

# UL Evaluation Report

## UL ER3225-01

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**DIVISION: 07 00 00 THERMAL AND MOISTURE PROTECTION**

**Sub-level 2: 07 50 00 – Membrane Roofing**

**Sub-level 2: 07 51 00 – Built-Up Bituminous Roofing**

**Sub-level 3: 07 51 13 – Built-Up Asphalt Roofing**

**Sub-level 2: 07 52 00 – Modified Bituminous Membrane Roofing**

**Sub-level 3: 07 52 16 – Styrene-Butadiene-Styrene Modified Bituminous Sheet Roofing**

### COMPANY:

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### 1. SUBJECT: AWAPLAN, SA CAP, AND SA BASE

### 2. SCOPE OF EVALUATION

- 2020 Florida Building Code – Building
- 2020 Florida Building Code – Residential
- 2018, 2015, and 2012 *International Building Code®* (IBC)
- 2018, 2015, and 2012 *International Residential Code®* (IRC)
- ICC ES Acceptance Criteria for Roof-Covering Systems (AC75)
- ICC ES Acceptance Criteria for Quality Documentation (AC10)

### The products were evaluated for the following properties:

- Roofing Systems for Exterior Fire Exposure (ANSI/UL 790)
- Roofing Systems, Wind Uplift Resistance (ANSI/UL 1897, ANSI/FM 4474)
- Physical Properties (ASTM D1970, ASTM D6164 Type I Grade G, and ASTM G155)
- Impact Resistance (FM 4470)



### 3. REFERENCED DOCUMENTS

- ANSI/UL 790, Eighth Edition, Standard Test Methods for Fire Tests of Roof Coverings
- ANSI/UL 1897, Seventh Edition, Standard for Tests for Uplift Tests for Roofing Systems
- ASTM D1970, Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
- ASTM D6164, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements
- ASTM G155, Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials
- ANSI/FM 4470, Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for use in Class 1 and Noncombustible Roof Deck Construction
- ANSI/FM 4474, Standard for Evaluating the Simulated Wind Uplift Resistance of Roof Assemblies Using Static Positive and/or Negative Differential Pressures
- ICC ES Acceptance Criteria for Membrane Roof-Covering Systems (AC75)
- ICC ES Acceptance Criteria for Quality Documentation (AC10)

### 4. USES

The styrene-butadiene-styrene (SBS) modified bitumen and built-up roofing felts and base sheets described in this report are used as roof coverings in mechanically fastened or fully adhered Class C roof assemblies installed on combustible or non-combustible roof decks.

### 5. PRODUCT DESCRIPTION

The membrane roofing systems described in this report consist of asphaltic roofing membranes, base sheets and ply sheets, insulation where used, barrier board or slip sheet where used, flashing, mechanical fasteners and adhesives that are installed on combustible or non-combustible roof decks.

The roofing assemblies incorporating the membranes comply with the following properties when installed as described in this report.

**Fire Classification:** Roofing assemblies covered under this report have been tested for fire classification Class C in accordance with ANSI/UL790, as required by Section 1505.1 of 2018, 2015, and 2012 IBC, the 2020 Florida Building Code - Building, and Section R902.1 of the 2018, 2015, and 2012 IRC, and the 2020 Florida Building Code - Residential.

The roofing assemblies incorporating the membranes comply with the following properties when installed as described in this report.

**Wind Uplift Resistance:** Roofing assemblies covered in this report have been tested for wind uplift resistance in accordance with ANSI/UL 1897 or ANSI/FM Approvals 4474 Appendix D: 12x24 Simulated Wind Uplift Pressure Test Procedure and Florida Building Code Test Protocols for the High Velocity Hurricane Zone (HVHZ) Testing Application Standard (TAS) No. 114-95, Appendix J: Test Procedure for 12 Foot By 24 Foot Simulated Uplift Pressure Resistance of Roof System Assemblies, and therefore qualify for use as roofing systems under Section 1504.3.1 of the 2018, 2015, and 2012 IBC, and 2020 Florida Building Code - Building.

The roofing assemblies shall be designed to resist the design wind load pressures for components and cladding in accordance with Section 1609.1 of the 2018, 2015, and 2012 IBC, the 2020 Florida Building Code - Building, and Section R905.1 of the 2018, 2015, and 2012 IRC, or 2020 Florida Building Code - Residential.

**Physical Properties:** The roofing membranes covered under this Report have been tested for physical properties in accordance with ASTM D6164, Type I, and ASTM G155, and therefore qualify for use under Section 1507.10.2 and Section 1504.6 of the 2018, 2015, and 2012 IBC, the 2020 Florida Building Code - Building, and Section R905.9.2 of the 2018, 2015, and 2012 IRC, and 2020 Florida Building Code - Residential.

**Impact Test:** The asphaltic roofing membranes covered under this report have been tested for impact resistance in accordance with "Resistance to Foot Traffic Test" in Section 5.5 of FM 4470 and therefore qualify for use as low-slope roof coverings covered under Section 1504.7 of the 2018, 2015, and 2012 IBC, and 2020 Florida Building Code - Building.

## **5.1 Built-up Roofing Felts and Membranes:**

**5.1.1 SA CAP:** Self-adhering, granule surfaced roof covering with polyester mat reinforcement coated in modified asphalt. The membrane is supplied in 142 mils thick rolls 3.28 Feet (1 m) wide by 33.52 feet (10.22 m) long and complies with ASTM D6164, Type I.

**5.1.2 AWAPLAN:** Granule-surfaced modified bitumen roof covering with polyester mat reinforcement coated in modified asphalt. The membrane is supplied in 141 mils thick rolls 3.28 Feet (1 m) wide by 33.42 feet (10.19 m) long and complies with ASTM D6164, Type I.

**5.1.7 SA BASE:** Self-adhering, fiberglass reinforced SBS-modified bitumen membrane. The membrane is supplied in rolls 3.26 feet (1m) wide by 65.83 (20.1 m) long and complies with ASTM D1970.

## **5.2 Insulation:**

Foam plastic insulation when used shall have a flame spread index of not more than 75 when tested at the maximum thickness intended for the use in accordance with ANSI/UL 723 or ASTM E 84 to qualify for use under Section 2603.3 and Exception 3 of the 2018, 2015, and 2012 IBC, and 2020 Florida Building Code - Building. To qualify for use under Section 2603.4.1.5 of the 2018, 2015, and 2012 IBC, and 2020 Florida Building Code - Building, a thermal barrier is not required for foam plastic insulation that is part of a Class A, B or C roof-covering assembly, provided the assembly with foam plastic insulation complies with FM 4450 or UL 1256.

## **5.3 Fasteners:**

Fasteners used to mechanically fasten insulation, membranes, and base and ply sheets to the roof deck, shall be corrosion resistant and shall be one of the fasteners identified in the Tables of this Report.

## **5.4 Asphalts and Adhesive:**

When specified in the roofing assemblies, hot roofing asphalt shall conform to ASTM D312, Type III or Type IV.

## 6. INSTALLATION

TAMKO roofing felts, base sheets, membranes and cap sheets shall be installed in accordance with the applicable code, this report and the manufacturer's published installation instructions. The roof covering materials shall be installed in accordance with Section 1507.10 of the 2018, 2015, and 2012 IBC, 2020 Florida Building Code - Building, or Section R905.9 of the 2018, 2015, and 2012 IRC, or 2020 Florida Building Code - Residential, as applicable, except as noted in this report.

The manufacturer's published installation instructions shall be available at all times on the jobsite during installation.

The slope of the roof on which the membranes are installed in accordance with [Table 1](#) shall not be more than the maximum slope indicated. These roofs shall be a minimum of 1/4:12 (2% slope) for drainage.

Penetrations and terminations of the roof covering shall be flashed and made watertight in accordance with the requirements of the membrane manufacturer, Section 1503.2 of 2018, 2015, and 2012 IBC, 2020 Florida Building Code - Building, or Section R903.2 of 2018, 2015, and 2012 IRC, or 2020 Florida Building Code - Residential and applicable code.

## 7. FIRE CLASSIFICATION

**7.1 New Construction:** Roof assemblies utilizing TAMKO roof coverings are described in UL Certification Category for Roofing Systems, ([TGfU](#)) File R3225 and in Tables of this Report.

**7.2 Reroofing:** The existing roof shall be inspected in accordance with the provisions and limitations of Section 1510 of the 2018, 2015, and 2012 IBC, Section R907 of the 2018, 2015, and 2012 IRC, or Section 1511 of the 2020 Florida Building Code - Residential as applicable. The existing deck shall be inspected to verify that the structure to be reroofed is structurally sound and adequate to support and secure the roofing membrane. Prior to installation of new roof coverings, inspection by and approval from the code official having jurisdiction is required.

TAMKO roof coverings may be installed over existing Classified Class A roof assemblies as described in the Tables of this Report.

Class A, B, or C roof coverings may be installed over existing classified roof assemblies under the following conditions without additional roof classification tests, provided the resulting classification is the lower of the new and existing roof classifications under the following conditions:

- New uninsulated roof coverings installed only over existing uninsulated assemblies.
- New insulated roof coverings installed over existing uninsulated assemblies only.

## 8. WIND RESISTANCE

**8.1 New Construction:** The allowable wind uplift pressures for the roof assemblies are noted in the Tables in this Report. Metal edge securement for all systems shall be designed in accordance with ANSI/SPRI ES-1, complying with Section 1504.5 of 2018, 2015, and 2012 IBC, or 2020 Florida Building Code - Building. For certifications of metal edge securement systems in accordance with ANSI/SPRI ES-1, See UL Online Certifications Directory Roof-edge Systems, Metal for Use with Low-slope Roofing Systems ([TGJZ](#)).

**8.2 Reroofing:** Roof covering systems employing mechanical fasteners shall be qualified, to the satisfaction of the code official, as to the adequacy of fasteners penetrating through existing roof coverings into structural substrates. Since the composition and/or conditions of existing underlying roofing materials and reroofing materials may vary, reroofing with adhered systems is outside the scope of this report.

## 9. CONDITIONS OF USE

The TAMKO roof covering materials described in this Report comply with, or are suitable alternatives to, what is specified in those codes listed in Section 2 of this Report, subject to the following conditions:

- 9.1 Materials and methods of installation shall comply with this Report and the manufacturer's published installation instructions. In the event of a conflict between the installation instructions and this Report, this Report governs.
- 9.2 See UL Online Certification Directory Roofing Systems (TGFU), and Roofing Systems, Uplift Resistance (TGIK) under File R3225, and refer to the Tables of this Report.
- 9.3 Above-deck thermal insulation board shall comply with the applicable standards listed in Table 1508.2 in Section 1508.2 of 2018, 2015, and 2012 IBC, and 2020 Florida Building Code - Building.
- 9.4 For mechanically attached components, the maximum design pressure for the selected assembly shall meet or exceed the Zone 1 design pressure as determined in accordance with Section 1609.1.1.1 of the 2018 IBC and 2020 Florida Building Code - Building, Section 1609.6.4.4 of 2015 and 2012 IBC. To resist enhanced wind uplift pressures, Zones 2 and 3 shall employ a fastener density specified by a qualified design professional. Determination of wind loads are to be in accordance with Section 1609.1.1 of the 2020 Florida Building Code - Building, where applicable.
- 9.5 The allowable wind uplift pressures listed in the Tables of this Report are for the roof systems only. The deck and framing to which the roofing system is attached shall be designed for the applicable components and cladding, and wind loads in accordance with the applicable codes.
- 9.6 When application is over an existing roof, documentation of the wind uplift resistance of the composite roof construction shall be submitted to the code official.
- 9.7 The metal edge securement shall be designed and installed for wind loads in accordance with Chapter 16 of 2018, 2015, and 2012 IBC, or 2020 Florida Building Code - Building, and tested for resistance in accordance with Test Methods RE-1, RE-2 and RE-3 of ANSI/SPRI ES-1, except  $V_{ult}$  wind speed shall be determined from Section 1609.3 of 2018, 2015, and 2012 IBC, or 2020 Florida Building Code - Building, as applicable.
- 9.8 The TAMKO roofing felts, base sheets, membranes and cap sheets covered under this report are produced under the UL LLC Classification and Follow-Up Service Program in Joplin, MO which includes audits in accordance with quality elements of ICC-ES Acceptance Criteria for Quality Documentation, AC10.

## 10. SUPPORTING EVIDENCE

- 10.1 Data in accordance with ICC-ES Acceptance Criteria for Membrane Roof-Covering Systems, AC75.
- 10.2 Manufacturer's descriptive product literature, including installation instructions.
- 10.3 UL Classification Reports in accordance with ANSI/UL 790. See UL Product Certification Category for Roofing Systems ([TGfU](#)), and Roofing Systems, Uplift Resistance ([TGfK](#)) under File R3225.
- 10.4 Data in accordance with ANSI/FM 4470, and ANSI/FM 4474 Appendix D.
- 10.5 Data in accordance with Florida Building Code (TAS) No. 114-95, Appendix J\*
- 10.6 Data in accordance with ASTM D1970, ASTM D6164 Type I Grade G, and ASTM G155.
- 10.7 Documentation of quality system elements in accordance with ICC-ES Acceptance Criteria for Quality Documentation, AC10.

## 11. IDENTIFICATION

The TAMKO roofing felts, base sheets, membranes, cap sheets, and adhesives described in this evaluation report are identified by a marking bearing the report holder's name (TAMKO), the plant identification, the product designation, the UL Classification Mark, and the evaluation report number UL ER3225-01. The validity of the evaluation report is contingent upon this identification appearing on the product or UL Classification Mark certificate.

## 12. USE OF UL EVALUATION REPORT

- 12.1 The approval of building products, materials or systems is under the responsibility of the applicable authorities having jurisdiction.
- 12.2 UL Evaluation Reports shall not be used in any manner that implies an endorsement of the product, material or system by UL.
- 12.3 The status of this report, as well as a complete directory of UL Evaluation Reports may be found at UL.com via the [Product iQ™ database](#).

Deck Number	Deck Type
1	Minimum 22 MSG Steel
2	Minimum <sup>15</sup> / <sub>32</sub> " Plywood
3	Nominal <sup>5</sup> / <sub>8</sub> " Plywood
4	Lightweight Concrete
5	Gypsum
6	Structural Concrete

**TABLE 1: NEW CONSTRUCTION or REROOF (Tear-Off)**

SYSTEM NO.	ALLOWABLE UPLIFT CAPACITY <sup>1</sup> (lbs/ft <sup>2</sup> )	DECK	INSULATION/BARRIER	BASE SHEET/PLY SHEET	ATTACHMENT	Lap Width	Fastener Spacing	INSULATION	PLY SHEETS	ROOF COVER	FIRE RATING UL790/ASTM E108	
											Class	Maximum Incline
1	-60	1, 3 <sup>2</sup>	Minimum 5/8 inch thick gypsum board through fastened 16 per board <sup>3</sup> with any glass faced polyisocyanurate, minimum 1.3 inches and second layer high density wood fiber or perlite coverboard, minimum 1/2 inch, adhered in hot asphalt	One or more layers G1, G2, or Type 15	Fully adhered in hot asphalt	N/A	N/A	N/A	Optional, one or more layers Type G1, G2, Type 15 or Type 30 fully adhered in hot asphalt	One or more layers Awaplan in hot asphalt or cold applied <sup>4</sup>	C	1/2
2	-45	1, 3 <sup>2</sup> , 6	Minimum 5/8 inch thick gypsum board through fastened 16 per board <sup>3</sup> with any combination faced polyisocyanurate, EPS, cellular glass, perlite, or wood fiber adhered in hot asphalt	One or more layers G1, G2, Type 15, or Type 30	Fully adhered in hot asphalt	N/A	N/A	N/A	Optional, one or more layers Type G1, G2, Type 15 or Type 30 fully adhered in hot asphalt	Awaplan in hot asphalt or cold applied <sup>4</sup>	C	1/2
3	-52.5	1, 3	UL Classified glass faced polyisocyanurate, minimum 1.3 inches mechanically fastened 16 per board, second layer minimum 1/2 inch high density wood fiber or perlite fully adhered in hot asphalt <sup>5</sup>	One or more layers G1, G2, Type 15, Type 30 or Versa-Base	Fully adhered in hot asphalt	N/A	N/A	N/A	Optional, one or more layers Type G1, G2, Type 15 or Type 30 fully adhered in hot asphalt	Awaplan in hot asphalt or cold applied <sup>4</sup> , or flood coat and gravel	C	1/2
4	-30	1	Any UL Classified minimum 15/16 inch fiberglass roof insulation board mechanically fastened with minimum 12-11 screws and 3 inch diameter steel plates 8 per 4X8 board followed by minimum 15/16 inch fiberglass roof insulation board fully adhered in hot asphalt	One or more plies Type G1, G2, Type 15 or Type 30	Fully adhered in hot asphalt	N/A	N/A	N/A	One or more layers Type G1, G2, Type 15 or Type 30 fully adhered in hot asphalt	Awaplan in hot asphalt or cold applied	C	1/2
5	-45	1	UL Classified glass faced polyisocyanurate, minimum 1.3 inches mechanically fastened with minimum 12-11 screws and 3 inch diameter steel plates or 3.25 inch plastic plates 16 per 4X8 board	Type G1, G2	Spot attached with hot asphalt in 12 inch diameter spots every 24 inches in all directions	N/A	N/A	N/A	One or more layers G1,	One or more layers Awaplan <sup>4</sup>	C	1/2

**TABLE 1: NEW CONSTRUCTION or REROOF (Tear-Off) continued**

SYSTEM NO.	ALLOWABLE UPLIFT CAPACITY <sup>1</sup> (lbs/ft <sup>2</sup> )	DECK	INSULATION/BARRIER	BASE SHEET/PLY SHEET	ATTACHMENT	Lap Width	Fastener Spacing	INSULATION	PLY SHEETS	ROOF COVER	FIRE RATING UL790/ASTM E108	
											Class	Maximum Incline
6 <sup>6</sup>	-105	2	Tam-Pro 813 or Tam-Pro 814 Low VOC Asphalt Primer applied at .75 gallons per 100 square feet	SA Base	Self-adhered	Minimum 2 inches	N/A	N/A	Optional one or more plies of SA Base adhered	SA Cap	C	2
7 <sup>6</sup>	-45	2	N/A	SA Base	Minimum 12 ga. ring shank nails with 32 ga. 1.675 inch diameter tin tabs	Minimum 2 inches	6 inches oc in the lap and 6 inches oc in three equally spaced field rows	N/A	Optional one or more plies of SA Base adhered	SA Cap	C	2
8 <sup>6</sup>	-22.5	2	N/A	SA Base	Minimum 12 ga. ring shank nails with 32 ga. 1 inch diameter tin caps	Minimum 2 inches	8 inches oc in the lap, two staggered rows 8 inches oc	N/A	N/A	SA Cap	C	2
9	-80	4, 5, 6	Any combination, any thickness glass faced polyisocyanurate, polystyrene, cellular glass, wood fiber or perlite fully adhered in hot asphalt	One or more plies Type G1, G2, Type 15 or Type 30	Fully adhered in hot asphalt	N/A	N/A	N/A	Two or more layers Type G1, G2, Type 15 or Type 30 fully adhered in hot asphalt	One or more layers Awaplan <sup>4</sup>	C	1/2
10	-52.5	4	Any combination, any thickness faced polyisocyanurate, wood fiber or Dens Deck fully adhered in hot asphalt	One or more plies Type G1, or G2	Fully adhered in hot asphalt	N/A	N/A	N/A	N/A	One or more layers Awaplan fully adhered in hot asphalt	C	1/2
11 <sup>6</sup>	-52.5	2	Minimum 1/2" UL Classified polyisocyanurate roofing insulation	SA Base	Mechanically fastened to deck	Minimum 2 inches	Fastened 8" o.c. in the lap and in 2 evenly staggered rows	N/A	Optional, one or more plies of SA Base	SA Cap	C	1/2
12 <sup>6</sup>	-45	1, 2, 6	Minimum 1-1/2 inch UL Certified polyisocyanurate roofing insulation mechanically fastened at a rate of 1 fastener per 2 sq ft <sup>2</sup> followed by minimum 3/4 inch UL Classified perlite fully adhered in hot asphalt	One or more plies Type G1 or G2	Fully adhered in hot asphalt	Minimum 2 inches	N/A	N/A	N/A	One layer of Awaplan fully adhered in hot asphalt	C	1/2



<sup>1</sup> Safety factor of 2 has been applied.

<sup>2</sup> Requires gypsum board when Non-combustible rating is used.

<sup>3</sup> Minimum Number 12-11 coated screws with minimum 3 inch plastic or minimum 2-<sup>7</sup>/<sub>8</sub> inch diameter galvanized steel, or 3 inch square galvanized steel plates

<sup>4</sup> Fully adhered in Tam-Pro CPA SBS at 1.5 gallons per 100 square feet or hot roofing asphalt at 23 pounds per 100 square feet

<sup>5</sup> May be substituted with minimum 1.8 inch composite polyisocyanurate-perlite

<sup>6</sup> Denotes 12x24 tested assembly

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