



EVALUATION REPORT

FLORIDA BUILDING CODE, 6TH EDITION (2017)

Manufacturer: GACO WESTERN, LLC
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Manufacturing Plant: Waukesha, WI

Quality Assurance: UL LLC (QUA9625)

SCOPE

Category: Roofing
Subcategory: Spray Applied Polyurethane Roof System
Code Sections: 1507.14.2, 1507.14.3, 1515.1.1, 1515.1.4, 1519.16, 1523.6.2
Properties: Wind Resistance, Physical Properties

PRODUCT DESCRIPTION

Product	Description
GacoRoofFoam 2733	TAS 110 and ASTM C 1029 Type III polyurethane spray applied foam that utilizes an HFC blowing agent intended for roofing applications.
GacoFlex A-31	ASTM D 6083 acrylic quick-set elastomeric coating that is brush, roller or spray-applied.
GacoFlex S-10	ASTM D 6694 silicone elastomeric coating that is brush, roller or spray-applied.
GacoFlex S-20	ASTM D 6694 silicone solvent-free, single-component, moisture-cured, waterproof elastomeric coating that is brush, roller or spray-applied.
GacoFlex S-21	ASTM D 6694 silicone solvent-free, single-component, moisture-cured, waterproof elastomeric coating that is brush, roller or spray-applied.
GacoRoof GR-16	ASTM D 6694 silicone elastomeric coating that is brush, roller or spray-applied.

REFERENCES

Entity	Report No.	Standard	Year
Intertek Testing Services NA, Inc. (TST6781)	102206114MID-001	ASTM C 1029	2013
		TAS 110	2000
FM Approvals (TST1867)	3023644	FM 4470	2012
FM Approvals (TST1867)	3052963	FM 4470	2012
PRI Construction Materials Technologies (TST5878)	GW1-024-02-02	ASTM D 6694	2008
PRI Construction Materials Technologies (TST5878)	GW1-026-02-01	ASTM D 6694	2008
PRI Construction Materials Technologies (TST5878)	GW1-042-02-01	ASTM D 6694	2008
PRI Construction Materials Technologies (TST5878)	GW1-043-02-01	ASTM D 6694	2008
PRI Construction Materials Technologies (TST5878)	GW1-044-02-01	ASTM D 6694	2008
PRI Construction Materials Technologies (TST5878)	GW1-045-02-01	ASTM D 6083	2005e01
PRI Construction Materials Technologies (TST5878)	GW1-045-02-01	Proprietary	2017
PRI Construction Materials Technologies (TST5878)	GW1-052-02-01	ASTM D 2126	2015
PRI Construction Materials Technologies (TST5878)	GW1-057-02-01	TAS 110	2000
		ANSI/FM 4474(D)	2011
PRI Construction Materials Technologies (TST5878)	GW1-057-02-02	TAS 114(J)	1995
		ANSI/FM 4474(B)	2011
PRI Construction Materials Technologies (TST5878)	GW1-060-02-01	TAS 114(D)	1995
		ANSI/FM 4474(B)	2011
PRI Construction Materials Technologies (TST5878)	GW1-060-02-02	TAS 114(D)	1995
		ANSI/FM 4474(D)	2011
		TAS 114(J)	1995



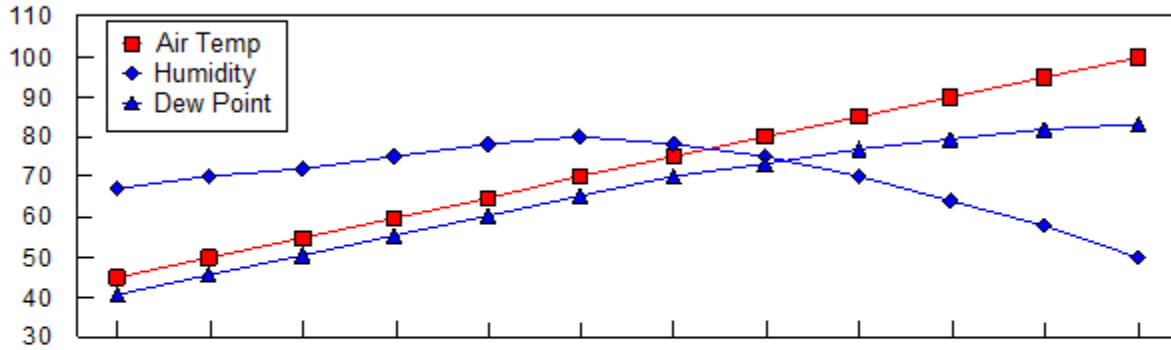
<u>Entity</u>	<u>Report No.</u>	<u>Standard</u>	<u>Year</u>
PRI Construction Materials Technologies (TST5878)	GW1-060-02-03	ANSI/FM 4474(D) TAS 114(J)	2011 1995
PRI Construction Materials Technologies (TST5878)	GW1-060-02-04	ANSI/FM 4474(D) TAS 114(J)	2011 1995
PRI Construction Materials Technologies (TST5878)	GW1-067-02-02	ANSI/FM 4474(B) TAS 114(D)	2011 1995
PRI Construction Materials Technologies (TST5878)	GW1-067-02-02A	ANSI/FM 4474(B) TAS 114(D)	2011 1995
UL LLC (TST9628)	R5663	UL790	2004

LIMITATIONS

1. Fire classification is not within the scope of this evaluation.
2. The roof deck and the roof deck attachment shall be designed by others to meet the minimum design loads established for components and cladding and in accordance with FBC requirements.
3. Foam plastic insulation shall be installed in accordance with the FBC Section 2603.3, 2603.4 and 2603.6.
4. Spray polyurethane foam shall not be applied when ambient temperature is within 5 degrees of the dew point. Ambient humidity applications limits shall be as listed in Table 1 below. In the HVHZ, the contractor shall monitor and record environmental conditions in the Job Log in compliance with RAS 109. Job Log shall be maintained at the job site and accessible to The Building Official.
5. All attachment and sizing of perimeter nailers, metal profile, and/or flashing termination designs shall conform to ANSI/SPRI ES-1 (non-HVHZ only) or Roofing Application Standard RAS 111 and the wind load requirements of Chapter 16.
6. In the HVHZ, fastener spacing for base sheets or membrane attachment shall meet the minimum fastener resistance value and the *MDP* for the specified assembly. It is permissible for a qualified professional to submit a revised fastener spacing utilizing the withdrawal resistance value obtained from TAS 105 testing and calculations performed in accordance with RAS 117 and/or RAS 137, when the fastener resistance is found less than required.
7. For assemblies containing mechanical attachment, the allowable uplift pressure for the selected assembly shall meet or exceed the minimum design loads as determined in accordance with the FBC Chapter 16. For perimeter and corner roof zones 2 and 3, the attachment density may be increased by a qualified design professional, as necessary, to meet the design pressure requirements in these areas. In the HVHZ, calculations shall be conducted in compliance with RAS 117 and/or RAS 137. Outside the HVHZ, commonly used standards include RAS 117, FM LPDS 1-29, or ANSI/SPRI WD-1.
8. Reroofing applications shall be examined in accordance with FBC Section 1511 outside of the HVHZ and FBC Section 1521 within the HVHZ. For mechanically fastened systems, a field withdrawal resistance test (TAS 105 in the HVHZ; ANSI/SPRI FX-1 or TAS 105 in the non-HVHZ) shall be conducted by a qualified professional to ensure the fastener meets the minimum design load requirements of the system. For adhered systems, a field uplift resistance test (TAS 124 in the HVHZ; ASTM E 907, FM LPDS 1-52, ANSI/SPRI IA-1, or TAS 124 in the non-HVHZ) shall be conducted to confirm conformance of the existing to the minimum design loads.
9. The *MDP* for the selected roof system shall meet or exceed the minimum design loads as determined in accordance with the FBC Chapter 16 without augmentation.
10. Flashings and waterproof coverings for expansion joints shall be of compatible materials and according to the sprayed polyurethane foam manufacturer's published literature.
11. Miscellaneous materials such as adhesives, elastomeric caulking compounds, metal, vents and drains shall be a composite part of the roof system and shall be compatible with the foam and coating.
12. Installation of the evaluated products shall comply with this report, the FBC, and the manufacturer's published application instructions. Where discrepancies exist between these sources, the more restrictive and FBC compliant installation detail shall prevail.
13. The minimum roof slope shall be in accordance with the FBC.
14. All products listed in this report shall be manufactured under a quality assurance programs in compliance with Rule 61G20-3.



Table 1. Ambient Humidity Applications Limits -
Air Temp/ Humidity/ Dew Point Guideline

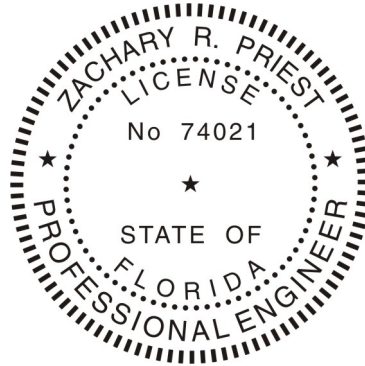


	45	67	40.5	50	70	45.5	55	72	50.5	60	75	55.5
■	45	50	55	60	65	70	75	80	85	90	95	100
◆	67	70	72	75	78	80	78	75	70	64	58	50
▲	40.5	45.5	50.5	55.5	60.5	65.5	70	73.5	77	79.5	82	83

Dew point and relative humidity for given dry bulb temperature.

COMPLIANCE STATEMENT

The products evaluated herein by Zachary R. Priest, P.E. have demonstrated compliance with the Florida Building Code, 6th Edition (2017) as evidenced in the referenced documents submitted by the named manufacturer.



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Florida Registration No. 74021
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CERTIFICATION OF INDEPENDENCE

CREEK Technical Services, LLC does not have, nor will it acquire, a financial interest in any company manufacturing or distributing products under this evaluation.

CREEK Technical Services, LLC is not owned, operated, or controlled by any company manufacturing or distributing products under this evaluation.

Zachary R. Priest, P.E. does not have, nor will acquire, a financial interest in any company manufacturing or distributing products under this evaluation.

Zachary R. Priest, P.E. does not have, nor will acquire, a financial interest in any other entity involved in the approval process of the product.

APPENDICES

- 1) [APPENDIX A](#) – Installation and Nomenclature (3 pages)
- 2) [APPENDIX B](#) – Approved Assemblies (3 pages)

INSTALLATION

Note - Refer to the [APPROVED ASSEMBLIES](#) section of this report for specific installation details of a selected assembly.

Unless otherwise specified in this report the following installation details shall be met for the named products:

Use	Products	Description and Installation
Base Sheet	GAF GAFGLAS Stratavent Perforated Venting Base Sheet	ASTM D 4897, Type II perforated base sheet; granule-surfaced on the bottom of sheet. Min. 2-inch side laps
	Firestone MB Base	ASTM D 4601, Type II base sheet; Min. 3-inch side laps
	Firestone SBS Base	ASTM D 6163, Type I, Grade S base sheet; Min. 3-inch side laps
Board Adhesives	Firestone I.S.O. Twin Pack	Applied in 3/4-inch wide ribbons
Fasteners & Plates	Firestone All-Purpose Fasteners	Min.0.75-inch penetration through the top rib of the steel deck or wood deck
	Firestone Insulation Fastening Plate	3-inch diameter; Galvalume steel plate
Cellular Lightweight Concrete	Concrecel	Slurry coat min. 1/4-inch thick; 1" thick EPS Holey board (1 lbs/ft ³); Min. 2-inch thick top coat; Min. f_c at 28 days as stated in the <i>Approved Assemblies</i>
Roof Board	Georgia-Pacific DensDeck Prime	Min. 1/2-inch thick
	USG SECUROCK Gypsum-Fiber Roof Board	Min. 1/2-inch thick
Primer	GacoFlex E-5320	Two component water based epoxy primer composed of Part A and Part B; shall be reduced with 1 pint of water per gallon of primer and roller applied to surface
	GacoFlex A-4600	Water-borne acrylic roof coating that is brush, roller or spray-applied at a minimum rate of 1 gal/100 ft ²
Polyurethane Foam	GacoRoofFoam 2733	Uniformly applied over surface to a minimum thickness of 1-inch
Coatings	GacoFlex A-31	Acrylic quick-set elastomeric coating that is brush, roller or spray-applied in three (3) coats at a minimum total rate of 1.5 gal/100 ft ²
	GacoFlex S-10	Silicone elastomeric coating that is brush, roller or spray-applied in one (1) or two (2) coats at a minimum total rate of 2.2 gal/100 ft ²
	GacoFlex S-20	Silicone solvent-free, single-component, moisture-cured, waterproof elastomeric coating that is brush, roller or spray-applied in one (1) or two (2) coats at a minimum total rate of 1.5 gal/100 ft ²
	GacoFlex S-21	Silicone solvent-free, single-component, moisture-cured, waterproof elastomeric coating that is brush, roller or spray-applied in one (1) or two (2) coats at a minimum total rate of 1.5 gal/100 ft ²
	GacoRoof GR-16	Silicone elastomeric coating that is brush, roller or spray-applied in one (1) or two (2) coats at a minimum total rate of 2.0 gal/100 ft ²

Insulation/Cover Board Fastening Patterns	
Description	Fastening Pattern
16 per 4 ft. x 8 ft. board	<p>(Max. 2ft² contributory area per fastener)</p>
20 per 4 ft. x 8 ft. board (1)	<p>(Max. 1.6ft² contributory area per fastener)</p>
20 per 4 ft. x 8 ft. board (2)	<p>(Max. 1.6ft² contributory area per fastener)</p>

NOMENCLATURE

The following naming conventions are utilized to specify products in the [APPROVED ASSEMBLIES](#) section of this report. Refer to the nomenclature below when deciphering the allowable products for use in the selected assembly. Installation requirements shall be as noted in the [APPROVED ASSEMBLIES](#) and [INSTALLATION](#) section of this report.

Name	Definition		
<i>As Tested</i>	Information provided to the report user based on the as tested condition of the system		
<i>Coating</i>	One of the following: -GacoFlex A-31 -GacoFlex S-10 -GacoFlex S-20 -GacoFlex S-21 -GacoRoof GR-16		
<i>Deck Detail</i>	Designed by others in accordance with FBC requirements; <i>As Tested</i> deck construction details are described as follows:		
	<i>Concrete Deck</i>	Min. $f'_c = 2,500$ psi at 28 days.	
	<i>CWF Deck</i>	Min. 2.5-inch thick Tectum I cementitious wood fiber panels	
	<i>Recover</i>	Where assemblies are used to recover an existing roof, the existing roof shall consist of only one layer of roofing, i.e. recovering a previously recovered roof is not permitted. Recover roofing shall be conducted in compliance with FBC Section 1511.	
	<i>Steel Deck</i>	Min. 22 ga, ASTM A 653 G90, Grade 33, Wide Rib Deck (Type WR) conforming to ANSI/SDI-RD1.0 & FBC;	
		The following nomenclature is used to further describe the <i>As Tested</i> condition.	
		<i>F<#></i>	<#> #12-24 HWH self-drilling screws or equivalent fastener at each flute used to secure the deck to the structural supports; Min. 0.25-inch penetration
		<i>G<#></i>	Min. Grade <#> of <i>Steel Deck</i>
		<i>L<#></i>	Max. span of <#> inches
	<i>S<#></i>	1/4 "-14 HWH x7/8" self-drilling screws or equivalent fastener secured <#>-inch o.c. along the panel side laps	
	<i>Wood Deck</i>	Min. PS 1-09 plywood sheathing; APA Span-Rated. Fasteners and stress plates shall be attached as follows:	
		The following nomenclature is used to further describe the <i>As Tested</i> condition.	
		<i>T<#></i>	Min. <#>-inch thick plywood
<i>L<#></i>		Max. span of <#> inches	
<i>N<#></i>	Min. 8d ring shank nails spaced <#>-inch o.c. at the field and perimeter		
<i>MDP</i>	Maximum Design Pressure		

APPROVED ASSEMBLIES

The following notes shall be observed when using the assembly tables below.

1. Allowable pressures (*MDP*) were calculated using a 2:1 margin of safety per FBC Section 1504.9.
2. Refer to [LIMITATIONS](#) and [NOMENCLATURE](#) sections of this evaluation when using the table(s) below.
3. Refer to [INSTALLATION](#) section of this report for installation detail when the information is not explicitly stated for the selected assembly.
4. As *Tested* information for roof deck construction is provided for information only. The addition of the As *Tested* deck information does not obviate the requirement for rational design of the roof deck and roof deck attachment in accordance with FBC requirements.

<i>Deck Detail</i>	Anchor Sheet, Roof Board, and/or Lightweight Concrete	Primer	Polyurethane Foam	Protective Coating	<i>MDP (psf)</i>
<i>Concrete Deck</i>	-	-	GacoRoofFoam 2733	<i>Coating</i>	-435 (Lim. 9)
<i>CWF Deck</i>	-	-	GacoRoofFoam 2733	<i>Coating</i>	-222.5 (Lim. 9; HVHZ only)
<i>Gypsum Deck</i>	-	-	GacoRoofFoam 2733	<i>Coating</i>	-222.5 (Lim. 9)
<i>Steel Deck; G33, L6, P, S18</i>	Min. 460psi Concrecel followed by 1/2-inch USG SECUROCK Gypsum-Fiber Roof Board attached with Firestone All-Purpose Fasteners and Insulation Fastening Plates at a rate of 16 per 4-ft x 8-ft board (1 fastener per 2ft ²)	-	GacoRoofFoam 2733	<i>Coating</i>	-60 (Lim. 7)
<i>Recover over existing smooth surface BUR roof system with Concrete Deck</i>	-	-	GacoRoofFoam 2733	<i>Coating</i>	-135 (Lim. 9)
<i>Recover over existing granule surface SBS Mod Bit roof system with Concrete Deck</i>	-	-	GacoRoofFoam 2733	<i>Coating</i>	-155 (Lim. 9)
<i>Recover over existing gravel surface BUR roof system with Concrete Deck</i>	-	-	GacoRoofFoam 2733	<i>Coating</i>	-220 (Lim. 9)
<i>Recover over existing sanded surface APP Mod Bit roof system with Concrete Deck</i>	-	-	GacoRoofFoam 2733	<i>Coating</i>	-430 (Lim. 9)
<i>Recover over existing granule surface APP Mod Bit roof system with Concrete Deck</i>	-	-	GacoRoofFoam 2733	<i>Coating</i>	-502.5 (Lim. 9)
<i>Recover over existing sanded surface SBS Mod Bit roof system with Concrete Deck</i>	-	-	GacoRoofFoam 2733	<i>Coating</i>	-502.5 (Lim. 9)
<i>Recover over existing smooth surface BUR roof system with Steel Deck</i>	-	-	GacoRoofFoam 2733	<i>Coating</i>	-90 (Lim. 9)
<i>Recover over existing smooth surface APP Mod Bit roof system with Steel Deck</i>	-	-	GacoRoofFoam 2733	<i>Coating</i>	-106.5 (Lim. 9)

APPENDIX B

<i>Deck Detail</i>	Anchor Sheet, Roof Board, and/or Lightweight Concrete	Primer	Polyurethane Foam	Protective Coating	<i>MDP (psf)</i>
<i>Recover</i> over existing gravel surface BUR roof system with <i>Steel Deck</i>	-	-	GacoRoofFoam 2733	<i>Coating</i>	-155 (Lim. 9)
<i>Recover</i> over existing smooth surface SBS Mod Bit roof system with <i>Steel Deck</i>	-	-	GacoRoofFoam 2733	<i>Coating</i>	-162.5 (Lim. 9)
<i>Recover</i> over existing granule surface APP Mod Bit roof system with <i>Steel Deck</i>	-	-	GacoRoofFoam 2733	<i>Coating</i>	-167.5 (Lim. 9)
<i>Recover</i> over existing granule surface SBS Mod Bit roof system with <i>Steel Deck</i>	-	-	GacoRoofFoam 2733	<i>Coating</i>	-292.5 (Lim. 9)
<i>Steel Deck; G33, L6, P, S24</i>	1/2-inch Georgia Pacific DensDeck Prime attached with Firestone All-Purpose Fasteners and Insulation Fastening Plates at a rate of 20 per 4-ft x 8-ft board (2) (1 fastener per 1.6ft ²)	-	GacoRoofFoam 2733	<i>Coating</i>	-75 (Lim. 7)
<i>Steel Deck; G33, L6, P, S24</i>	-	-	GacoRoofFoam 2733	<i>Coating</i>	-75 (Lim. 9)
<i>Steel Deck; G33, L6, F1, S24</i>	1/2-inch Georgia Pacific DensDeck Prime attached with Firestone All-Purpose Fasteners and Insulation Fastening Plates at a rate of 20 per 4-ft x 8-ft board (2) (1 fastener per 1.6ft ²)	-	GacoRoofFoam 2733	<i>Coating</i>	-97.5 (Lim. 7)
<i>Steel Deck; G33, L6, F1, S24</i>	-	-	GacoRoofFoam 2733	<i>Coating</i>	-105 (Lim. 9)
<i>Steel Deck</i>	1/2-inch DensDeck Prime secured 6-inch o.c. in Firestone I.S.O. Twin Pack Insulation Adhesive to the top flange of the deck ribs	-	GacoRoofFoam 2733	<i>Coating</i>	-147.5 (Lim. 9; HVHZ only)
<i>Steel Deck</i>	-	-	GacoRoofFoam 2733	<i>Coating</i>	-407.5 (Lim. 9; HVHZ only)
<i>Wood Deck; T19/32, N6, L24</i>	Firestone MB Base attached with Firestone All-Purpose Fasteners and Insulation Fastening Plates spaced 12-inch o.c. in the lap and 12-inch o.c. in two (2) staggered rows in the field	-	GacoRoofFoam 2733	<i>Coating</i>	-67.5 (Lim. 7)
<i>Wood Deck; T19/32, N6, L24</i>	Firestone SBS Base attached with Firestone All-Purpose Fasteners and Insulation Fastening Plates spaced 12-inch o.c. in the lap and 12-inch o.c. in two (2) staggered rows in the field	GacoFlex A-4600	GacoRoofFoam 2733	<i>Coating</i>	-67.5 (Lim. 7)
<i>Wood Deck; T19/32, N6, L24</i>	1/2-inch Georgia Pacific DensDeck Prime attached with Firestone All-Purpose Fasteners and Insulation Fastening Plates at a rate of 20 per 4-ft x 8-ft board (1) (1 fastener per 1.6ft ²)	GacoFlex A-4600	GacoRoofFoam 2733	<i>Coating</i>	-82.5 (Lim. 7)



APPENDIX B

<i>Deck Detail</i>	Anchor Sheet, Roof Board, and/or Lightweight Concrete	Primer	Polyurethane Foam	Protective Coating	<i>MDP (psf)</i>
<i>Wood Deck; T19/32, N6, L24</i>	GAF GAFGLAS Stratavent Perforated Venting Base Sheet attached with 11ga. x 1-1/4-inch ring shank nails and 32 ga. x 1-5/8-inch diameter tin caps spaced 7-inch o.c in the lap and 7-inch o.c. in two (2) staggered rows in the field	GacoFlex E-5320	GacoRoofFoam 2733	<i>Coating</i>	-105 (Lim. 9 Non-HVHZ)

END OF REPORT