

CA-02GC-10-20
Very Severe Hail (VSH) Code Alert
October 7, 2020

This Code Alert is a monthly online release that addresses issues pertaining to FM and UL, including raising awareness of industry updates and new approvals and elaborating on existing approved assemblies that may require additional clarification. The contents of each release will be customized to address specific field inquiries or to respond to unique market trends. Feedback concerning future topics is strongly encouraged.

Very Severe Hail (VSH) – FM Approvals

As part of Carlisle SynTec Systems’ ongoing testing program for high-performance and unique roofing system assemblies, extensive Very Severe Hail (**VSH**) testing has been completed at FM. The main **VSH** hail belt (as determined by FM) is in the Midwest, but other areas of the country have shown interest in these robust assemblies.

The following tables highlight **VSH** testing conducted on various TPO and FleeceBACK® membrane assemblies and feature the use of Carlisle EcoStorm VSH™ and StormBase® products. The assemblies are usable on new construction projects as well as re-roofing and recover applications. These tables are categorized by deck/substrate type and include the associated FM wind uplift rating.

New Construction / Tear-Off Applications – Steel Deck / EcoStorm VSH

Steel Deck / EcoStorm VSH					
Base Insulation Layer	Attachment 4' x 8' Board	Top Insulation Layer	Attachment 4' x 8' Board*	Membrane / Attachment	FM Rating
Min. 1-1/2" InsulBase	Loose-Laid	1/2" EcoStorm VSH	8 Fasteners	Min. 115-mil FleeceBACK EPDM or Min. 115-mil FleeceBACK TPO adhered using Flexible FAST™ Adhesive - 4" o.c.	VSH - 1-90
			18 Fasteners		VSH - 1-120
			24 Fasteners		VSH - 1-225
			32 Fasteners		VSH - 1-270
Min. 1-1/2" InsulBase	10 Fasteners	1/2" EcoStorm VSH	Flexible FAST Adhesive - 6" o.c.	Min. 80-mil Sure-Weld® EXTRA adhered using CAV-GRIP® III, Low-VOC, or Sure-Weld Bonding Adhesive	VSH - 1-90
Min. 2" InsulBase	8 Fasteners				VSH - 1-90
Min. 2" InsulBase	24 Fasteners				VSH - 1-165

*When fasteners are to be utilized, only use fasteners that have been approved by FM as part of the referenced roofing assembly and are in compliance with the Membrane System Warranty requirements.

New Construction / Tear-Off Applications - Steel Deck / StormBase

Steel Deck / StormBase					
Base Insulation Layer	Attachment 4' x 8' Board	Top Insulation Layer	Attachment 4' x 8' Board	Membrane / Attachment	FM Rating
Any FM Approved	Loose-Laid	Min. 2" StormBase	17 Fasteners**	Min. 145-mil Sure-White® FleeceBACK or Min. 115-mil FleeceBACK TPO adhered using Flexible FAST Adhesive - 4" o.c.	VSH - 1-150
			32 Fasteners**		VSH - 1-270
Min. 1-1/2" InsulBase	10 Fasteners**	Min. 2" StormBase	Flexible FAST Adhesive 12" o.c.	Min. 80-mil Sure-Weld EXTRA adhered using CAV-GRIP III, Low-VOC, or Sure-Weld Bonding Adhesive Min. 145-mil Sure-White FleeceBACK or Min. 115-mil FleeceBACK TPO adhered using Flexible FAST Adhesive - 4" o.c.	VSH - 1-90
Min. 2" InsulBase	8 Fasteners**				VSH - 1-90

** Use only fasteners that have been approved by FM as part of the referenced roofing assembly and are in compliance with the Membrane System Warranty requirements.

New Construction / Tear-Off Applications - Concrete Deck

Structural Concrete Deck					
Base Insulation Layer	Attachment	Top Insulation Layer	Attachment	Membrane / Attachment	FM Rating
Min. 1-1/2" InsulBase	Flexible FAST Adhesive 12" o.c.	1/2" EcoStorm VSH	Flexible FAST Adhesive 12" o.c.	Min. 80-mil Sure-Weld EXTRA adhered using CAV-GRIP III, Low-VOC, or Sure-Weld Bonding Adhesive	VSH - 1-225
Min. 3/4" OPTIM-R®	Flexible FAST Adhesive 6" o.c.		Flexible FAST Adhesive 6" o.c.	Min. 115-mil FleeceBACK EPDM or Min. 115-mil FleeceBACK TPO adhered using Flexible FAST Adhesive - 4" o.c.	VSH - 1-120
Min. 1-1/2" InsulBase	Flexible FAST Adhesive 12" o.c.	Min. 2" StormBase	Flexible FAST Adhesive 12" o.c.	Min. 80-mil Sure-Weld EXTRA adhered using CAV-GRIP III, Low-VOC, or Sure-Weld Bonding Adhesive Min. 145-mil Sure-White FleeceBACK or Min. 115-mil FleeceBACK TPO adhered using Flexible FAST Adhesive - 4" o.c.	VSH - 1-270

Recover Applications - Steel Deck

Steel Deck Recover					
Base Insulation Layer	Attachment	Top Insulation Layer	Attachment	Membrane / Attachment	FM Rating
None	None	1/2" EcoStorm VSH	Approved Fasteners 1 per 2 ft ²	Min. 115-mil FleeceBACK EPDM or Min. 115-mil FleeceBACK TPO adhered using Flexible FAST Adhesive - 4" o.c.	VSH - 1-90
			Flexible FAST Adhesive 4" o.c.	Min. 80-mil Sure-Weld EXTRA adhered using CAV-GRIP III, Low-VOC, or Sure-Weld Bonding Adhesive Min. 115-mil FleeceBACK EPDM or Min. 115-mil FleeceBACK TPO adhered using Flexible FAST Adhesive - 4" o.c.	VSH - 1-150

Recover Applications - Concrete Deck

Structural Concrete Recover					
Base Insulation Layer	Attachment	Top Insulation Layer	Attachment	Membrane / Attachment	FM Rating
(Optional) Min. 1-1/2" InsulBase or SecurShield®	Flexible FAST Adhesive 4" o.c.	1/2" EcoStorm VSH	Flexible FAST Adhesive 4" o.c.	Min. 80-mil Sure-Weld EXTRA adhered using CAV-GRIP III, Low-VOC, or Sure-Weld Bonding Adhesive Min. 115-mil FleeceBACK EPDM or Min. 115-mil FleeceBACK TPO adhered using Flexible FAST Adhesive - 4" o.c.	VSH - 1-150
		Min. 2" StormBase		Min. 80-mil Sure-Weld EXTRA adhered using CAV-GRIP III, Low-VOC, or Sure-Weld Bonding Adhesive Min. 145-mil Sure-White FleeceBACK or Min. 115-mil FleeceBACK TPO adhered using Flexible FAST Adhesive - 4" o.c.	VSH - 1-150

These assemblies can be viewed on the FM Approvals RoofNAV website:

<https://www.roofnav.com/Account/Login>.

Please consult Carlisle's Project Review & Design Group with questions concerning specific project warranty requirements.