



LISTING INFORMATION OF  
**General Coatings Ultra-Thane 230 Roof Foam Systems**  
SPEC ID: 28315

General Coatings Manufacturing Corp.  
1220 E. North Avenue  
Fresno, CA 93725  
United States

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## LISTING INFORMATION

Ultra-Thane 230 (HFC) Roofing Foam consists of two components, "A" (isocyanate) and "B" (polyol resin), which are intended to be interacted in a one to one ratio, by volume, and spray-applied to form a closed cell rigid foam plastic roof covering/insulation material with a nominal density of 3 pounds per cubic foot. The A and B components are available in 55-gallon drums and have a shelf life of 12 and 6 months respectively when stored at temperatures between 50°F and 80°F. See CCRR-0492

Ultra-Thane 230 Roofing Foam (HFO) consists of two components, "A" (isocyanate) and "B" (polyol resin), which are intended to be interacted in a one to one ratio, by volume, and spray-applied to form a closed cell rigid foam plastic roof covering/insulation material with a nominal densities of 2.5, 2.7, and 3 pounds per cubic foot. The A and B components are available in 55-gallon drums and have a shelf life of 12 and 6 months respectively when stored at temperatures between 50°F and 80°F. See CCRR-1026.

### FLAME SPREAD RATING (ASTM E84)

Product	Flame Spread Rating
Ultra-Thane 230 (HFC) Maximum thickness of 4 inches	< 75
Ultra-Thane 230 (HFO) Maximum Thickness of 4 inches	< 75

### FIRE CLASSIFICATION

#### Class A Assemblies

Assembly No.	Ultra-Thane 230 (HFC) and Ultra Thane 230 (HFO)	
E108 – 28315-A01	Slope:	Maximum 4:12
	Deck Type:	Non-combustible deck
	Details:	<ul style="list-style-type: none"> <li>• Ultra-thane 230 Roof Foam at maximum thickness of 10 in.</li> <li>• Two coats of Ultra-Flex 1000 Acrylic Elastomeric Coating (1-1/2 gallons per 100 ft<sup>2</sup> each)</li> <li>• No. 11 granules top surfacing (32 lbs./100 ft<sup>2</sup>)</li> </ul>
E108-28315-A02	Slope:	Maximum 1/2:12
	Deck Type:	Combustible
	Details:	<ul style="list-style-type: none"> <li>• Combustible deck covered with a DensDeck substrate</li> <li>• Ultra-thane 230 Roof Foam at maximum thickness of 10 in.</li> <li>• Two coats of Ultra-Flex 1000 Acrylic Elastomeric Coating (1-½ gallons per 100 ft<sup>2</sup> each)</li> <li>• No. 11 granules top surfacing (32 lbs./100 ft<sup>2</sup>)</li> </ul>

E108-28315-A03	Slope:	Maximum 1/2:12 or greater
	Deck Type:	Combustible
	Details:	<ul style="list-style-type: none"> <li>• BUR over Minimum nominal 15/32" thick Code Compliant exterior grade plywood</li> <li>• Ultra-thane 230 Roof Foam at maximum thickness of 10 in.</li> <li>• Two coats of Ultra-Flex 1000 Acrylic Elastomeric Coating (1-1/2 gallons per 100 ft<sup>2</sup> each)</li> <li>• No. 11 granules top surfacing (32 lbs./100 ft<sup>2</sup>)</li> </ul>
E108-28315-A04	Slope:	Maximum 2:12
	Deck Type:	Non-Combustible
	Details:	<ul style="list-style-type: none"> <li>• Ultra-thane 230 Roof Foam at at maximum thickness of 10 in.</li> <li>• Two coats of Ultra-Guard 5700 Silicone Coating (1-1/5 gallons per 100 ft<sup>2</sup> each)</li> </ul>
E108-28315-A05	Slope:	Unlimited
	Deck Type:	Non-Combustible
	Details:	<ul style="list-style-type: none"> <li>• Non-combustible deck</li> <li>• Ultra-thane 230 Roof Foam at maximum thickness of 10 in.</li> <li>• Two coats of Ultra-Guard 5700 Silicone Coating (1-1/5 gallons per 100 ft<sup>2</sup> each)</li> <li>• No. 11 granules top surfacing (26 lbs./100 ft<sup>2</sup>)</li> </ul>
E108-28315-A06	Slope:	Unlimited
	Deck Type:	Combustible
	Details:	<ul style="list-style-type: none"> <li>• Combustible deck covered with a DensDeck substrate (joints in the non-combustible substrate must be staggered from joints in the combustible deck and must be aligned with framing members)</li> <li>• Ultra-thane 230 Roof Foam at maximum thickness of 10 in.</li> <li>• Two coats of Ultra-Guard 5700 Silicone Coating (1-1/5 gallons per 100 ft<sup>2</sup> each)</li> </ul>

		<ul style="list-style-type: none"> <li>No. 11 granules top surfacing (26 lbs./100 ft<sup>2</sup>)</li> </ul>
E108-28315-A07	Slope:	Maximum 1/2:12
	Deck Type:	Combustible
	Details:	<ul style="list-style-type: none"> <li>Panasonic VIP panels, max 24 mm thick (see Spec ID 43853)</li> <li>Min. 1/2-in. Dens-Deck Roof boards</li> <li>Ultra-Thane 230 (HFO) Roof Foam at maximum thickness of 10 in.</li> <li>Two coats of Ultra-Flex 1000 Acrylic Coating (1-1/2 gallons per 100 ft<sup>2</sup> each)</li> <li>No. 11 granules top surfacing (32 lbs./100 ft<sup>2</sup>)</li> </ul>
E108-28315-A08	Slope	Maximum 2:12
	Deck Type:	Combustible
	Details:	<ul style="list-style-type: none"> <li>Panasonic VIP panels, max 24 mm thick (see Spec ID 43853)</li> <li>Min. 1/2-in. Dens-Deck Roof boards</li> <li>Ultra-Thane 230 (HFO) Roof Foam at maximum thickness of 10 in.</li> <li>Two coats of Ultra-Guard 5700 Silicone Coating (1-1/5 gallon per 100 ft<sup>2</sup> each)</li> <li>No. 11 granules top surfacing (32 lbs./100 ft<sup>2</sup>)</li> </ul>

**Class B Assemblies**

Assembly No.	Ultra-Thane 230 (HFC) and Ultra Thane 230 (HFO)	
E108-28315-B01	Slope:	Maximum 1/2:12
	Deck Type:	Combustible
	Details:	<ul style="list-style-type: none"> <li>Minimum nominal 15/32" thick Code Compliant exterior grade plywood</li> <li>Ultra-thane 230 Roof Foam at maximum thickness of 10 in.</li> <li>Two coats of Ultra-Flex 1000 Acrylic Elastomeric Coating (1 ½ gallons per 100 ft<sup>2</sup> each)</li> <li>No. 11 granules top surfacing (32 lbs./100 ft<sup>2</sup>)</li> </ul>
E108-28315-B02	Slope:	Maximum 1/2:12

	Deck Type:	Combustible
	Details:	<ul style="list-style-type: none"> <li>• Minimum nominal 15/32" thick Code Compliant exterior grade plywood</li> <li>• Ultra-Thane 230 Roof Foam at maximum thickness of 10 in.</li> <li>• Two coats of Ultra-Guard 5700 Silicone Coating (1-1/5 gallons per 100 ft2 each)</li> <li>• No. 11 granules top surfacing (26 lbs./100 ft<sup>2</sup>)</li> </ul>
E108-28315-B03	Slope:	Maximum 1/2:12
	Deck Type:	Combustible
	Details:	<ul style="list-style-type: none"> <li>• Minimum nominal 15/32" thick Code Compliant exterior grade plywood</li> <li>• Ultra-Thane 230 Roof Foam at maximum thickness of 10 in.</li> <li>• Two coats of Ultra-Guard 5700 Silicone Coating (1 gallon per 100 ft2 each)</li> <li>• No. 11 granules top surfacing (26 lbs./100 ft<sup>2</sup>)</li> </ul>

**CODE COMPLIANCE RESEARCH REPORT**

Evaluation Method	Building Code	CCRR Number
ICC-ES AC377 ICC 1100	2021, 2018, 2015 IBC 2021, 2018, 2015 IRC 2021, 2018, 2015 IECC 2023, 2020 FBC	CCRR-0492 CCRR-1026

Ultra-Thane 230 is also under Intertek's Quality Assurance program for Florida Product Approval:

Report No.	Product Covered
FL# 28114	Ultra-Thane 230 Roof Foam System

Attribute	Value
Code Reports	Yes
Criteria	ASTM E108 (2017)
Criteria	ICC-ES AC377 (February 2020)
Criteria	ASTM E84 (2018b)
Criteria	ICC 1100 (2019)

CSI Code 07 57 00 Coated Foam Roofing  
Listing Section BUILDING MATERIALS WITH SURFACE BURNING CHARACTERISTICS  
Listing Section ROOFING MATERIALS  
Spec ID 28315

Issue Date: 05-08-2023  
Revised Date: 03-20-2024  
Renewal Date: 03-31-2025

**DIVISION: 07 — THERMAL AND MOISTURE PROTECTION**  
**Section: 07 57 00 – Coated Foam Roofing**

**REPORT HOLDER:**  
General Coatings Manufacturing Corp.  
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Fresno, CA 93725  
Phone: (559) 495-4004  
[www.generalcoatings.net](http://www.generalcoatings.net)

**REPORT SUBJECT:**  
**Ultra-Thane 230 (HFC) Roof Foam System**

### 1.0 SCOPE OF EVALUATION

**1.1** This Research Report addresses compliance with the following Codes:

- 2021, 2018, 2015 *International Building Code*® (IBC)
- 2021, 2018, 2015 *International Residential Code*® (IRC)
- 2021, 2018, 2015 *International Energy Conservation Code*® (IECC)
- 2023 and 2020 *Florida Building Code (excluding High Velocity Hurricane Zones)* – See Section 8.1

**1.2** The Ultra-Thane 230 (HFC) Foam System has been evaluated for the following properties:

- Physical properties
- Flame spread characteristics
- Wind resistance
- Impact resistance
- Fire classification
- Thermal resistance (R-value)

See Table 1 for applicable Code sections related to these properties.

NOTE: This report references the most recent edition of the Codes cited. Section numbers for earlier Code editions may differ.

**1.3** The Ultra-Thane 230 (HFC) Foam System has been evaluated for the following uses:

Non-structural thermal insulating material for Class A or Class B roof coverings, and roofing recovers over existing classified roof systems. Roof coverings with an A or B classification, as noted in Table 1, are permitted on buildings of any type of construction.

### 2.0 STATEMENT OF COMPLIANCE

The Ultra-Thane 230 (HFC) Roof Foam System complies with the Codes listed in Section 1.1, for the properties stated in Section 1.2, and uses stated in Section 1.3, when installed as described in this report, including the Conditions of Use stated in Section 6.0.

### 3.0 DESCRIPTION

**3.1 Materials:** The Ultra-Thane 230 (HFC) Foam System consists of the Ultra-Thane 230 Roofing Foam, a spray-applied polyurethane foam plastic, covered with Ultra-Flex 1000 or Ultra-Guard 5700, liquid applied, elastomeric coatings.

**3.1.1 Ultra-Thane 230 Roof Foam:** The Ultra-Thane 230 (HFC) Roof Foam consists of two components, "A" (isocyanate) and "B" (polyol resin), which are intended to be interacted in a one to one ratio, by volume, and spray-applied to form a closed cell rigid foam plastic roof covering/insulation material with a nominal density of 3 pounds per cubic foot. The A and B components are available in 55-gallon drums and have a shelf life of 12 and 6 months respectively when stored at temperatures between 50°F and 80°F. Further information may be found at [www.generalcoatings.net](http://www.generalcoatings.net).

**3.1.2 Ultra-Flex 1000 Coating:** Ultra-Flex 1000 Acrylic Elastomeric Coating is a single component water-borne acrylic elastomeric coating specifically designed to adhere to polyurethane foam. The coating is supplied in 5-gallon pails, 55-gallon drums, and 250-gallon totes, and has a shelf life of 12 months when stored at temperatures between 40°F and 80°F. The materials must be protected from freezing.



**3.1.3 Ultra-Guard 5700 Coating:** Ultra-Guard 5700 Silicone Coating is a single-component silicone elastomer coating specifically designed to adhere to polyurethane foam. The coating is supplied in 5-gallon pails, 50-gallon drums, and 250-gallon totes, and has a shelf life of 12 months when stored at temperatures between 32°F and 100°F.

The materials must be protected from freezing. The coating is available in white and grey colors.

#### 4.0 PERFORMANCE CHARACTERISTICS

**4.1 Surface-burning Characteristics:** Ultra-Thane 230 (HFC) Roof Foam has a flame-spread rating of 75 or less when tested in accordance with ASTM E84 at a maximum thickness of 4 inches.

**4.2 Impact Resistance:** The Ultra-Thane 230 (HFC) Roof Foam System complies with the requirements of the Resistance to Foot Traffic Test in Section 5.5 of FM 4470, as referenced in IBC Section 1504.7.

**4.3 Wind Resistance:** The wind resistance of the roofing system is limited to the wind resistance for the roof deck and structural framing to which it is applied.

**4.4 Fire Classification:** The Ultra-Thane 230 (HFC) Roof Foam System, when installed in accordance with this report, and as described in Table 2, is a Class A or Class B roof covering in accordance with ASTM E108. The Ultra-Thane 230 (HFC) Foam System may be used over any existing roof system and maintain its new construction rating when the roof deck is noncombustible. On installations over existing BUR roofing systems with combustible decks, construction must be as described in Table 3.

**4.5 Thermal Resistance:** Ultra-Thane 230 (HFC) Roof Foam has thermal resistance (*R*-value) as shown in Table 2.

#### 5.0 INSTALLATION

**5.1 General:** The Ultra-Thane 230 (HFC) Roof Foam System must be installed in accordance with the manufacturer's published installation instructions, the applicable Code, and this Research Report. The

manufacturer's published installation instructions and this Research Report must be strictly adhered to, and a copy of the instructions must be available on the jobsite during installation.

**5.2 Preparation of Substrates:** The substrates to be covered must be prepared as described in the General Coatings installation instructions.

#### 5.3 Substrates:

**5.3.1 Combustible Substrates:** Combustible substrates must be minimum 15/32-inch-thick, Code-complying, exterior grade or Exposure 1 plywood. All plywood edges must be supported by blocking or have tongue and groove joints as required by IBC Section 2603.4.1.5.

#### 5.3.2 Noncombustible Substrates:

**5.3.2.1 Cementitious Substrates:** Structural concrete substrates must have a minimum compressive strength of 2500 psi.

**5.3.2.2 Metal Substrates:** Metal substrates must be a minimum No. 22 gauge galvanized steel [0.030 inch (0.76mm)] substrate.

**5.4 Roof Slope:** Minimum slope must be 1/4:12 (2 percent) and the maximum roof slope is as specified in Table 3.

**5.5 Foam Application:** The Ultra-Thane 230 (HFC) Roof Foam is applied in a 1:1 ratio by volume of the A and B components using foam spraying equipment recommended by General Coatings. Application of the spray foam must be performed when the substrate temperature is at least 50°F, the ambient temperature is at least 50°F, and the wind speed is equal to or less than 15 miles per hour. The spray foam must not be applied to wet or damp substrates, or when dew, condensation, precipitation, or freezing temperatures are expected prior to completion of the foam and coating application.

The Ultra-Thane 230 (HFC) Roof Foam must be applied in uniform passes ranging from 1/2 to 1-1/2 inches, to reach the desired thickness as noted in Table 2. The total finished thickness must be achieved within the same day. The finished surface of the foam must be smooth and free of voids, pinholes, and crevices.







**5.6 Coating Application:** The surface of the foam plastic must be dry and free of all damaged foam, dirt, and foreign materials before application of the coating. If the insulation surface is damaged to the point where cracks, voids, or large depressions appear, additional insulation must be applied to create a satisfactory surface. After the insulation has developed sufficient strength to support foot traffic, but within 24 hours, the coating must be brush, roller, or spray-applied at the application rates noted in Table 3. The ambient temperature must be at least 50°F during coating application and above 32°F for the 24-hour period after application. The coating must not be applied when dew, condensation, precipitation, or freezing temperatures are anticipated prior to completion of the coating application.

**5.7 Reroofing:** Prior to installation of new roof coverings, inspection in accordance with IBC Section 1511 or IRC R908, as applicable, and approval from the Code official having jurisdiction are required.

## 6.0 CONDITIONS OF USE

**6.1** Installation must comply with this Research Report, the manufacturer's published installation instructions and the applicable Code. In the event of a conflict between the manufacturer's instructions and this report, this report governs.

**6.2** The thickness and density of the foam plastic must not exceed that noted in Section 4.0 and Table 3 of this report.

**6.3** The foam roofing system must be applied by qualified trained applicators.

**6.4** Where moderate to heavy foot traffic occurs for maintenance of equipment, or is otherwise necessary, the roof covering must be adequately protected to prevent mechanical damage or wearing of the surface.

**6.5** The foam plastic insulation must be separated from the interior of the building by an approved thermal barrier in accordance with IBC Section 2603.4.

**6.6** The Ultra-Thane 230 (HFC) Roof Foam, Ultra-Flex 1000 Coating, and Ultra-Guard 5700 Coating are produced

under a quality control program with inspections by Intertek.

## 7.0 SUPPORTING EVIDENCE

**7.1** Reports of tests in accordance with ASTM D6083, ASTM D6694, ASTM E108, FM 4470, and FM 4474.

**7.2** Data in accordance with the ICC-ES Acceptance Criteria for Spray-applied Foam Plastic Insulation, (AC377), dated April 2020 (editorially revised July 2020).

**7.3** Data in accordance with ICC 1100 (2019).

**7.4** Intertek Listing Report "[General Coatings Ultra-Thane 230 \(HFC\) and Ultra-Thane 203 \(HFO\) Roof Foam Systems](#)".

## 8.0 IDENTIFICATION

Components of the Ultra-Thane 230 (HFC) Foam System are identified with a label containing the General Coatings Manufacturing Corp. name, address and telephone number, the product name (Ultra-Thane 230), use instructions, the product density, the flame-spread and the smoke-development indices, the Intertek Mark, Code Compliance Research Report number (CCRR-0492), the Intertek Control Number, and the name of the inspection agency (Intertek). The products are also labeled with the shelf life and batch number.



## 9.0 OTHER CODES

### 9.1 Florida Building Code:

The Ultra-Thane 230 (HFC) Foam System described in Sections 2.0 to 7.0 of this report complies with the 2023 and 2020 *Florida Building Code – Building* and the 2023 and 2020 *Florida Building Code – Residential*, subject to the following conditions:





- The foam system must be installed in accordance with the provisions noted in Sections 2.0 through 7.0 of this report, Sections 1507.14 and 1521.18 of the *Florida Building Code – Building* and Section R905.14.1 of the *Florida Building Code – Residential*.
- Use of the foam system in areas designated as High-velocity Hurricane Zones is outside the scope of this report.
- The foam system is manufactured under a quality control program with inspections by Intertek.

Intertek is an approved evaluation entity and quality assurance entity pursuant to Florida Statute 553.842 – *Product Evaluation and Approval*.

#### 10.0 CODE COMPLIANCE RESEARCH REPORT USE

**10.1** Approval of building products and/or materials can only be granted by a building official having legal authority in the specific jurisdiction where approval is sought.

**10.2** Code Compliance Research Reports shall not be used in any manner that implies an endorsement of the product by Intertek.

**10.3** Reference to the [Intertek Directory of Building Products](#) is recommended to ascertain the current version and status of this report.

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TABLE 1 – PROPERTIES EVALUATED

PROPERTY	2021 IBC SECTION <sup>1</sup>	2021 IRC SECTION <sup>1</sup>	2021 IECC SECTION <sup>1</sup>	2023 FBC – Building	2023 FBC - Residential
Physical properties	1507.14 2603.1.1	R905.14	n/a	1507.14 2603.1.1	R905.14
Surface burning characteristics	2603.3	R316.3	n/a	2603.3	R316.3
Thermal barrier	2603.4	R316.4	n/a	2603.4	R316.4
Wind resistance	1504.3	R905.1	n/a	1504.3	R905.1
Impact resistance	1504.7	n/a	n/a	1504.7	n/a
Fire classification	1505	R902	n/a	1505	R902
Thermal resistance	n/a	N1102	C303.1 R303.1	n/a	N1101

<sup>1</sup> Section numbers may be different for earlier versions of the International Codes.

n/a – not applicable

TABLE 2 – THERMAL RESISTANCE (R-VALUE) OF ULTRA-THANE 230 ROOFING FOAM

Thickness (inch)	R-value (°F·ft <sup>2</sup> ·h/Btu) <sup>1,2</sup>
1	6.7
1.5	10
2	14
3.5	22
10	6.4

<sup>1</sup>R-values are based on tested K-values at 1 and 4 inch thicknesses

<sup>2</sup>R-values greater than 10 are rounded to the nearest whole number

<sup>3</sup> To determine R values for thickness not listed:

- a. Between 1 inch and 3.5 inches can be determined through linear interpolation or
- b. greater than 3.5 inches can be calculated based on R= 6.40/inch





TABLE 3 – FIRE CLASSIFICATION – COATED FOAM ROOF ASSEMBLIES

FIRE CLASSIFICATION	SUBSTRATE	MAXIMUM ROOF SLOPE	FOAM PLASTIC INSULATION Ultra-Thane 230 and Ultra Thane 230 (HFO)	COATING		TOP SURFACING
			Maximum Thickness (Inches)	Designation	Application Rate	
Class A	Non-combustible	4:12	10	Ultra-Flex 1000 Acrylic Elastomeric Coating	Two coats at 1½ gallons per 100 ft <sup>2</sup> each	No. 11 granules, 32 pounds per 100 ft <sup>2</sup>
Class A	Combustible deck covered with a DensDeck substrate	1/2:12	10	Ultra-Flex 1000 Acrylic Elastomeric Coating	Two coats at 1½ gallons per 100 ft <sup>2</sup> each	No. 11 granules, 32 pounds per 100 ft <sup>2</sup>
Class B	15/32-inch-thick plywood minimum	1/2:12	10	Ultra-Flex 1000 Acrylic Elastomeric Coating	Two coats at 1½ gallons per 100 ft <sup>2</sup> each	No. 11 granules, 32 pounds per 100 ft <sup>2</sup>
Class A	BUR over 15/32-inch plywood	1/2:12	10	Ultra-Flex 1000 Acrylic Elastomeric Coating	Two coats at 1½ gallons per 100 ft <sup>2</sup> each	No. 11 granules, 32 pounds per 100 ft <sup>2</sup>
Class A	Non-combustible	2:12	10	Ultra-Guard 5700 Silicone Coating	Two coats at 1-1/5 gallons per 100 ft <sup>2</sup> each	Non-granulated
Class A	Non-combustible	Unlimited	10	Ultra-Guard 5700 Silicone Coating	Two coats at 1-1/5 gallons per 100 ft <sup>2</sup> each	No. 11 granules, 26 pounds per 100 ft <sup>2</sup>
Class B	15/32-inch-thick plywood minimum	1/2:12	10	Ultra-Guard 5700 Silicone Coating	Two coats at 1-1/5 gallons per 100 ft <sup>2</sup> each	No. 11 granules, 26 pounds per 100 ft <sup>2</sup>
Class A	Combustible deck covered with a DensDeck substrate <sup>1</sup>	Unlimited	10	Ultra-Guard 5700 Silicone Coating	Two coats at 1-1/5 gallons per 100 ft <sup>2</sup> each	No. 11 granules, 26 pounds per 100 ft <sup>2</sup>
Class A	Combustible deck covered with Panasonic VIP panels <sup>2</sup> covered with a DensDeck substrate <sup>1</sup>	1/2:12	10	Ultra-Flex 1000 Acrylic Elastomeric Coating	Two coats at 1-1/2 gallons per 100 ft <sup>2</sup> each	No. 11 granules, 32 pounds per 100 ft <sup>2</sup>
Class A	Combustible deck covered with Panasonic VIP panels <sup>2</sup> covered with a DensDeck substrate <sup>1</sup>	2:12	10	Ultra-Guard 5700 Silicone Coating	Two coats at 1-1/5 gallons per 100 ft <sup>2</sup> each	No. 11 granules, 32 pounds per 100 ft <sup>2</sup>

NOTE 1: Joints in the noncombustible substrate must be staggered from joints in the combustible deck and must be aligned with framing members.

NOTE 2: Maximum 24 mm thick Panasonic VIP Panels (See Intertek SpecDirect Spec ID 43853)



Issue Date: 10-23-2014  
Revision Date: 03-20-2024  
Renewal Date: 03-31-2025

**DIVISION: 07 — THERMAL AND MOISTURE PROTECTION**  
**Section: 07 57 00 – Coated Foam Roofing**

**REPORT HOLDER:**  
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**1220 E. North Avenue**  
**Fresno, CA 93725**  
**Phone: (559) 495-4004**  
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**REPORT SUBJECT:**  
**Ultra-Thane 230 (HFO) Roof Foam System**

### 1.0 SCOPE OF EVALUATION

**1.1** This Research Report addresses compliance with the following Codes:

- 2021, 2018, 2015 *International Building Code*® (IBC)
- 2021, 2018, 2015 *International Residential Code*® (IRC)
- 2021, 2018, 2015 *International Energy Conservation Code*® (IECC)
- 2023, 2020 *Florida Building Code (including High Velocity Hurricane Zones)* – See Section 8.1

**1.2** The Ultra-Thane 230 (HFO) Foam System has been evaluated for the following properties:

- Physical properties
- Flame spread characteristics
- Wind resistance
- Impact resistance
- Fire classification
- Thermal resistance (R-value)

See Table 1 for applicable Code sections related to these properties.

NOTE: This report references the most recent edition of the Codes cited. Section numbers for earlier Code editions may differ.

**1.3** The Ultra-Thane 230 (HFO) Foam System has been evaluated for the following uses:

Non-structural thermal insulating material for Class A or Class B roof coverings, and roofing recovers over existing classified roof systems. Roof coverings with an A or B classification, as noted in Table 1, are permitted on buildings of any type of construction.

### 2.0 STATEMENT OF COMPLIANCE

The Ultra-Thane 230 (HFO) Roof Foam System complies with the Codes listed in Section 1.1, for the properties stated in Section 1.2, and uses stated in Section 1.3, when installed as described in this report, including the Conditions of Use stated in Section 6.0.

### 3.0 DESCRIPTION

**3.1 Materials:** The Ultra-Thane 230 (HFO) Roof Foam System consists of the Ultra-Thane 230 (HFO) Roof Foam, a spray-applied polyurethane foam plastic, covered with Ultra-Flex 1000 or Ultra-Guard 5700, liquid applied, elastomeric coatings.

**3.1.1 Ultra-Thane 230 (HFO) Roofing Foam:** The Ultra-Thane 230 (HFO) Roofing Foam consists of two components, "A" (isocyanate) and "B" (polyol resin), which are intended to be interacted in a one-to-one ratio, by volume, and spray-applied to form a closed cell rigid foam plastic roof covering/insulation material with nominal densities of 2.5, 2.7, and 3 pounds per cubic foot. The A and B components are available in 55-gallon drums and have a shelf life of 12 and 6 months respectively when stored at temperatures between 50°F and 80°F. Further information may be found at [www.generalcoatings.net](http://www.generalcoatings.net).

**3.1.2 Ultra-Flex 1000 Coating:** Ultra-Flex 1000 Acrylic Elastomeric Coating is a single component water-borne acrylic elastomeric coating specifically designed to adhere to polyurethane foam. The coating is supplied in 5-gallon pails, 55-gallon drums, and 250-gallon totes, and has a shelf life of 12 months when stored at temperatures between 40°F and 80°F. The materials must be protected from freezing.

**3.1.3 Ultra-Guard 5700 Coating:** Ultra-Guard 5700 Silicone Coating is a single-component silicone elastomer coating specifically designed to adhere to polyurethane foam. The coating is supplied in 5-gallon pails, 50-gallon drums, and 250-gallon totes, and has a shelf life of 12 months when stored at temperatures between 32°F and 100°F.

The materials must be protected from freezing. The coating is available in white and grey colors.



#### 4.0 PERFORMANCE CHARACTERISTICS

**4.1 Surface-burning Characteristics:** Ultra-Thane 230 (HFO) Roofing Foam has a flame-spread rating of 75 or less when tested in accordance with ASTM E84 at a maximum thickness of 4 inches.

**4.2 Impact Resistance:** The Ultra-Thane 230 (HFO) Roofing Foam System complies with the requirements of the Resistance to Foot Traffic Test in Section 5.5 of FM 4470, as referenced in IBC Section 1504.7.

**4.3 Wind Resistance:** The wind resistance of the roofing system is limited to the wind resistance for the roof deck and structural framing to which it is applied.

**4.4 Fire Classification:** The Ultra-Thane 230 (HFO) Foam System, when installed in accordance with this report, and as described in Table 2, is a Class A or Class B roof covering in accordance with ASTM E108. The system may be used over any existing roof system and maintain its new construction rating when the roof deck is noncombustible. On installations over existing BUR roofing systems with combustible decks, construction must be as described in Table 3.

**4.5 Thermal Resistance:** Ultra-Thane 230 (HFO) Roofing Foam has thermal resistance (*R*-value) as shown in Table 2.

#### 5.0 INSTALLATION

**5.1 General:** The Ultra-Thane 230 (HFO) Foam System must be installed in accordance with the manufacturer's published installation instructions, the applicable Code, and this Research Report. The manufacturer's published installation instructions and this Research Report must be strictly adhered to, and a copy of the instructions must be available on the jobsite during installation.

**5.2 Preparation of Substrates:** The substrates to be covered must be prepared as described in the General Coatings installation instructions.

##### 5.3 Substrates:

**5.3.1 Combustible Substrates:** Combustible substrates must be minimum 15/32 inch thick, Code-complying, exterior grade, or Exposure 1 plywood. All plywood edges must be supported by blocking or have tongue and groove joints as required by IBC Section 2603.4.1.5.

##### 5.3.2 Noncombustible Substrates:

**5.3.2.1 Cementitious Substrates:** Structural concrete substrates must have a minimum compressive strength of 2500 psi.

**5.3.2.2 Metal Substrates:** Metal substrates must be a minimum No. 22 gauge galvanized steel [0.030 inch (0.76mm)] substrate.

**5.4 Roof Slope:** Minimum slope must be 1/4:12 (2 percent) and the maximum roof slope is as specified in Table 3.

**5.5 Foam Application:** The Ultra-Thane 230 (HFO) Roofing Foam is applied in a 1:1 ratio by volume of the A and B components using foam spraying equipment recommended by General Coatings. Application of the spray foam must be performed when the substrate temperature is at least 50°F, the ambient temperature is at least 50°F, and the wind speed is equal to or less than 15 miles per hour. The spray foam must not be applied to wet or damp substrates, or when dew, condensation, precipitation, or freezing temperatures are expected prior to completion of the foam and coating application.

The Roofing Foam must be applied in uniform passes ranging from 1/2 to 1-1/2 inches, to reach the desired thickness as noted in Table 3. The total finished thickness must be achieved within the same day. The finished surface of the foam must be smooth and free of voids, pinholes, and crevices.

**5.6 Coating Application:** The surface of the foam plastic must be dry and free of all damaged foam, dirt, and foreign materials before application of the coating. If the insulation surface is damaged to the point where cracks, voids, or large depressions appear, additional insulation must be applied to create a satisfactory surface. After the insulation has developed sufficient strength to support foot traffic, but within 24 hours, the coating must be brush, roller, or spray-applied at the application rates noted in Table 2. The ambient temperature must be at least 50°F during coating application and above 32°F for the 24-hour period after application. The coating must not be applied when dew, condensation, precipitation, or freezing temperatures are anticipated prior to completion of the coating application.

**5.7 Reroofing:** Prior to installation of new roof coverings, inspection in accordance with IBC Section 1511 or IRC R908, as applicable, and approval from the Code official having jurisdiction are required.





## 6.0 CONDITIONS OF USE

**6.1** Installation must comply with this Research Report, the manufacturer's published installation instructions, and the applicable Code. In the event of a conflict between the manufacturer's instructions and this report, this report governs.

**6.2** The thickness and density of the foam plastic must not exceed that noted in Section 4.0 and Table 3 of this report.

**6.3** The roofing foam system must be applied by qualified trained applicators.

**6.4** Where moderate to heavy foot traffic occurs for maintenance of equipment, or is otherwise necessary, the roof covering must be adequately protected to prevent mechanical damage or wearing of the surface.

**6.5** The foam plastic insulation must be separated from the interior of the building by an approved thermal barrier in accordance with IBC Section 2603.4.

**6.6** The Ultra-Thane 230 (HFO) Roofing Foam, Ultra-Flex 1000 Coating, and Ultra-Guard 5700 Coating are produced under a quality control program with inspections by Intertek.

## 7.0 SUPPORTING EVIDENCE

**7.1** Reports of tests in accordance with ASTM D6083, ASTM D6694, ASTM E108, FM 4470, FM 4474, FED TTC-555B, TAS 110, and TAS 114.

**7.2** Data in accordance with the ICC-ES Acceptance Criteria for Spray-applied Foam Plastic Insulation, (AC377), dated April 2020, editorially revised July 2020.

**7.3** Data in accordance with ICC 1100 (2019).

**7.4** Intertek Listing Report "[General Coatings Ultra-Thane 230 \(HFC\) and Ultra-Thane 230 \(HFO\) Roof Foam Systems](#)".

## 8.0 IDENTIFICATION

Components of the Ultra-Thane 230 (HFO) Roof Foam System are identified with a label containing the General Coatings Manufacturing Corp. name, address and telephone number, the product name [Ultra-Thane 230 (HFO)], use instructions, the product density, the flame-spread and the smoke-development indices, the Intertek Mark, Code Compliance Research Report number (CCRR-1026), the Intertek Control

Number and the name of the inspection agency (Intertek). The products are also labeled with the shelf life and batch number.



## 9.0 OTHER CODES

### 9.1 Florida Building Code:

The Ultra-Thane 230 (HFO) Roof Foam System described in Sections 2.0 to 7.0 of this report complies with the 2023 and 2020 *Florida Building Code – Building* and the 2023 and 2020 *Florida Building Code – Residential*, including High-velocity Hurricane Zones, subject to the following conditions:

- The foam system must be installed in accordance with the provisions noted in Sections 2.0 through 7.0 of this report, Sections 1507.14 and 1521.18 of the *Florida Building Code – Building* and Section R905.14.1 of the *Florida Building Code – Residential*.
- Wood roof decks must be minimum 19/32-in. CD Exposure 1 plywood or minimum nominal 1-inch wood decking.
- The foam system is manufactured under a quality control program with inspections by Intertek.

Intertek is an approved evaluation entity and quality assurance entity pursuant to Florida Statute 553.842 – *Product Evaluation and Approval*.

## 10.0 CODE COMPLIANCE RESEARCH REPORT USE

**10.1** Approval of building products and/or materials can only be granted by a building official having legal authority in the specific jurisdiction where approval is sought.

**10.2** Code Compliance Research Reports shall not be used in any manner that implies an endorsement of the product by Intertek.

**10.3** Reference to the [Intertek Directory of Building Products](#) is recommended to ascertain the current version and status of this report.





TABLE 1 – PROPERTIES EVALUATED

PROPERTY	2021 IBC SECTION <sup>1</sup>	2021 IRC SECTION <sup>1</sup>	2021 IECC SECTION <sup>1</sup>	2023 FBC – Building	2023 FBC - Residential
Physical properties	1507.14 2603.1.1	R905.14	n/a	1507.14, 1523.6.2.1 2603.1.1	R905.14, R4402
Surface burning characteristics	2603.3	R316.3	n/a	2603.3	R316.3
Thermal barrier	2603.4	R316.4	n/a	2603.4	R316.4
Wind resistance	1504.3	R905.1	n/a	1504.3, 1523	R905.1, R4402
Impact resistance	1504.7	n/a	n/a	1504.7, 1626.4	n/a
Fire classification	1505	R902	n/a	1505, 1523	R902
Thermal resistance	n/a	N1102	C303.1 R303.1	n/a	N1101

<sup>1</sup> Section numbers may be different for earlier versions of the International Codes.

n/a – not applicable

TABLE 2 – THERMAL RESISTANCE (R-VALUE) OF ULTRA-THANE 230 (HFO) ROOFING FOAM

Thickness (inch)	R-value @ Nominal Density of 3.0 lb/ft <sup>3</sup> (°F·ft <sup>2</sup> ·h/Btu) <sup>1,2,3</sup>
1	6.9
1.5	10
2	14
3.5	23
5.5	37
7.5	50
10	66

<sup>1</sup>R-values are based on tested K-values at 1 and 3.5 inch thicknesses

<sup>2</sup>R-values greater than 10 are rounded to the nearest whole number

<sup>3</sup> To determine R values for thickness not listed at Nominal Density of 3.0 lb/ft<sup>3</sup>:

- Between 1 inch and 3.5 inches can be determined through linear interpolation or
- greater than 3.5 inches can be calculated based on R= 6.65/inch







TABLE 3 – FIRE CLASSIFICATION – COATED FOAM ROOF ASSEMBLIES

FIRE CLASSIFICATION	SUBSTRATE	MAXIMUM ROOF SLOPE	FOAM PLASTIC INSULATION Ultra-Thane 230 and Ultra Thane 230 (HFO)	COATING		TOP SURFACING
			Maximum Thickness (Inches)	Designation	Application Rate	
Class A	Non-combustible	4:12	10	Ultra-Flex 1000 Acrylic Elastomeric Coating	Two coats at 1½ gallons per 100 ft <sup>2</sup> each	No. 11 granules, 32 pounds per 100 ft <sup>2</sup>
Class A	Combustible deck covered with a DensDeck substrate	1/2:12	10	Ultra-Flex 1000 Acrylic Elastomeric Coating	Two coats at 1½ gallons per 100 ft <sup>2</sup> each	No. 11 granules, 32 pounds per 100 ft <sup>2</sup>
Class B	15/32-inch-thick plywood minimum	1/2:12	10	Ultra-Flex 1000 Acrylic Elastomeric Coating	Two coats at 1½ gallons per 100 ft <sup>2</sup> each	No. 11 granules, 32 pounds per 100 ft <sup>2</sup>
Class A	BUR over 15/32-inch plywood	1/2:12	10	Ultra-Flex 1000 Acrylic Elastomeric Coating	Two coats at 1½ gallons per 100 ft <sup>2</sup> each	No. 11 granules, 32 pounds per 100 ft <sup>2</sup>
Class A	Non-combustible	2:12	10	Ultra-Guard 5700 Silicone Coating	Two coats at 1-1/5 gallons per 100 ft <sup>2</sup> each	Non-granulated
Class A	Non-combustible	Unlimited	10	Ultra-Guard 5700 Silicone Coating	Two coats at 1-1/5 gallons per 100 ft <sup>2</sup> each	No. 11 granules, 26 pounds per 100 ft <sup>2</sup>
Class B	15/32-inch-thick plywood minimum	1/2:12	10	Ultra-Guard 5700 Silicone Coating	Two coats at 1-1/5 gallons per 100 ft <sup>2</sup> each	No. 11 granules, 26 pounds per 100 ft <sup>2</sup>
Class A	Combustible deck covered with a DensDeck substrate <sup>1</sup>	Unlimited	10	Ultra-Guard 5700 Silicone Coating	Two coats at 1-1/5 gallons per 100 ft <sup>2</sup> each	No. 11 granules, 26 pounds per 100 ft <sup>2</sup>
Class A	Combustible deck covered with Panasonic VIP panels <sup>2</sup> covered with a DensDeck substrate <sup>1</sup>	1/2:12	10	Ultra-Flex 1000 Acrylic Elastomeric Coating	Two coats at 1-1/2 gallons per 100 ft <sup>2</sup> each	No. 11 granules, 32 pounds per 100 ft <sup>2</sup>
Class A	Combustible deck covered with Panasonic VIP panels <sup>2</sup> covered with a DensDeck substrate <sup>1</sup>	2:12	10	Ultra-Guard 5700 Silicone Coating	Two coats at 1-1/5 gallons per 100 ft <sup>2</sup> each	No. 11 granules, 32 pounds per 100 ft <sup>2</sup>

NOTE 1: Joints in the noncombustible substrate must be staggered from joints in the combustible deck and must be aligned with framing members.

NOTE 2: Maximum 24 mm thick Panasonic VIP Panels (See Intertek SpecDirect Spec ID 43853)

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