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ESR-3239

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DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION

SECTION: 07 57 00—COATED FOAM ROOFING

REPORT HOLDER:

GENERAL COATINGS MANUFACTURING CORP.

**1220 EAST NORTH AVENUE
FRESNO, CALIFORNIA 93725**

EVALUATION SUBJECT:

ULTRA-THANE COATED FOAM PLASTIC ROOF COVERING SYSTEM



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**DIVISION: 07 00 00—THERMAL AND MOISTURE
PROTECTION****Section: 07 57 00—Coated Foam Roofing****REPORT HOLDER:****GENERAL COATINGS MANUFACTURING CORP.
1220 EAST NORTH AVENUE
FRESNO, CALIFORNIA 93725
(559) 497-4004**www.generalcoatings.net**EVALUATION SUBJECT:****ULTRA-THANE COATED FOAM PLASTIC ROOF
COVERING SYSTEM****1.0 EVALUATION SCOPE****Compliance with the following codes:**

- 2012, 2009 and 2006 *International Building Code*® (IBC)
- 2012, 2009 and 2006 *International Residential Code*® (IRC)

Properties evaluated:

- Physical properties
- Fire classification
- Wind resistance
- Impact resistance

2.0 USES

The coated foam plastic roof covering described in this report is used in construction of classified roof assemblies, as noted in Table 1. The roof covering systems recognized in this report may be used on buildings of any type of construction.

3.0 DESCRIPTION**3.1 General:**

The Ultra-Thane coated foam plastic roof covering system consists of a liquid-applied coating (Ultra-Flex 1000) over a spray-applied polyurethane foam plastic insulation (Ultra-Thane 230).

3.2 Spray-applied Polyurethane Foam Plastic Insulation:

General Coatings Ultra-Thane 230 Roofing Foam is a two-component, spray-applied, polyurethane foam plastic insulation produced in a nominal density of 3.0 pcf (48.0 kg/m³). The foam plastic ingredients (Component A and Component B) are available in 55-gallon (208 L) drums and have a shelf life of nine months for Component

A and six months for Component B when stored in unopened containers at temperatures between 50°F and 80°F (10°C and 26.7°C).

The foam plastic insulation has a flame-spread rating of 75 or less when tested in accordance with ASTM E84 or UL 723 at a maximum thickness of 2.0 inches (51 mm).

3.3 Coating: General Coatings Ultra-Flex 1000 coating is a single-component, liquid-applied, 100 percent acrylic elastomeric coating complying with ASTM D6083. It is supplied in 5-gallon (18.9 L) pails, 55-gallon (209 L) drums and 275-gallon (1041 L) totes; and has a shelf life of 12 months when stored in unopened containers at temperatures between 50°F and 80°F (10°C and 26.7°C).

3.4 Impact and Foot Traffic Resistance:

The coated foam plastic roof coverings described in this report comply with the Resistance to Foot Traffic Test in Section 5.5 of FM 4470.

4.0 INSTALLATION**4.1 Preparation of Substrates:**

The substrates to be covered must be free of all grease, oil, loose particles, moisture, and other foreign materials. Areas not receiving a foam plastic insulation application must be masked off or otherwise protected from overspray. The application of primers, when used, must be in accordance with General Coatings' published installation instructions.

4.2 Substrates:

4.2.1 Combustible Substrates: Combustible substrates must be minimum ¹⁵/₃₂-inch-thick (11.9 mm), code-complying, exterior-grade or Exposure 1 plywood. All plywood edges must be supported by blocking or have tongue-and-groove joints in accordance with the requirements in IBC Section 2603.4.1.5, 2012 and 2009 IRC Section R316.5.2, or 2006 IRC Section R314.5.2, as applicable.

4.2.2 Noncombustible Substrates:

4.2.2.1 Cementitious Substrates: Structural concrete substrates must have a minimum compressive strength of 3000 psi (20 684 kPa). Cementitious decks must be thoroughly cured and must be subjected to specialized treatment, such as wire brushing or commercial sandblasting, or must be chemically cleaned to ensure adequate bonding.

4.2.2.2 Metal Substrates: Minimum No. 22 gage galvanized steel [0.030 inch (0.76 mm)] deck. Metal decks must be cleaned of any adhesion inhibitors, and gaps in end or sidelaps must be sealed with an approved sealant.

4.3 Roof Slope:

The Ultra-Thane 230 Roofing Foam insulation must be spray-applied to form roof slopes that have a minimum slope of $\frac{1}{4}$:12 (2 percent) and a maximum roof slope as specified in Table 1.

4.4 Foam Plastic Insulation Application:

The Ultra-Thane 230 Roofing Foam insulation described in Section 3.2 must be applied at a 1:1 ratio by volume of the A and B components to one of the substrates described in Section 4.2, using foam-spraying equipment and processing parameters specified by General Coatings. Application of the foam plastic insulation must be performed when the following conditions are met:

- Substrate temperature is at least 50°F (10°C);
- Ambient temperature is at least 50°F (10°C);
- Relative Humidity is below 85% RH;
- Dew point is more than 5°F (2.8°C) above or below the ambient temperature;
- Wind speed is equal to or less than 15 miles per hour (24.1 km/h).

The Ultra-Thane 230 Roofing Foam insulation 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 Roofing Foam insulation may be applied in one or more passes from $\frac{1}{2}$ -inch-thick (12.7 mm) up to maximum, 2-inch-thick (51 mm), as noted in Table 1. 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.

4.5 Application of Coating:

The Ultra-Thane 230 Roofing Foam insulation surface must be dry and free of all damaged foam, dirt and foreign material 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, no less than 2 hours not more than 72 hours after application of the insulation, the coating must be brush-, roller-, or spray-applied at the application rates noted in Table 1. The ambient temperature must be at least 50°F (10°C) during coating application, and above 32°F (0°C) 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. The first coat must be allowed to cure in accordance with General Coatings' published installation instructions before application of the second coat. The application of primers, when used, must be in accordance with General Coatings' published installation instructions.

4.6 Fire Classification:

4.6.1 New Construction: Roof covering systems, as noted in Table 1, when installed in accordance with this report, are Class A or Class B roof coverings in accordance with ASTM E108 or UL 790.

4.6.2 Reroofing: The Ultra-Thane coated foam plastic roof covering system may be applied over existing built-up roof coverings as described in Table 1. Prior to installation of the new roof covering system over the existing roof system, inspection in accordance with IBC Section 1510 or IRC Section R907, and approval from the code official

having jurisdiction, are required. Installation must be over existing uninsulated systems only.

4.7 Wind Resistance:

The allowable wind uplift pressures for the Ultra-Thane coated foam plastic roof covering is as noted in Table 2.

5.0 CONDITIONS OF USE

The Ultra-Thane coated foam plastic roof covering described in this report complies with, or is a suitable alternative to what is specified in, the code indicated in Section 1.0 of this report, subject to the following conditions:

- 5.1 Installation and application of the Ultra-Thane coated foam plastic roof covering system must comply with the applicable code, General Coatings' published installation instructions, and this report. If there are any conflicts between the report holder's installation instructions and this report, this report governs.
- 5.2 The spray-applied foam roofing insulation must be applied by installers trained or approved by General Coatings.
- 5.3 Where moderate or heavy foot traffic occurs for maintenance of equipment, or is otherwise necessary, the roof covering must be adequately protected to prevent damage or wearing of the surface.
- 5.4 The Ultra-Thane system must be separated from the interior of the building by an approved thermal barrier in accordance with IBC Section 2603.4, 2012 and 2009 IRC Section R316.5.2 or 2006 IRC Section R314.5.2, as applicable.
- 5.5 The allowable wind uplift pressures listed in Table 2 are for the roof covering only. The deck and supporting structure to which the roof covering is attached must be designed to withstand the applicable wind pressures determined in accordance with ASCE 7 or IBC Section 1609.6.
- 5.6 Flashing must be installed at wall and roof intersections, at gutters and around roof openings, as required by IBC Section 1503.2 or IRC Section R903.2, as applicable.
- 5.7 Use of the foam plastic insulation as a vapor retarder is outside the scope of this report. If required, a vapor retarder must be installed in accordance with the applicable code.
- 5.8 The Ultra-Thane 230 Roofing Foam insulation components and the Ultra-Flex 1000 roof coating are manufactured in Fresno, California under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the ICC-ES Acceptance Criteria for Spray-Applied Foam Plastic Insulation (AC377), dated November 2012 (editorially revised April 2014).
- 6.2 Report of tests on Ultra-Flex 1000 in accordance with ASTM D6083.
- 6.3 Reports of tests in accordance with Appendix B of FM 4474.
- 6.4 Reports of tests in accordance with Section 5.5 of FM 4470.
- 6.5 Reports of tests in accordance with ASTM E108 (UL 790).
- 6.6 Reports of tests in accordance with ASTM E84 (UL 723).

7.0 IDENTIFICATION

Each container of the Ultra-Thane 230 Roofing Foam insulation bears a label with the General Coatings name and address; the product name (Ultra-Thane 230 Roofing Foam); the component type [A or B]; the density (Component B only); the flame spread index; the date of manufacture; the shelf life; and the evaluation report number (ESR-3239).

Each container of Ultra-Flex 1000 acrylic roof coating is labeled with the General Coatings name and address; the product name (Ultra-Flex 1000); the date of manufacture; the shelf life; and the evaluation report number (ESR-3239).

TABLE 1—FIRE CLASSIFICATION—COATED FOAM ROOF ASSEMBLIES

SYSTEM NO.	FIRE CLASSIFICATION	SUBSTRATE	MAXIMUM ROOF SLOPE	SPRAY-APPLIED FOAM PLASTIC INSULATION ¹		COATING		TOP SURFACING
				Designation	Thickness (inches)	Designation	Thickness (inches), Dry film thickness	
1	A	Non-combustible	4:12	Ultra-Thane 230 Roofing Foam	1-2	Ultra-Flex 1000	Two coats applied at 1½ gallons per 100 ft ² to achieve a 0.024-inch dry film thickness	No. 11 granules, applied at 33 pounds per 100 ft ²
2	A	¹⁵ / ₃₂ -inch-thick plywood, covered with ¼-inch-thick GP DensDek, with joints offset 6 inches from the plywood joints	¹ / ₂ :12		2			No. 11 granules, applied at 32 pounds per 100 ft ²
3	B	¹⁵ / ₃₂ -inch-thick plywood	¹ / ₂ :12		1-2			No. 11 granules, applied at 33 pounds per 100 ft ²
3	A	Class A BUR ² over minimum ¹⁵ / ₃₂ -inch-thick plywood	¹ / ₂ :12		2			No. 11 granules, applied at 33 pounds per 100 ft ²

For SI: 1 inch = 25.4 mm; 1 gallon per 100 square feet = 0.41 L/m²; 1 gallon = 3.785 L; 1 ft² = 0.0929 m².

¹The spray-applied foam plastic insulation must be Intertek classified.

²BUR – Existing built-up roof.

TABLE 2—WIND RESISTANCE—COATED FOAM ROOF COVERINGS

SYSTEM NO.	ALLOWABLE WIND UPLIFT (psf)	SUBSTRATE	FOAM PLASTIC INSULATION		COATING		TOP SURFACING
			DESIGNATION	THICKNESS (inches)	DESIGNATION	THICKNESS (inches), Dry film thickness	
1	570	Concrete	Ultra-Thane 230 Roofing Foam	2	Ultra-Flex 1000	Two coats applied at 1½ gallons per 100 ft ² to achieve a 0.024-inch dry film thickness	No. 11 granules, applied at 33 pounds per 100 ft ²
2	660	Plywood		2			
3	450	Steel deck		1 (above top of deck)			

For SI: 1 inch = 25.4 mm; 1 psf = 4.882 kg/m²; 1 gallon per 100 square feet = 0.41 L/m²