

Evaluation Report

Foamsulate HFO 2.0 Spray-Applied Polyurethane Foam Adhesive

Manufacturer

Carlisle Spray Foam Insulation (CSFI)

100 Enterprise Drive
Cartersville, GA 30120
(770) 607-0755

for

Florida Product Approval

FL 47070.1

Florida Building Code 8th Edition (2023)

Method: 2 – B

Category: Roofing

Sub - Category: Cements – Adhesives – Coatings

Product: Foamsulate HFO 2.0

Material Description: Spray-Applied Polyurethane Foam Adhesive

Deck Type: Plywood

Application Type: 3 inch Fillet

This item has been digitally signed and sealed by James L. Buckner, P.E., on this date below. Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies.

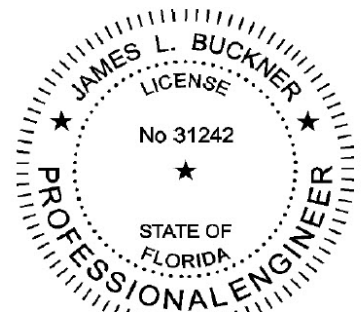
Prepared by:

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Report No. 24-641-FHFO2.0-Ply-ER (New)
Date: 10/16/2024

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James L. Buckner, P.E.
FL31242

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1.0 Manufacturer

Carlisle Spray Foam Insulation (CSFI)

100 Enterprise Drive
Cartersville, GA 30120
(770) 607-0755
www.carlislesfi.com

2.0 Product

1.1 Product Name: Foamsulate HFO 2.0

3.0 Evaluation Scope:

3.1 Evaluation Criteria:

Florida Building Code (FBC) 8th Edition (2023)
State Product Approval Rule 60G20-3.005 (2) (b)

3.2 Evaluation Classification:

Category: Roofing
Sub Category: Adhesives

3.3 Properties Evaluated

Structural Properties

3.4 Limits of Evaluation:

This product assembly evaluation is limited to compliance with the criteria in section 2.1 and properties in section 2.2 of this report.

4.0 Evaluated Uses:

4.1 Structural:

Foamsulate HFO 2.0 Foam as evaluated in this report, can be used for supplemental attachment of roof **plywood deck** to rafters/truss top chords (dimensional lumber) for commercial and residential buildings. This product may be used for code-plus wind resistance in new construction or for enhancing the wind uplift resistance on existing structures.

5.0 Product Assembly Description:

5.1 General:

Foamsulate HFO 2.0 is a two component Foam, one to one mixing ratio by volume, self-adhering, spray applied closed-cell polyurethane foam adhesive. Foamsulate HFO 2.0 Spray-Applied Polyurethane Foam adhesive is produced in the field by combining an "A" component or aromatic diisocyanurate and a "B" component which included polyols, fire retarding materials and additives. This spray foam adhesive provides wind uplift resistance when applied directly to the junction of the roof plywood deck and the roof rafter/truss top chords. Foamsulate HFO 2.0 Spray Polyurethane Foam adhesive fillet is applied to both sides of the roof rafter/truss top chords.

6.0 Evaluated Components to be Adhered:

6.1 Roof Deck:

Type: Plywood per FBC Chapter 23

6.2 Rafter/Truss Top Chord:

Function: Typically Roof Rafter or Wood Truss Top Chord

Type: Dimensional Lumber

Spacing: 24 in. o.c. (As Tested and Evaluated)

(Design of components is outside the scope of this evaluation)

7.0 Product Assembly Structural Performance:

7.1 Allowable Design Uplift Resistance:

Resistance - **190 PSF**

8.0 Performance Standard:

8.1 The product described herein has been tested and evaluated in accordance with the Florida Building Code 8th (2023) using Standards:

- TAS 202, *Criteria for Testing building Envelope Components using Uniform Static Air Pressure* (Structural & Negative Load Only)
- TAS 203, *Criteria for Testing Products Subject to Cyclic Wind Pressure Loading*
- ASTM E330 – *Standard Test Method for Structural by Uniform Static Air Pressure Difference* (Structural & Negative Load Only)

9.0 Code Compliance:

9.1 The product assembly described herein has demonstrated compliance with the intent of:

9.1.1 Florida Building Code (FBC) 8th (2023), Section 1708.2

10.0(Optional) Insulation:

Evaluation of additional Spray Polyurethane Foam to the underside of wood deck for insulation purposes is outside the scope of properties evaluated in this report. Any applications and/or uses that are not within the scope of this evaluation shall be the responsibilities of others.

11.0 Limitations and Conditions of Use:

- 11.1 Foamsulate HFO 2.0 Spay-Applied Polyurethane Foam Adhesive shall be installed by a Carlisle qualified spray foam applicator trained in the processing and application of SPF systems as well as the plural component polyurethane dispensing equipment.
- 11.2 Scope of "Limitations and Conditions of Use" for this evaluation:
This evaluation report for "State Approval" contains technical documentation, specifications and installation method(s) which include "Limitations and Conditions of Use" throughout the report in accordance with Rule 61G20.005. Per Rule 61G20.004, the Florida Building Commission is the authority to approve products under "State Approval".
- 11.3 Option for application outside "Limitations and Conditions of Use"
Rule 61G20.005(1)(e) allows engineering analysis for "project specific approval by the local authorities having jurisdiction in accordance with the alternate methods and materials authorized in the Code". Chapter one of the FBC and IBC addresses design for alternative materials, design and methods of construction. Any modification of the product as evaluated in this report and approved by the Florida Building Commission is outside the scope of this evaluation and will be the responsibility of others.
- 11.4 The scope of this evaluation is limited to structural properties.
- 11.5 This report does not evaluate the use of this product for other types of applications as allowed in the code.
- 11.6 Fire Classification and Thermal Properties are outside the scope of Rule 60G20-3, and are therefore not included in this evaluation.
- 11.7 This report does not evaluate the use of this product for use in the High Velocity Hurricane Zone code section. (Dade & Broward Counties)

12.0 Quality Assurance:

The manufacturer has demonstrated compliance of products in accordance with the Florida Building Code and Rule 61G20-3.005 (3) for manufacturing under a quality assurance program audited by an approved quality assurance entity through IAPMO Quality Control Consultants LLC. (FBC Organization ID# QUA 10385)

13.0 Components & Material Standards:

Material shall comply with:

<u>Property:</u>	<u>Nominal Minimum Values:</u>	<u>Standard:</u>
Core Density	2.0 pcf	ASTM D 1622
Compressive Strength	31 psi	ASTM D 1621
Tensile Strength	39 psi	ASTM D 1623

14.0 General Installation Method:

- **Surface Preparation:**

All surfaces intended to receive the spray foam adhesive must be free of dirt, soil, grease, oil, and moisture prior to application. Moisture in any form may adversely affect the system performance and corresponding physical properties. Primers may be necessary dependent upon condition of surfaces intended to be sprayed.

- **Fillet Foam Application:**

Apply the spray foam using a "picture framing" technique. Foam must cover at least 3-inches of the rafter member and 3-inches of the roof deck. The resulting triangular cant, at least 3-inches high and 3-inches wide, will cover the joint between the rafter member and the underside of the roof deck. Spray foam adhesive shall be applied in consecutive layers not to exceed 2 inches per pass. Allow foam to fully expand and cool for a period of 10 minutes or until surface temperature has returned to ambient between each layer.

Install the system in compliance with the evaluated installation method(s). The installation method(s) described herein have been evaluated to address the scope of the evaluation. Refer to manufacturer's installation instructions as a supplemental guide for spray foam application.

(Refer to installation method on Page 6 of this evaluation report.)

15.0 Evaluation Reference Data:

15.1 Testing Application Standard (TAS) 202

Criteria for Testing building Envelope Components using Uniform Static Air Pressure
By Certified Testing Laboratories, Inc. (TST ID: 1577)
Test Number# CTLA 2080W-1, Date: 11/07/11

15.2 Testing Application Standard (TAS) 203

Criteria for Testing Products Subject to Cyclic Wind Pressure Loading
By Certified Testing Laboratories, Inc. (TST ID: 1577)
Test Number# CTLA 2080W-1, Date: 11/07/11

14.3 ASTM E330

Test Method for Structural Performance by uniform Static Air Pressure Difference
By Certified Testing Laboratories, Inc. (TST ID: 1577)
Test Number# CTLA 2080W, Date: 11/07/11

14.4 Certification of Independence

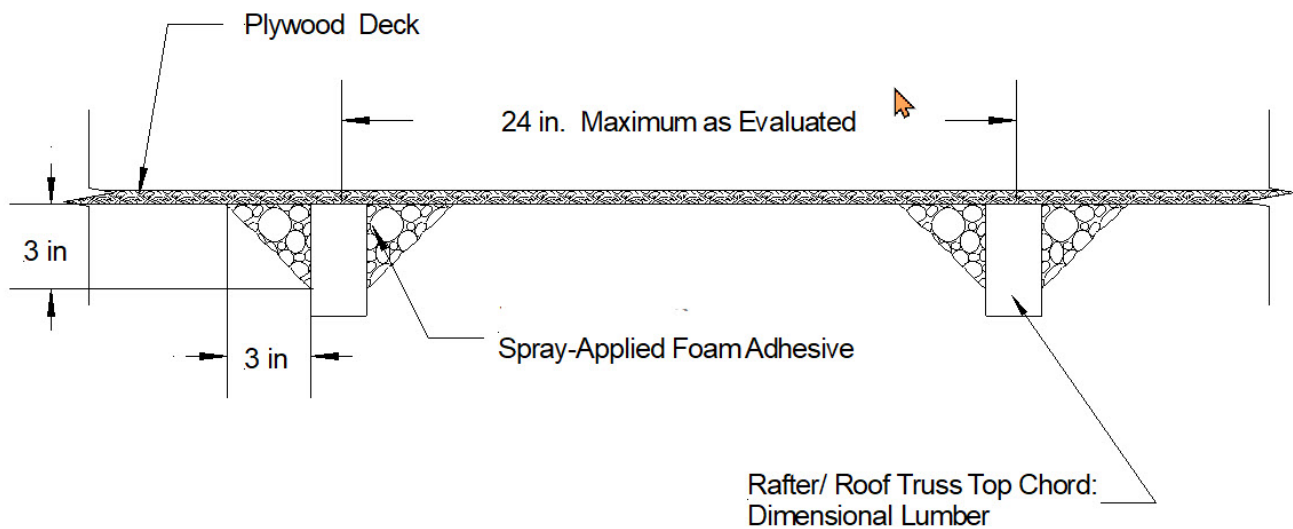
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(FBC Organization # ANE 1916)

14.5 Engineering Analysis

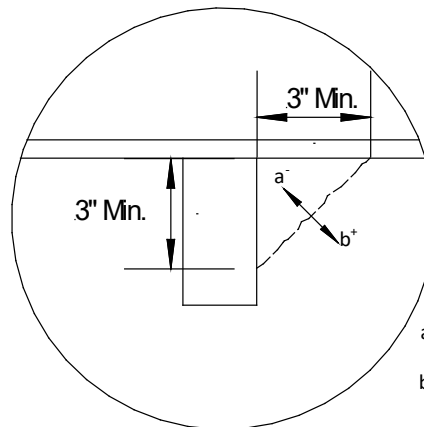
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(FBC Organization # ANE 1916)

Installation Method
Carlisle (CSFI)
Foamsulate HFO 2.0 Spray-Applied Polyurethane Foam Adhesive
with Plywood

Application Type: Fillet



Typical Roof Deck Section



a Direction: Zero Tolerance
b Direction: Any Greater

Fillet Tolerances