-0 (LVOC)	-
Min. 2" InsulBase Polyiso	8 (4 sq. ft.)	-	-	1-90	345900-0-0 (HydroBond)	-
Min. 2" InsulBase Polyiso	20 (1.6 sq. ft.)	-	-	1-135	325911-0-0 (LVOC)	-
Min. 1/2" InsulBase Polyiso	Loose laid	Min. 2" InsulBase Polyiso	20 (1.6 sq. ft.)	1-135	424164-0-0	-
Min. 1-1/2" InsulBase Polyiso	10 (3.2 sq. ft.)	Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	1-90	-	-
Min. 2" InsulBase Polyiso	8 (4 sq. ft.)	Min. 2" InsulBase Polyiso	12" ribbons of FAST	1-90	187137-0-0 (LVOC)	-
Min. 2" InsulBase Polyiso	16 (2 sq. ft.)	Min. 1" InsulBase Polyiso	12" ribbons of FAST	1-105	454530-0-0	454531-0-0
Min. 2" InsulBase Polyiso	20 (1.6 sq. ft.)	Min. 1" InsulBase Polyiso	6" ribbons of FAST	1-150	455835-0-0	455836-0-0
Min. 2" InsulBase Polyiso	32 (1 sq. ft.)	Min. 1" InsulBase Polyiso	4" ribbons of FAST	1-270	455875-0-0	455877-0-0
Min. 1/2" Dens Deck or DensDeck Prime	16 (2 sq. ft.)	Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	1-90	181116-0-0 (LVOC)	-
<b>Steel Deck (Min. 22 Gauge)/VapAir Seal 725 TR with Cav-Grip III or 702 Primer</b>						
Min. 1/2" DensDeck Prime or Securock	8 (4 sq. ft.)	Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	1-90	211245-0-0 (LVOC)	400229-0-0
<b>Steel Deck (Min. 22 Gauge)/SureMB 90TG or 120 TG Base Torch Applied</b>						
Min. 1/2" DensDeck Prime or Securock	8 (4 sq. ft.)	Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	1-90	454499-0-0	454400-0-0
<b>Concrete Deck</b>						
Min. 1-1/2" InsulBase Polyiso	FAST Full-Coverage	-	-	1-450	424518-0-0 (HydroBond)	-
Min. 1/2" InsulBase Polyiso	12" ribbons of FAST	-	-	1-285	-	434245-0-0 (LVOC)
Min. 1/2" InsulBase Polyiso	12" ribbons of FAST	-	-	1-315	424559-0-0 (HydroBond)	-
Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	-	-	1-315	269947-0-0 (LVOC)	-
Min. 1-1/2" InsulBase Polyiso	Hot Asphalt	-	-	1-315	269947-0-0 (LVOC)	-
				1-300	424551-0-0 (HydroBond)	-
Min. 2" InsulBase Polyiso	8 (4 sq. ft.)	Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	1-90	424561-0-0 (HydroBond)	-
Min. 1-1/2" InsulBase Polyiso	16 (2 sq. ft.)	Min. 1-1/2" InsulBase Polyiso	Full-Coverage FAST	1-90	424523-0-0 (HydroBond)	-
Min. 1" InsulBase Polyiso	20 (1.6 sq. ft.)	-	-	1-90	424552-0-0 (HydroBond)	-
Min. 1-1/2" InsulBase Polyiso	16 (2 sq. ft.)	-	-	1-90	424534-0-0 (HydroBond)	-
Min. 2" InsulBase Polyiso	8 (4 sq. ft.)	-	-	1-90	424562-0-0 (HydroBond)	-
<b>Concrete Deck/VapAir Seal 725 TR and Cav-Grip III, 702-LV or 702 Primer</b>						

FM Approvals  
Design "A" Adhered Roofing Systems

**InsulBase Polyiso Ratings - New Construction**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Membrane Adhesive:** Low VOC PVC Bonding Adhesive (LVOC) or HydroBond Water-Based PVC Bonding Adhesive (HydroBond)

**Base and Top Layer Adhesive:** FAST = Flexible FAST and Flexible FAST Dual Tank

Base Insulation Layer (Max. thickness 36")	Base Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Top Insulation Layer	Top Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Rating	Sure-Flex PVC	Sure-Flex KEE HP (LVOC Only)
					RoofNAV Number	
Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	-	-	1-255	434244-0-0 (LVOC)	434244-0-0
Min. 1/2" InsulBase Polyiso	6" ribbons of FAST	-	-	1-315	462916-0-0	462919-0-0
Min. 1-1/2" InsulBase Polyiso	6" ribbons of FAST	-	-	1-465	462918-0-0	462920-0-0
<b>Concrete Deck/SureMB 90TG and 120TG Base Torch Applied/Cut-Back Asphalt Primer</b>						
Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	1-315	-	-
Min. 1/2" InsulBase Polyiso	6" ribbons of FAST	-	-	1-315	462947-0-0	462949-0-0
Min. 1-1/2" InsulBase Polyiso	6" ribbons of FAST	-	-	1-465	462948-0-0	462950-0-0
<b>Gypsum Deck Tear-Off</b>						
Min. 1-1/2" InsulBase Polyiso	16 (2 sq. ft)	-	-	1-90	-	-
Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	-	-	1-90	164217-0-0 (LVOC)	-
<b>Gypsum Deck Tear-Off/VapAir Seal 725TR and Cav-Grip III, 702-LV or 702 Primer</b>						
Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	-	-	1-90	-	-
<b>Cellular Lightweight Insulating Concrete Over Steel Decking (Min. 22 Gauge)</b>						
Min. 1-1/2" InsulBase Polyiso	16 (2 sq. ft)	-	-	1-90	-	-
Min. 2" InsulBase Polyiso	8 (4 sq. ft)	-	-	1-90	-	-
Min. 2" InsulBase Polyiso	20 (1.6 sq. ft)	-	-	1-150	-	-

FM Approvals  
Design "A" Adhered Roofing Systems

**InsulBase Polyiso Ratings - Recover**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Membrane Adhesive:** Low VOC PVC Bonding Adhesive (LVOC) or HydroBond Water-Based PVC Bonding Adhesive (HydroBond)

**Base and Top Layer Adhesive:** FAST = Flexible FAST and Flexible FAST Dual Tank

Base Insulation Layer (Max. thickness 36")	Base Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Top Insulation Layer	Top Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Rating	Sure-Flex PVC	Sure-Flex KEE HP (LVOC Only)
					RoofNAV Number	
<b>Steel Deck (Min. 22 Gauge)</b>						
Min. 1" InsulBase Polyiso	20 (1.6 sq. ft)	-	-	1-90	164654-0-0 (LVOC)	-
Min. 1/2" InsulBase Polyiso	6" ribbons of FAST	-	-	1-90	-	-
<b>Concrete Deck</b>						
Min. 1/2" InsulBase Polyiso	6" ribbons of FAST	-	-	1-90	303378-0-0 (LVOC)	-
<b>Gypsum Deck</b>						
1-1/2" InsulBase Polyiso	16 (2 sq. ft.)	-	-	1-90	371869-0-0 (LVOC)	371870-0-0
Min. 1/2" InsulBase Polyiso	6" ribbons of FAST	-	-	1-90	-	-

FM Approvals  
Design "A" Adhered Roofing Systems

**SecurShield and SecurShield HD Composite Ratings - New Construction**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Membrane Adhesive:** Low VOC PVC Bonding Adhesive (LVOC) or HydroBond Water-Based PVC Bonding Adhesive (HydroBond)

**Base and Top Layer Adhesive:** FAST = Flexible FAST and Flexible FAST Dual Tank

Base Insulation Layer (Max. thickness 36")	Base Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Top Insulation Layer	Top Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Rating	Sure-Flex PVC	Sure-Flex KEE HP (LVOC Only)
					RoofNAV Number	
<b>Steel Deck (Min. 22 Gauge)</b>						
Min. 1-1/2" SecurShield or SecurShield HD Comp.	16 (2 sq. ft)	-	-	1-90	-	-
Min. 2" SecurShield or SecurShield HD Comp.	8 (4 sq. ft)	-	-	1-90	345915-0-0 (HydroBond)	-
Min. 2" SecurShield or SecurShield HD Comp.	20 (1.6 sq. ft.)	-	-	1-150	-	-
Min. 2" SecurShield or SecurShield HD Comp.	32 (1 sq. ft.)	-	-	1-225 (30)	325903-0-0	399391-0-0
Min. 2" SecurShield or SecurShield HD Comp.	33 (1 sq. ft.)	-	-	1-225 (30)	424166-0-0 (HydroBond)	-
Min. 1-1/2" InsulBase Polyiso	10 (3.2 sq. ft.)	1-1/2" SecurShield or 2" SecurShield HD Comp.	12" ribbons of FAST	1-90	-	-
Min. 2" InsulBase Polyiso	8 (4 sq. ft)	Min. 2" SecurShield HD Comp.	12" ribbons of FAST	1-90	461415-0-0	-
Min. 2" InsulBase Polyiso	16 (2 sq. ft.)	Min. 1/2" SecurShield Polyiso	12" ribbons of FAST	1-105	454530-0-0	454531-0-0
Min. 2" InsulBase Polyiso	20 (1.6 sq. ft.)	Min. 1" SecurShield Polyiso	6" ribbons of FAST	1-150	455835-0-0	455836-0-0
Min. 2" InsulBase Polyiso	32 (1 sq. ft.)	Min. 1" SecurShield Polyiso	4" ribbons of FAST	1-270	455875-0-0	455877-0-0
Min. 1/2" DensDeck Prime or Securock	16 (2 sq. ft.)	Min. 2" SecurShield or SecurShield HD Comp.	12" ribbons of FAST	1-90	-	-
<b>Steel Deck (Min. 22 Gauge)/VapAir Seal 725 TR and Cav-Grip III or 702 Primer</b>						
Min. 1/2" DensDeck Prime or Securock	8 (4 sq. ft.)	Min. 2" SecurShield or SecurShield HD Comp.	12" ribbons of FAST	1-90	400813-0-0	400819-0-0
<b>Steel Deck (Min. 22 Gauge)/SureMB 90TG or 120TG Base Torch Applied</b>						
Min. 1/2" DensDeck Prime or Securock	8 (4 sq. ft)	1-1/2" SecurShield	12" ribbons of FAST	1-90	454499-0-0	454500-0-0
<b>Concrete Deck</b>						
Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	Min. 1-1/2" SecurShield	12" ribbons of FAST	1-225	424569-0-0 (HydroBond)	-
Min. 1-1/2" SecurShield	12" ribbons of FAST	-	-	1-225	424570-0-0 (HydroBond)	-
Min. 1/2" SecurShield or SecurShield HD Comp.	Hot Asphalt	-	-	1-300	-	-
<b>Concrete Deck/VapAir Seal 725 TR and Cav-Grip III, 702-LV or 702 Primer</b>						
Min. 2" SecurShield or SecurShield HD Comp.	Full-Coverage FAST	-	-	1-255	434244-0-0 (LVOC)	434244-0-0 (LVOC)
Min. 1/2" SecurShield	6" ribbons of FAST	-	-	1-315	462916-0-0	462919-0-0
Min. 1-1/2" SecurShield	6" ribbons of FAST	-	-	1-465	462918-0-0	462920-0-0
Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	Min. 2" SecurShield HD Comp.	12" ribbons of FAST	1-255	400838-0-0	400832-0-0
<b>Concrete Deck/SureMB 90TG and 120TG Base Torch Applied/Cut-Back Asphalt Primer</b>						

FM Approvals  
Design "A" Adhered Roofing Systems

**SecurShield and SecurShield HD Composite Ratings - New Construction**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Membrane Adhesive:** Low VOC PVC Bonding Adhesive (LVOC) or HydroBond Water-Based PVC Bonding Adhesive (HydroBond)

**Base and Top Layer Adhesive:** FAST = Flexible FAST and Flexible FAST Dual Tank

Base Insulation Layer (Max. thickness 36")	Base Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Top Insulation Layer	Top Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Rating	Sure-Flex PVC	Sure-Flex KEE HP (LVOC Only)
					RoofNAV Number	
Min. 1/2" InsulBase Polyiso	12" ribbons of FAST	1/2" SecurShield or SecurShield HD Comp.	12" ribbons of FAST	1-330	-	-
Min. 1/2" SecurShield	6" ribbons of FAST	-	-	1-315	-	-
Min. 1-1/2" SecurShield	6" ribbons of FAST	-	-	1-465	-	-
<b>Gypsum Deck Tear-Off</b>						
Min. 1-1/2" SecurShield or SecurShield HD Comp.	16 (2 sq. ft)	-	-	1-90	-	-
Min. 1-1/2" SecurShield or SecurShield HD Comp.	12" ribbons of FAST	-	-	1-90	164217-0-0	-
<b>Gypsum Deck Tear-Off/VapAir Seal 725TR and Cav-Grip III, 702-LV or 702 Primer</b>						
Min. 1-1/2" SecurShield or SecurShield HD Comp.	12" ribbons of FAST	-	-	1-90	-	-
<b>Cellular Lightweight Insulating Concrete Over Steel Decking (Min. 22 Gauge)</b>						
Min. 1-1/2" SecurShield or SecurShield HD Comp.	16 (2 sq. ft)	-	-	1-75	-	-
Min. 2" SecurShield or SecurShield HD Comp.	8 (4 sq. ft)	-	-	1-90	-	-
Min. 2" SecurShield or SecurShield HD Comp.	20 (1.6 sq. ft.)	-	-	1-150	-	-
Min. 2" SecurShield or SecurShield HD Comp.	32 (1 sq. ft.)	-	-	1-225	-	-

FM Approvals  
Design "A" Adhered Roofing Systems  
**SecurShield Ratings - Recover**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Membrane Adhesive:** Low VOC PVC Bonding Adhesive (LVOC) or HydroBond Water-Based PVC Bonding Adhesive (HydroBond)

**Base and Top Layer Adhesive:** FAST = Flexible FAST and Flexible FAST Dual Tank

Base Insulation Layer (Max. thickness 36")	Base Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Top Insulation Layer	Top Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Rating	Sure-Flex PVC	Sure-Flex KEE HP (LVOC Only)
					RoofNAV Number	
<b>Steel Deck (Min. 22 Gauge)</b>						
1" SecurShield	20 (1.6 sq. ft)	-	-	1-90	-	-
<b>Concrete Deck</b>						
1/2" SecurShield	12" ribbons of FAST	-	-	1-90	-	-
<b>Gypsum Deck</b>						
1" SecurShield	20 (1.6 sq. ft)	-	-	1-90	-	-
1" SecurShield	Full-Coverage FAST	-	-	1-90	-	-

FM Approvals  
Design "A" Adhered Roofing Systems

**Securock Ratings - New Construction**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Membrane Adhesive:** Low VOC PVC Bonding Adhesive (LVOC) or HydroBond Water-Based PVC Bonding Adhesive (HydroBond)

**Base and Top Layer Adhesive:** FAST = Flexible FAST and Flexible FAST Dual Tank

Base Insulation Layer (Max. thickness 36")	Base Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Top Insulation Layer	Top Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Rating	Sure-Flex PVC	Sure-Flex KEE HP (LVOC Only)
					RoofNAV Number	
<b>Steel Deck (Min. 22 Gauge)</b>						
FM Approved	Loose laid	Min. 1/4" Securock	12 (2.66 sq. ft) SecurFAST Plate	1-75	345921-0-0 (HydroBond)	
					211999-0-0 (LVOC)	-
FM Approved	Loose laid	Min. 1/2" Securock	10 (3.2 sq. ft)	1-90	345911-0-0 (HydroBond)	350400-0-0
Min. 1-1/2" InsulBase Polyiso	Loose laid	Min. 1/4" Securock	10 (3.2 sq. ft) SecurFAST Plate	1-90	345909-0-0 (HydroBond)	
					212271-0-0 (LVOC)	-
Min. 1-1/2" InsulBase Polyiso	Loose laid	Min. 3/8" Securock	8 (4 sq. ft) SecurFAST Plate	1-90	-	-
FM Approved	Loose laid	Min. 5/8" Securock	8 (4 sq. ft)	1-90	345913-0-0 (HydroBond)	350401-0-0
Min. 1-1/2" InsulBase Polyiso	Loose laid	Min. 1/2" Securock	8 (4 sq. ft) SecurFAST Plate	1-90	319026-0-0	-
Min. 1-1/2" InsulBase Polyiso	Loose laid	Min. 1/2" Securock	6 (5.33 sq. ft) SecurFAST Plate	1-75	-	-
Min. 1-1/2" InsulBase Polyiso	Loose laid	Min. 5/8" Securock	6 (5.33 sq. ft) SecurFAST Plate	1-90	212009-0-0	-
Min. 1-1/2" InsulBase Polyiso	Loose laid	Min. 1/2" Securock	20 (1.6 sq. ft)	1-165	424163-0-0 (HydroBond)	-
					325914-0-0 (LVOC)	325947-0-0
Min. 1-1/2" InsulBase Polyiso	Loose laid	Min. 1/2" Securock	32 (1 sq. ft)	1-285	424162-0-0 (HydroBond)	-
Min. 1-1/2" InsulBase Polyiso	Loose laid	Min. 1/2" Securock	32 (1 sq. ft)	1-225	399395-0-0 (LVOC)	399399-0-0 (LVOC)
FM Approved	Loose laid	Min. 1/2" Securock	20 (1.6 sq. ft)	1-165	-	-
FM Approved	Loose laid	Min. 1/2" Securock	32 (1 sq. ft)	1-255 (30)	-	-
Min. 1-1/2" InsulBase Polyiso	10 (3.2 sq. ft.)	Min. 1/4" Securock	12" ribbons of FAST	1-90	403963-0-0 (LVOC)	408074-0-0 (LVOC)
Min. 1-1/2" InsulBase Polyiso	8 (4 sq. ft)	Min. 1/4" Securock	12" ribbons of FAST	1-90	187180-0-0 (LVOC)	-
Min. 1-1/2" InsulBase Polyiso	18 (1.8 sq. ft.)	Min. 1/4" Securock	6" ribbons of FAST	1-105	-	-
Min. 2" InsulBase Polyiso	16 (2 sq. ft.)	Min. 1/2" Securock	12" ribbons of FAST	1-120	455775-0-0	455775-0-0
Min. 2" InsulBase Polyiso	20 (1.6 sq. ft.)	Min. 1/2" Securock	6" ribbons of FAST	1-135	455742-0-0	455742-0-0
Min. 2" InsulBase Polyiso	32 (1 sq. ft.)	Min. 1/2" Securock	4" ribbons of FAST	1-225	455817-0-0	455817-0-0
Min. 1-1/2" InsulBase Polyiso	24 (1.33 sq. ft.)	Min. 1/4" Securock	4" ribbons of FAST	1-165	-	-
Min. 1/2" DensDeck Prime or Securock	16 (2 sq. ft.)	Min. 1/4" Securock over InsulBase Polyiso	12" ribbons of FAST	1-90	-	-
<b>Steel Deck (Min. 22 Gauge)/VapAir Seal 725 TR and Cav-Grip III or 702 Primer</b>						



FM Approvals  
Design "A" Adhered Roofing Systems

**Securock Ratings - New Construction**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Membrane Adhesive:** Low VOC PVC Bonding Adhesive (LVOC) or HydroBond Water-Based PVC Bonding Adhesive (HydroBond)

**Base and Top Layer Adhesive:** FAST = Flexible FAST and Flexible FAST Dual Tank

Base Insulation Layer (Max. thickness 36")	Base Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Top Insulation Layer	Top Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Rating	Sure-Flex PVC	Sure-Flex KEE HP (LVOC Only)
					RoofNAV Number	
Min. 1/2" DensDeck Prime or Securock	8 (4 sq. ft.)	1/4" Securock over Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	1-90	386902-0-0 (HydroBond)	387334-0-0
<b>Steel Deck (Min. 22 Gauge)/SureMB 90TG or 120TG Base Torch Applied</b>						
Min. 1/2" DensDeck Prime or Securock	8 (4 sq. ft.)	1/4" Securock over Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	1-90	-	-
<b>Concrete Deck</b>						
Min. 1/2" InsulBase Polyiso	12" ribbons of FAST	Min. 1/4" Securock	12" ribbons of FAST	1-120	424738-0-0 (HydroBond)	-
Min. 1/2" InsulBase Polyiso	12" ribbons of FAST	Min. 1/4" Securock	12" ribbons of FAST	1-285	429656-0-0 (LVOC)	-
Min. 1/2" InsulBase Polyiso	12" ribbons of FAST	Min. 1/4" Securock	12" ribbons of FAST	1-225	400710-0-0 (LVOC)	400711-0-0 (LVOC)
Min. 1/2" InsulBase Polyiso	12" ribbons of FAST	Min. 1/4" Securock	12" ribbons of FAST	1-315	-	-
FM Approved	Loose laid	Min. 1/2" Securock	10 (3.2 sq. ft)	1-90	395790-0-0	-
Min. 1/2" InsulBase Polyiso	Loose laid	Min. 1/2" Securock	10 (3.2 sq. ft.)	1-90	424818-0-0	398874-0-0
Min. 1/2" InsulBase Polyiso	Loose laid	Min. 1/2" Securock	20 (1.6 sq. ft)	1-150	424819-0-0	398909-0-0
Min. 1/2" InsulBase Polyiso	Loose laid	Min. 1/2" Securock	32 (1 sq. ft)	1-270	424821-0-0	398910-0-0
<b>Concrete Deck/VapAir Seal 725 TR and Cav-Grip III, 702-LV or 702 Primer</b>						
Min. 1/2" InsulBase Polyiso	12" ribbons of FAST	Min. 1/4" Securock	12" ribbons of FAST	1-225	424744-0-0 (Hydrobond)	-
					364510-0-0 (LVOC)	364511-0-0
Min. 1/2" InsulBase Polyiso	6" ribbons of FAST	Min. 1/4" Securock	6" ribbons of FAST	1-315	-	-
Min. 1-1/2" InsulBase Polyiso	6" ribbons of FAST	Min. 1/4" Securock	6" ribbons of FAST	1-465	-	-
<b>Concrete Deck/SureMB 90TG and 120TG Base Torch Applied/Cut-Back Asphalt Primer</b>						
Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	Min. 1/4" Securock	12" ribbons of FAST	1-330	424801-0-0 (HydroBond)	394638-0-0
Min. 1/2" InsulBase Polyiso	6" ribbons of FAST	Min. 1/4" Securock	6" ribbons of FAST	1-315	-	-
Min. 1-1/2" InsulBase Polyiso	6" ribbons of FAST	Min. 1/4" Securock	6" ribbons of FAST	1-465	-	-
<b>Gypsum Deck Tear-Off</b>						
Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	Min. 1/4" Securock	12" ribbons of FAST	1-90	-	-
<b>Gypsum Deck Tear-Off/VapAir Seal 725 TR and Cav-Grip III, 702-LV or 702 Primer</b>						
Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	Min. 1/4" Securock	12" ribbons of FAST	1-90	-	-
<b>Cellular Lightweight Insulating Concrete Over Steel Decking (Min. 22 Gauge)</b>						
<b>Celcore</b>						
FM Approved	Loose laid	Min. 1/4" Securock	12 (2.67 sq. ft)	1-75	-	-
FM Approved	Loose laid	Min. 1/2" Securock	10 (3.2 sq. ft)	1-90	-	-
FM Approved	Loose laid	Min. 5/8" Securock	8 (4 sq. ft)	1-90	-	-
FM Approved	Loose laid	Min. 1/2" Securock	20 (1.6 sq. ft)	1-150	-	-
FM Approved	Loose laid	Min. 1/2" Securock	32 (1 sq. ft)	1-225	-	-

FM Approvals  
Design "A" Adhered Roofing Systems

**Securock Ratings - Recover**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Membrane Adhesive:** Low VOC PVC Bonding Adhesive (LVOC) or HydroBond Water-Based PVC Bonding Adhesive (HydroBond)

**Base and Top Layer Adhesive:** FAST = Flexible FAST and Flexible FAST Dual Tank

Base Insulation Layer (Max. thickness 36")	Base Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Top Insulation Layer	Top Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Rating	Sure-Flex PVC	Sure-Flex KEE HP (LVOC Only)
					RoofNAV Number	
<b>Concrete Deck</b>						
Min. 2" InsulBase Polyiso	Hot Asphalt	Min. 1/4" Securock	Hot Asphalt	1-495	303398-0-0 (LVOC)	303398-0-0
Min. 1-1/2" InsulBase Polyiso	6" ribbons of FAST	Min. 1/4" Securock	6" ribbons of FAST	1-150	-	-

FM Approvals  
Design "A" Adhered Roofing Systems

**DensDeck Prime Ratings - New Construction**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Membrane Adhesive:** Low VOC PVC Bonding Adhesive (LVOC) or HydroBond Water-Based PVC Bonding Adhesive (HydroBond)

**Base and Top Layer Adhesive:** FAST = Flexible FAST and Flexible FAST Dual Tank

Base Insulation Layer (Max. thickness 36")	Base Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Top Insulation Layer	Top Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Rating	Sure-Flex PVC	Sure-Flex KEE HP (LVOC Only)
					RoofNAV Number	
<b>Steel Deck (Min. 22 Gauge)</b>						
FM Approved	Loose laid	Min. 1/4" DensDeck Prime	12 (2.67 sq. ft)	1-90	345893-0-0 (HydroBond)	-
FM Approved	Loose laid	Min. 1/2" DensDeck Prime	10 (3.2 sq. ft)	1-90	345920-0-0 (HydroBond)	379949-0-0
FM Approved	Loose laid	Min. 1/2" DensDeck Prime	20 (1.6 sq. ft)	1-105	345904-0-0 (HydroBond)	-
Min. 1-1/2" InsulBase Polyiso	Loose laid	Min. 1/2" DensDeck Prime	8 (4 sq.ft)	1-90	388252-0-0	-
Min. 1-1/2" InsulBase Polyiso	Loose laid	Min. 1/4" DensDeck Prime	18 (1.8 sq. ft)	1-105	382311-0-0	-
Min. 1-1/2" InsulBase Polyiso	Loose laid	Min. 1/2" DensDeck Prime	18 (1.8 sq. ft)	1-135	383701-0-0	396259-0-0
Min. 1-1/2" InsulBase Polyiso	Loose laid	Min. 1/2" DensDeck Prime	20 (1.6 sq. ft)	1-150	383711-0-0	-
Min. 1-1/2" InsulBase Polyiso	Loose laid	Min. 1/2" DensDeck Prime	32 (1 sq. ft)	1-165	387932-0-0	-
Min. 1-1/2" InsulBase Polyiso	Loose laid	Min. 1/2" DensDeck Prime	32 (1 sq. ft)	1-180 (29)	384597-0-0	-
Min. 1-1/2" InsulBase Polyiso	Loose laid	Min. 1/2" DensDeck Prime	32 (1 sq. ft)	1-255 (30)	387933-0-0	-
Min. 1-1/2" InsulBase Polyiso	10 (3.2 sq. ft.)	Min. 1/4" DensDeck Prime	12" ribbons of FAST	1-90	403961-0-0 (LVOC)	403961-0-0 (LVOC)
Min. 2" InsulBase Polyiso	8 (4 sq. ft)	Min. 1/4" DensDeck Prime	12" ribbons of FAST	1-90	187145-0-0 (LVOC)	-
Min. 2" InsulBase Polyiso	8 (4 sq. ft)	Min. 1/4" DensDeck Prime	12" ribbons of FAST	1-90	428869-0-0 (HydroBond)	428869-0-0 (HydroBond)
Min. 2" InsulBase Polyiso	16 (2 sq. ft.)	Min. 1/2" DensDeck Prime	12" ribbons of FAST	1-120	455774-0-0	455774-0-0
Min. 2" InsulBase Polyiso	20 (1.6 sq. ft.)	Min. 1/2" DensDeck Prime	6" ribbons of FAST	1-135	455741-0-0	455741-0-0
Min. 2" InsulBase Polyiso	32 (1 sq. ft.)	Min. 1/2" DensDeck Prime	4" ribbons of FAST	1-225	-	-
Min. 1/2" DensDeck Prime or Securock	16 (2 sq. ft.)	Min. 1/4" DensDeck Prime over InsulBase Polyiso	12" ribbons of FAST	1-90	-	-
<b>Steel Deck (Min. 22 Gauge)/VapAir Seal 725 TR and Cav-Grip III or 702 Primer</b>						
Min. 1/2" DensDeck Prime or Securock	8 (4 sq. ft.)	Min. 1/4" DensDeck Prime over InsulBase Polyiso	12" ribbons of FAST	1-90	400374-0-0 (HydroBond)	-
<b>Steel Deck (Min. 22 Gauge)/SureMB 90TG and 120TG Base Torch Applied</b>						
Min. 1/2" DensDeck Prime or Securock	8 (4 sq. ft)	Min. 1/4" DensDeck Prime over InsulBase Polyiso	12" ribbons of FAST	1-90	458442-0-0	-
<b>Concrete Deck</b>						
Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	Min. 1/4" DensDeck Prime	12" ribbons of FAST	1-315	345857-0-0	-
Min. 1/2" InsulBase Polyiso	Hot Asphalt	Min. 1/4" DensDeck Prime	Hot Asphalt	1-300	-	-
Min. 1" InsulBase Polyiso	Loose laid	Min. 5/8" DensDeck Prime	8 (4 sq. ft)	1-90	424540-0-0	-
Min. 2" InsulBase Polyiso	8 (4 sq. ft)	Min. 1/4" DensDeck Prime	Full-Coverage FAST	1-90	424532-0-0	-

FM Approvals  
Design "A" Adhered Roofing Systems

**DensDeck Prime Ratings - New Construction**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Membrane Adhesive:** Low VOC PVC Bonding Adhesive (LVOC) or HydroBond Water-Based PVC Bonding Adhesive (HydroBond)

**Base and Top Layer Adhesive:** FAST = Flexible FAST and Flexible FAST Dual Tank

Base Insulation Layer (Max. thickness 36")	Base Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Top Insulation Layer	Top Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Rating	Sure-Flex PVC	Sure-Flex KEE HP (LVOC Only)
					RoofNAV Number	
Min. 2" InsulBase Polyiso	8 (4 sq. ft)	Min. 1/4" DensDeck Prime	12" ribbons of FAST	1-90	424531-0-0	-
<b>Concrete Deck/VapAir Seal 725 TR and Cav-Grip III, 702-LV or 702 Primer</b>						
Min. 1/2" InsulBase Polyiso	12" ribbons of FAST	Min. 1/4" DensDeck Prime	12" ribbons of FAST	1-255	424748-0-0	-
Min. 1/2" InsulBase Polyiso	6" ribbons of FAST	Min. 1/4" DensDeck Prime	6" ribbons of FAST	1-315	-	-
Min. 1-1/2" InsulBase Polyiso	6" ribbons of FAST	Min. 1/4" DensDeck Prime	6" ribbons of FAST	1-465	-	-
<b>Concrete Deck/SureMB 90TG and 120TG Base Torch Applied/Cut-Back Asphalt Primer</b>						
Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	Min. 1/4" DensDeck Prime	12" ribbons of FAST	1-330	424803-0-0 (Hydrobond)	-
Min. 1/2" InsulBase Polyiso	6" ribbons of FAST	Min. 1/4" DensDeck Prime	6" ribbons of FAST	1-315	-	-
Min. 1-1/2" InsulBase Polyiso	6" ribbons of FAST	Min. 1/4" DensDeck Prime	6" ribbons of FAST	1-465	-	-
<b>Gypsum Deck Tear-Off</b>						
Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	Min. 1/4" DensDeck Prime	12" ribbons of FAST	1-90	164605-0-0	-
<b>Gypsum Deck Tear-Off/VapAir Seal 725 TR and Cav-Grip III, 702-LV or 702 Primer</b>						
Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	Min. 1/4" DensDeck Prime	12" ribbons of FAST	1-90	-	-
<b>Cellular Lightweight Insulating Concrete Over Steel Decking (Min. 22 Gauge)</b>						
FM Approved	Loose laid	Min. 1/4" DensDeck Prime	12 (2.67 sq. ft)	1-90	-	-
FM Approved	Loose laid	Min. 1/2" DensDeck Prime	10 (3.2 sq. ft)	1-90	-	-
FM Approved	Loose laid	Min. 5/8" DensDeck Prime	8 (4 sq. ft)	1-90	-	-

FM Approvals  
Design "A" Adhered Roofing Systems

**DensDeck Prime Ratings - Recover**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Membrane Adhesive:** Low VOC PVC Bonding Adhesive (LVOC) or HydroBond Water-Based PVC Bonding Adhesive (HydroBond)

**Base and Top Layer Adhesive:** FAST = Flexible FAST and Flexible FAST Dual Tank

Base Insulation Layer (Max. thickness 36")	Base Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Top Insulation Layer	Top Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Rating	Sure-Flex PVC	Sure-Flex KEE HP (LVOC Only)
					RoofNAV Number	
<b>Concrete Deck</b>						
-	-	1/2" DensDeck Prime	6" ribbons of FAST	1-135	458985-0-0	458985-0-0
Min. 1/2" InsulBase Polyiso	12" ribbons of FAST	1/4" DensDeck Prime	12" ribbons of FAST	1-90	-	-

FM Approvals  
Design "A" Adhered Roofing Systems

**StormBase Ratings - New Construction**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Membrane Adhesive:** Low VOC PVC Bonding Adhesive (LVOC) or HydroBond Water-Based PVC Bonding Adhesive (HydroBond)

**Base and Top Layer Adhesive:** FAST = Flexible FAST and Flexible FAST Dual Tank

Base Insulation Layer (Max. thickness 36")	Base Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Top Insulation Layer	Top Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Rating	Sure-Flex PVC	Sure-Flex KEE HP (LVOC Only)
					RoofNAV Number	
<b>Steel Deck (Min. 22 Gauge)</b>						
FM Approved	Loose Laid	Min. 2" StormBase	17 (1.8 sq. ft)	1-135	-	-
<b>Steel Deck (Min. 22 Gauge)/VapAir Seal 725 TR and Cav-Grip III or 702 Primer</b>						
Min. 1/2" DensDeck Prime or Securock	8 (4 sq. ft.)	Min. 2" StormBase	12" ribbons of FAST	1-90	-	-
<b>Steel Deck (Min. 22 Gauge)/SureMB 90TG and 120TG Base Torch Applied</b>						
Min. 1/2" DensDeck Prime or Securock	8 (4 sq. ft.)	Min. 2" StormBase	12" ribbons of FAST	1-90	-	-
<b>Concrete Deck</b>						
Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	Min. 2" StormBase	12" ribbons of FAST	1-360	342089-0-0 (LVOC)	-
					424575-0-0 (HydroBond)	-
Min. 1/2" InsulBase Polyiso	12" ribbons of FAST	Min. 2" StormBase	12" ribbons of FAST	1-315	-	-
<b>Concrete Deck/VapAir Seal 725 TR and Cav-Grip III, 702-LV or 702 Primer</b>						
Min. 1/2" InsulBase Polyiso	12" ribbons of FAST	Min. 2" StormBase	12" ribbons of FAST	1-255	-	-
Min. 1/2" InsulBase Polyiso	6" ribbons of FAST	Min. 2" StormBase	6" ribbons of FAST	1-315	-	-
Min. 1-1/2" InsulBase Polyiso	6" ribbons of FAST	Min. 2" StormBase	6" ribbons of FAST	1-360	-	-
<b>Concrete Deck/SureMB 90TG and 120TG Base Torch Applied/Cut-Back Asphalt Primer</b>						
Min. 1/2" InsulBase Polyiso	12" ribbons of FAST	Min. 2" StormBase	12" ribbons of FAST	1-330	-	-
Min. 1/2" InsulBase Polyiso	6" ribbons of FAST	Min. 2" StormBase	6" ribbons of FAST	1-315	-	-
Min. 1-1/2" InsulBase Polyiso	6" ribbons of FAST	Min. 2" StormBase	6" ribbons of FAST	1-360	-	-
<b>Gypsum Deck Tear-Off</b>						
Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	Min. 2" StormBase	12" ribbons of FAST	1-90	-	-
<b>Gypsum Deck Tear-Off/VapAir Seal 725 TR and Cav-Grip III, 702-LV or 702 Primer</b>						
Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	Min. 2" StormBase	12" ribbons of FAST	1-90	-	-
<b>Cellular Lightweight Insulating Concrete Over Steel Decking (Min. 22 Gauge)</b>						
FM Approved	Loose Laid	Min. 2" StormBase	17 (1.8 sq. ft)	1-135	-	-

FM Approvals  
Design "A" Adhered Roofing Systems

**StormBase Rating - Recover**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Membrane Adhesive:** Low VOC PVC Bonding Adhesive (LVOC) or HydroBond Water-Based PVC Bonding Adhesive (HydroBond)

**Base and Top Layer Adhesive:** FAST = Flexible FAST and Flexible FAST Dual Tank

Base Insulation Layer (Max. thickness 36")	Base Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Top Insulation Layer	Top Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Rating	Sure-Flex PVC	Sure-Flex KEE HP (LVOC Only)
					RoofNAV Number	
<b>Concrete Deck</b>						
Min. 1/2" InsulBase Polyiso	6" ribbons of FAST	Min. 2" StormBase	6" ribbons of FAST	1-150	-	-

FM Approvals  
Design "A" Adhered Roofing Systems

**HP Recovery Board Ratings - New Construction**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
.050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Membrane Adhesive:** Low VOC PVC Bonding Adhesive (LVOC) or HydroBond Water-Based PVC Bonding Adhesive (HydroBond)

Base Insulation Layer (Max. thickness 36")	Base Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Top Insulation Layer	Top Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Rating	Sure-Flex PVC	Sure-Flex KEE HP (LVOC Only)
					RoofNAV Number	
<b>Steel Deck (Min. 22 Gauge)</b>						
FM Approved	Loose laid	Min. 1/2" HP Recovery Board	16 (2 sq. ft)	1-90	-	-
<b>Cellular Lightweight Insulating Concrete Over Steel Decking (Min. 22 Gauge)</b>						
FM Approved	Loose laid	Min. 1/2" HP Recovery Board	16 (2 sq. ft)	1-90	-	-



FM Approvals

**EcoStorm VSH Ratings - New Construction**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
 .050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Membrane Adhesive:** Low VOC PVC Bonding Adhesive (LVOC) or HydroBond Water-Based PVC Bonding Adhesive (HydroBond)

**Base and Top Layer Adhesive:** FAST = Flexible FAST and Flexible FAST Dual Tank

Base Insulation Layer (Max. thickness 36")	Base Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Top Insulation Layer	Top Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Rating	Sure-Flex PVC	Sure-Flex KEE HP (LVOC Only)
					RoofNAV Number	
<b>Steel Deck (Min. 22 Gauge)</b>						
Min. 1-1/2" InsulBase Polyiso	Loose laid	1/2" EcoStorm VSH	8 (4 sq. ft)	1-90	-	-
FM Approved	Loose laid	1/2" EcoStorm VSH	18 (1.8 sq. ft)	1-120	-	-
FM Approved	Loose laid	1/2" EcoStorm VSH	24 (1.33 sq. ft)	1-165	-	-
FM Approved	Loose laid	1/2" EcoStorm VSH	24 (1.33 sq. ft)	1-225 (30)	-	-
Min. 1-1/2" InsulBase Polyiso	10 (3.2 sq. ft.)	1/2" EcoStorm VSH	6" ribbons of FAST	1-90	-	-
Min. 2" InsulBase Polyiso	8 (4 sq. ft)	1/2" EcoStorm VSH	6" ribbons of FAST	1-90	-	-
Min. 2" InsulBase Polyiso	16 (2 sq. ft.)	1/2" EcoStorm VSH	12" ribbons of FAST	1-120	-	-
Min. 2" InsulBase Polyiso	20 (1.6 sq. ft.)	1/2" EcoStorm VSH	6" ribbons of FAST	1-135	-	-
Min. 2" InsulBase Polyiso	32 (1 sq. ft.)	1/2" EcoStorm VSH	4" ribbons of FAST	1-225	-	-
Min. 1-1/2" InsulBase Polyiso	24 (1.33 sq. ft.)	1/2" EcoStorm VSH	4" ribbons of FAST	1-165	-	-
Min. 1/2" DensDeck Prime or Securock	16 (2 sq. ft.)	1/2" EcoStorm VSH over InsulBase Polyiso	6" ribbons of FAST	1-90	-	-
<b>Steel Deck (Min. 22 Gauge)/VapAir Seal 725 TR and Cav-Grip III or 702 Primer</b>						
Min. 1/2" DensDeck Prime or Securock	8 (4 sq. ft.)	1/2" EcoStorm VSH over InsulBase Polyiso	6" ribbons of FAST	1-90	-	-
<b>Steel Deck (Min. 22 Gauge)/SureMB 90TG or 120TG Base Torch Applied</b>						
Min. 1/2" DensDeck Prime or Securock	8 (4 sq. ft.)	1/2" EcoStorm VSH over InsulBase Polyiso	6" ribbons of FAST	1-90	-	-
<b>Concrete Deck</b>						
Min. 1/2" InsulBase Polyiso	12" ribbons of FAST	1/2" EcoStorm VSH	12" ribbons of FAST	1-225	-	-
Min. 2" Insulfoam EPS	12" ribbons of FAST	1/2" EcoStorm VSH	12" ribbons of FAST	1-285	-	-
Min. 1/2" InsulBase Polyiso	Loose laid	1/2" EcoStorm VSH	16 (2 sq. ft.)	1-90	-	-
<b>Concrete Deck/VapAir Seal 725 TR and Cav-Grip III, 702-LV or 702 Primer</b>						
Min. 1/2" InsulBase Polyiso or Min. 2" Insulfoam	12" ribbons of FAST	1/2" EcoStorm VSH	12" ribbons of FAST	1-255	-	-
Min. 1/2" InsulBase Polyiso	6" ribbons of FAST	1/2" EcoStorm VSH	6" ribbons of FAST	1-315	-	-

FM Approvals

**EcoStorm VSH Ratings - New Construction**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
 .050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Membrane Adhesive:** Low VOC PVC Bonding Adhesive (LVOC) or HydroBond Water-Based PVC Bonding Adhesive (HydroBond)

**Base and Top Layer Adhesive:** FAST = Flexible FAST and Flexible FAST Dual Tank

Base Insulation Layer (Max. thickness 36")	Base Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Top Insulation Layer	Top Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Rating	Sure-Flex PVC	Sure-Flex KEE HP (LVOC Only)
					RoofNAV Number	
Min. 1-1/2" InsulBase Polyiso	6" ribbons of FAST	1/2" EcoStorm VSH	6" ribbons of FAST	1-465	-	-
<b>Concrete Deck/SureMB 90TG and 120TG Base Torch Applied/Cut-Back Asphalt Primer</b>						
Min. 1/2" InsulBase Polyiso	12" ribbons of FAST	1/2" EcoStorm VSH	12" ribbons of FAST	1-225	-	-
Min. 1/2" InsulBase Polyiso	6" ribbons of FAST	1/2" EcoStorm VSH	6" ribbons of FAST	1-315	-	-
Min. 1-1/2" InsulBase Polyiso	6" ribbons of FAST	1/2" EcoStorm VSH	6" ribbons of FAST	1-465	-	-
<b>Gypsum Deck Tear-Off</b>						
Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	1/2" EcoStorm VSH	12" ribbons of FAST	1-90	-	-
<b>Gypsum Deck Tear-Off/VapAir Seal 725TR and Cav-Grip III, 702-LV or 702 Primer</b>						
Min. 1-1/2" InsulBase Polyiso	12" ribbons of FAST	1/2" EcoStorm VSH	12" ribbons of FAST	1-90	-	-
<b>Cellular Lightweight Insulating Concrete Over Steel Decking (Min. 22 Gauge)</b>						
FM Approved	Loose laid	1/2" EcoStorm VSH	12 (2.67 sq. ft)	1-75	-	-
FM Approved	Loose laid	1/2" EcoStorm VSH	16 (2 sq. ft)	1-90	-	-
-	-	1/2" EcoStorm VSH	12 (2.67 sq. ft)	1-75	-	-
-	-	1/2" EcoStorm VSH	16 (2 sq. ft)	1-90	-	-

FM Approvals

**EcoStorm VSH Ratings - Recover**

**Membrane Type:** .050", .060" or .080" Sure-Flex PVC Reinforced Membrane (White, Gray or Tan)  
 .050", .060" or .080" Sure-Flex KEE HP Reinforced Membrane (White)

**Membrane Adhesive:** Low VOC PVC Bonding Adhesive (LVOC) or HydroBond Water-Based PVC Bonding Adhesive (HydroBond)

**Base and Top Layer Adhesive:** FAST = Flexible FAST and Flexible FAST Dual Tank

Base Insulation Layer (Max. thickness 36")	Base Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Top Insulation Layer	Top Layer Fastening (mechanically fastened see notes 25, 26 & 27)	Rating	Sure-Flex PVC	Sure-Flex KEE HP (LVOC Only)
					RoofNAV Number	
<b>Steel Deck (Min. 22 Gauge)</b>						
-	-	1/2" EcoStorm VSH	8 (4 sq. ft)	1-90	-	-
-	-	1/2" EcoStorm VSH	6" ribbons of FAST	1-150	-	-
<b>Concrete Deck</b>						
Min. 1/2" InsulBase Polyiso	6" ribbons of FAST	1/2" EcoStorm VSH	6" ribbons of FAST	1-150	-	-
-	-	1/2" EcoStorm VSH	6" ribbons of FAST	1-150	-	-
<b>Gypsum Deck</b>						
Min. 1-1/2" InsulBase Polyiso	6" ribbons of FAST	1/2" EcoStorm VSH	6" ribbons of FAST	1-90	-	-

## NATIONAL, STATE & CITY BUILDING CODE APPROVALS

Authority	Approval #
ICC – International Code Council	Report ESR-1463

### State of Florida Evaluation Report

Evaluation Report Number	Evaluation Report Use
FL-14165	Not for use in High Velocity Hurricane Zone area
FL-16438	For use in High Velocity Hurricane Zone area

### Dade County (South Florida) Approvals Expires August, 2021

Deck Type	Acceptance #
Wood	16-0404.11
Steel	16-0404.10
Structural Concrete	16-0404.07
Cementitious Wood Fiber	16-0404.09
Gypsum	16-0404.06
Recover	16-0404.08

Carlisle SynTec, a division of Carlisle Construction Materials LLC, P. O. Box 7000, Carlisle, PA 17013  
(800)-4SYNTEC (800-479-6832)

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## Sure-Flex™ (PVC) Reference Notes

1. All insulation joints must be staggered a minimum of 6 inches from the deck joints or from the insulation joints directly below.
2. Any roof covering system listed for use over a combustible roof deck can be installed over a non-combustible roof deck and achieve the same classification.
3. Any UL Classified Carlisle Polyisocyanurate Insulation, any combination, any thickness may be used below the 3" minimum total thickness of SecurShield or SecurShield HD Composite.
4. Any UL Classified Carlisle Polyisocyanurate Insulation, any combination, any thickness may be used below the 1.9" thickness of SecurShield or SecurShield HD Composite.
5. Any UL Classified Carlisle Polyisocyanurate Insulation, any combination, any thickness may be used below the 1" thickness of SecurShield CD.
6. Any UL Classified Insulation, any combination, any thickness, may be used below the 4-1/2" minimum total thickness.
7. All insulation joints must be staggered a minimum of 6 inches from the deck joints or from the insulation joints directly below.
8. Any thickness of UL Classified Carlisle Polyisocyanurate Insulation may be used below the 1.9" thickness of SecurShield or SecurShield HD Composite.
9. Any UL Classified insulation, any combination, any thickness, may be used below the SecurShield CD.
10. On Steel Deck (Min. 22 Gauge), Carlisle HP-X Fasteners and Piranha Plates or HP-Xtra Fasteners and Piranha Xtra Plates are required as identified in this chart. On structural concrete decks, CD-10, HP Concrete Spikes or HD 14-10 Fasteners are used with Piranha Plates.
11. Testing conducted on FM approved 22-gauge Grade E Steel Deck (Min. 22 Gauge) meeting ASTM Designation A611 or A653 Grade 80.
12. On Steel Deck (Min. 22 Gauge), a thermal barrier of FM approved gypsum board (Type X or Type C) is required under these insulations. For specific thermal barrier requirements, refer to the current published FM Approval Guide or contact the respective manufacturer.
13. Existing roof must be FM Class 1 rated.
14. Severe Hail (SH) rating applies to all FM listed assemblies.
15. On Steel Deck (Min. 22 Gauge), Carlisle HP-X Fasteners and Piranha Plates or HP-Xtra Fasteners and Piranha Xtra Plates are required as identified in this chart. On structural concrete decks, CD-10, HP Concrete Spikes or HD 14-10 Fasteners are used with Piranha Plates.
16. All insulation joints must be staggered a minimum of 6 inches from the deck joints or from the insulation joints directly below.
17. Any roof covering system listed for use over a combustible roof deck can be installed over a non-combustible roof deck and achieve the same classification.
18. Any UL Classified Carlisle Polyisocyanurate Insulation, any combination, any thickness may be used below the 3" minimum total thickness of SecurShield or SecurShield HD Composite.
19. Any UL Classified Carlisle Polyisocyanurate Insulation, any combination, any thickness may be used below the 1.9" thickness of SecurShield or SecurShield HD Composite.
20. Any UL Classified Carlisle Polyisocyanurate Insulation, any combination, any thickness may be used below the 1" thickness of SecurShield CD.
21. Any UL Classified Insulation, any combination, any thickness, may be used below the 4-1/2" minimum total thickness.
22. All insulation joints must be staggered a minimum of 6 inches from the deck joints or from the insulation joints directly below.
23. Any thickness of UL Classified Carlisle Polyisocyanurate Insulation may be used below the 1.9" thickness of SecurShield or SecurShield HD Composite.
24. Any UL Classified insulation, any combination, any thickness, may be used below the SecurShield CD.
25. Sure-Seal HP fastener/Sure-Seal Insulation plate.
26. InsulFAST fastener/Sure-Seal Insulation plate.
27. InsulFAST fastener/SecurFAST Insulation Fastening plate.
28. Existing adhered or mechanically fastened EPDM or Hypalon roofing system contact Carlisle regarding suitability and specific requirements.
29. 80 ksi with one fastener per attachment point.
30. 80 ksi with two fasteners per attachment point.