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ICC-ES Evaluation Report

ESR-3994

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Issued 11/2017

This report is subject to renewal 11/2018.

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
SECTION: 07 56 00—FLUID APPLIED ROOFING

REPORT HOLDER:

METACRYLICS

**365 OBATA COURT
GILROY, CALIFORNIA 95020**

EVALUATION SUBJECT:

METACRYLICS ACRYLIC POLYESTER ROOF SYSTEMS



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DIVISION: 07—THERMAL AND MOISTURE PROTECTION
Section: 07 56 00—Fluid Applied Roofing

REPORT HOLDER:

METACRYLICS
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(408) 280-7733
www.metacrylics.com

EVALUATION SUBJECT:

METACRYLICS ACRYLIC POLYESTER ROOF SYSTEMS

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2015 and 2012 *International Building Code*® (IBC)
- 2015 and 2012 *International Residential Code*® (IRC)

Properties evaluated:

- Physical properties
- Wind resistance
- Fire classification

2.0 USES

Metacrylics Acrylic Polyester Roof Systems are liquid applied roof coverings with polyester fabric to be used in new construction or for re-roofing of an existing structure, and are recognized for use as Class A roof coverings for installation over insulated, combustible and noncombustible substrates and over existing roof coverings.

3.0 DESCRIPTION

3.1 General:

Metacrylics Acrylic Polyester Roof Systems utilize multiple layers of the liquid-applied materials and fabric listed in Section 3.2.1 thru 3.2.5 to create a roof covering for use in classified and non-classified roof construction of new construction and re-roofing.

3.2 Materials:

3.2.1 Metacrylics Acrylic Black Primer: The primer is an acrylic copolymer water-based emulsion used to seal substrates prior to roof-covering application. Packaged in 2-, 5- or 55-gallon (7.5, 19 or 208 L) containers, the product must be stored at a minimum of 35°F (2°C). The primer is mixed for two to three minutes by hand or machine prior to use. Small amounts of water may be used

to thin the material, if necessary. A brush, roller or spray apparatus is used to apply the material. Where application is not intended, the area is masked. The material should not be applied when rain or freezing weather is imminent within 24 hours following application. Shelf life is 12 months when stored in unopened containers.

3.2.2 Metacrylics Acrylic Grey Base: The acrylic grey base is an acrylic copolymer water-based emulsion packaged in 2-, 5- or 55-gallon (7.5, 19 or 208 L) containers. The product is stored at a minimum of 35°F (2°C) and is mixed two to three minutes by machine or hand before application. The application surfaces must be clean, dry and free of dust and oily residue. Where the substrate is new galvanized metal, an acidic solution must be applied prior to application, to enhance bonding. The acrylic base should not be applied if rain or freezing weather is imminent within 24 hours following application. Shelf life is 24 months when stored at a minimum of 35°F (2°C) in unopened containers.

3.2.3 Metacrylics Acrylic White Coating: The acrylic white coating is an acrylic polymer emulsion combined with titanium dioxide. This material is packaged in 2-, 5- or 55-gallon (7.5, 19 or 208 L) containers. When stored at a minimum of 40°F (4°C), the coating has a shelf life of 24 months when stored in unopened containers. The coating is mixed two to three minutes by hand or machine prior to application.

3.2.4 Metacrylics Stitchbond Polyester Fabric (T272): The stitchbond polyester nonwoven product weighs approximately 3 ounces per square yard (100 g/m²) and is used as reinforcing within the system. Thread count is 14 to 18 per inch (5 to 7 per cm) in each direction. The fabric is available in 40-inch-wide (1016 mm) by 30-, 108- and 324-foot-long (9, 33 or 99 m) rolls, and in 2-, 4-, 6-, 9-, 12- and 20-inch-wide (51, 102, 152, 229, 305 and 508 mm) by 160-foot-long (48 m) rolls.

3.2.5 Metacrylics Acrylic Gel: The acrylic gel is a water-based, acrylic polymer mastic combined with titanium dioxide. Used for flashing and fabric embedment, the product is packaged in 2- and 5-gallon (9.5 and 19 L) containers that must be stored at a minimum of 35°F (2°C). Prior to application, all surfaces must be clean, dry and free of dust and oily residue. Metacrylics Acrylic Primer is required prior to gel application unless the flashings are new. New metal flashings must be treated with an acidic solution.

Application must not exceed 1/4-inch (6.4 mm) thickness. The gel has a shelf life of twelve months when stored at a minimum of 35°F (2°C) in unopened containers.

3.3 Impact Resistance:

The Metacrylics Acrylic Polyester Roof Systems comply with the requirements for impact resistance in accordance with Section 4.6 of FM 4470.

4.0 INSTALLATION

4.1 Preparation of Substrate:

The substrate must be clean, dry and free of dust and oily residue. The topcoat should not be applied if rain or freezing weather is imminent within 24 hours following application. An existing code-complying built-up roof must be repaired and made sound and weathertight prior to application of the acrylic polyester roof system. All existing roof surfaces must be completely cleaned to remove loose gravel, dirt, dust, grease and foreign debris, and allowed to dry prior to application of the new roof covering system. After the existing roof surface has completely dried, components of the new system must be applied in accordance with this report and the report holder's published installation instructions. See Sections 3.2, 4.4 and 4.5 for additional instructions on preparation of surfaces.

4.2 Roof Deck:

4.2.1 Combustible: Plywood sheathing must be minimum $1\frac{5}{32}$ -inch-thick (11.9 mm) code-complying, exterior-grade or Exposure 1 plywood or minimum $\frac{7}{16}$ -inch-thick (11.1 mm) wood structural panel sheathing complying with 2015 IBC Section 2304.8.2, 2012 IBC Section 2304.7.2 or IRC Section R803.2, as applicable.

4.2.2 Noncombustible: Steel deck must be minimum No. 22 gage galvanized steel [0.030 inch (0.76 mm)].

4.3 Roof Slope:

The roofing systems must be applied to provide a minimum slope of $\frac{1}{4}$:12 (2 percent) and a maximum slope as specified in Table 2.

4.4 New Construction:

4.4.1 General: Metacrylics roofing systems must be applied in accordance with the report holder's published installation instructions.

4.4.2 Insulation Board and Cover Board: Insulation materials include glass fiber board, perlite board and polyisocyanurate board. Cover boards include Georgia-Pacific Corp. DensDeck Roofboard and gypsum sheathing. The insulation board and cover board adjacent to surfaces to be coated must be completely free of degraded surfaces, overspray, grease, oil, dirt and other contamination that may interfere with proper coating adhesion. The surface must be completely dry. Insulation boards and cover boards with physical damage must be replaced prior to coating applications.

4.4.2.1 DensDeck Roofboard: DensDeck Roofboard, manufactured by Georgia-Pacific Corp., is a minimum $\frac{1}{4}$ -inch-thick (6.4 mm) board consisting of fiberglass mat facings over a silicone-treated gypsum core that must comply with ASTM C1396.

4.4.2.2 Glass Fiber Board: The glass fiber board must comply with ASTM C552.

4.4.2.3 Perlite: The perlite board must comply with ASTM C728.

4.4.2.4 Gypsum Sheathing: The water-resistant core gypsum sheathing must be minimum $\frac{1}{2}$ inch (12.7 mm) thick and comply with ASTM C1396.

4.4.2.5 Wood Fiber Board: The wood fiber board must comply with ASTM C208.

4.4.3 Coatings: The Acrylic Black Primer must be applied to the entire surface of the insulation board or cover board and allowed to dry for a minimum of two hours. The surface must be completely dry before the applicator walks on the surface. Flashing must be installed in accordance with IBC Section 1503.2 or IRC Section R903.2, as applicable. The coatings must then be applied at the coverage rates and thicknesses specified in Table 1 or Table 2, using airless spray equipment, brush or roller. The minimum ambient application temperature is 55°F (13°C). The completed surface must be uniformly coated and free of pinholes and blisters.

The coverage rate per gallon, per coat must not be exceeded. Each coat must be sufficiently dry to allow foot traffic. Metacrylics Acrylic Gel must be used at all penetrations, including skylights and ridge vents, at a $\frac{1}{8}$ -inch (3.2 mm) thickness, followed by one layer of Stitchbond Polyester Fabric and an additional $\frac{1}{8}$ -inch (3.2 mm) thick layer of gel.

The Acrylic Grey Base is applied to the primed, dry surface, followed by immediate application of one layer of the Stitchbond Polyester Fabric into the wet Acrylic Grey Base. Wrinkles in the coating may be removed by pulling lightly on the polyester fabric. The fabric must be lapped approximately 3 inches at all edges and pressed into the base using a roller or soft bristle brush. Immediately following fabric application, a cover coat of Acrylic Grey Base must be applied. The second layer must be allowed to cure for 24 to 48 hours or until dry to the touch. The Acrylic White coating must then be applied. After this first coat is dry to the touch, a second coat of Acrylic White coating is applied, followed by optional No. 30 washed sand broadcast into the wet topcoat. After this coating layer dries to the touch and all loose, unadhered sand is removed, an additional third Acrylic White topcoat must be applied over the sand. The topcoat must cure for at least 24 hours. Full curing of the coating system can extend to 30 days.

4.5 Reroofing over Existing Built-up Roof Coverings:

The Metacrylics Acrylic Polyester Roof System may be applied over an existing uninsulated built-up roof covering system as described in Table 2. Prior to installation of the new roof covering system over the existing roof system, an inspection of the existing roof covering system in accordance with 2015 IBC Section 1511, 2012 IBC Section 1510, 2015 IRC Section R908 or IRC Section R907, and approval of the code official having jurisdiction, are required. The existing roofing must be a Class A or B uninsulated built-up roof covering system with a mineral-surfaced cap sheet. All loose and deleterious materials, including loose gravel, dust, debris and other accumulation, must be vacuumed during the cleaning process. Asphalt buildup must also be removed to provide a uniform, smooth surface. For cap sheets, all blisters and delaminated materials must be repaired in accordance with the report holder's published installation instructions.

For application over an existing gravel surfaced built-up roofing covering, Monsey Products' 'Asphalt Emulsion' shall be applied after the Acrylic Black Primer in accordance with System 5 of Table 2.

The Metacrylics Acrylic Polyester Roof system is then directly applied in accordance with Section 4.4 and Table 2.

4.6 Wind Resistance:

The allowable wind uplift pressure for the Metacrylic roof covering assembly described in Table 1 is noted in Table 1.

4.7 Fire Classification:

The roof covering systems, as noted in Table 2, when installed in accordance with this report, are Class A roof coverings in accordance with ASTM E108 or UL 790.

5.0 CONDITIONS OF USE:

The Metacrylics Acrylic Polyester Roof Systems described in this report comply, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 Installation must comply with the applicable code, the report holder’s 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 Application must be by roofers approved by Metacrylics.
- 5.3 Where moderate to heavy foot traffic occurs, such as for maintenance of equipment, the roof covering must be adequately protected to prevent rupture or wearing of the surface.
- 5.4 The allowable wind uplift pressure listed in Table 1 is for the roof covering only. The deck and supporting structure to which the roof covering is applied must be designed to withstand the applicable wind pressures determined in accordance with ASCE 7 or IBC Section 1609.6.

5.5 Foam plastic insulation must be separated from the interior of the building by an approved thermal barrier in accordance with IBC Section 2603.4.1.5 or IRC Section R316.5.2, as applicable.

5.6 The components are manufactured in Gilroy, California, under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

- 6.1 Reports of tests on Metacrylics Acrylic Polyester Roof Systems in accordance with ASTM D6083.
- 6.2 Reports of wind uplift resistance tests in accordance with UL 1897.
- 6.3 Reports of accelerated weathering tests in accordance with IBC Section 1504.6.
- 6.4 Reports of roof classification tests in accordance with ASTM E108 or UL 790.
- 6.5 Report of impact resistance tests in accordance with Section 4.6 of FM 4470.
- 6.6 Quality control documentation in accordance with ICC-ES Acceptance Criteria for Quality Documentation (AC10).
- 6.7 Manufacturer’s literature and installation instructions.

7.0 IDENTIFICATION

Containers of the Metacrylics primers, coatings, fabric and gel are labeled with the product name, the Metacrylics name and address, the date of manufacture, the shelf life, and the evaluation report number (ESR-3994).

TABLE 1—WIND UPLIFT RESISTANCE OF METACRYLICS ACRYLIC POLYESTER ROOF SYSTEMS

SYSTEM NO.	ROOF DECK SUBSTRATE	ALLOWABLE WIND UPLIFT (psf)	INSULATION BOARD THICKNESS ¹ (inches)	APPLICATION RATE (gallons per 100 sq. ft.)
1	Minimum ¹⁵ / ₃₂ -inch thick APA rated sheathing	53	Minimum 1½	1. 3 gallons per 100 sq. ft. of Metacrylics Acrylic Grey Base. 2. Metacrylics Stitchbond Polyester Fabric followed by 2 gallons per 100 sq. ft. of Metacrylics Acrylic Grey Base. 3. 2 gallons per 100 sq. ft. of Metacrylics Acrylic White top coat. An optional second coat may be applied at 2 gallons per 100 sq. ft. Curing time between coats is 2 days.

For SI: 1 inch = 25.4 mm; 1 psf = 4.882 kg/m²

¹Aluminum foil faced polyisocyanurate, min 1.5 in. thick, fastened to deck with Buildex Inc. No. 12 by 2¼ in. self-drilling, self-tapping, hex-washer-head coated steel screws with 3⁵/₁₆ in. diameter plastic plate manufactured by Buildex, Inc. Sixteen fasteners used per 4 by 8 ft. sheet or 1 fastener per 2 sq ft. of board. All joints covered with 2-in.-wide foil faced tape.

TABLE 2—CLASSIFIED METACRYLICS ROOFING SYSTEMS

SYSTEM NO.	ROOF CLASS	ROOF DECK ^{1,2}	INSULATION BOARD AND COVER BOARD ³		MEMBRANE COATING ^{4,5,6}			MAX. ROOF SLOPE
			Type ³	Thickness (inches)	Type	Coverage rate (gallons/ 100 ft ²)	Minimum Dry Film Thickness (mils)	
1	A	No. 22 gauge steel deck	Gypsum sheathing over glass fiber, wood fiber or perlite, or polyisocyanurate insulation board. Insulation to be hot mopped or mechanically fastened in combination with the cover board to the roof deck.	Gypsum – 1/2" Glass fiber, wood fiber, or perlite – 1" to 3" Polyisocyanurate – minimum 1-inch thick	1. Metacrylics Acrylic Grey Base 2. Metacrylics Stitchbond Polyester Fabric 3. Metacrylics Acrylic Grey Base 4. Three Coats Metacrylics Acrylic White	3 — 2 4 total (1 1/3 gal/coat)	27 — 18 36 total (12 per coat)	1/2:12
2	A	Min. 15/32" plywood or No. 22 gauge steel deck	Gypsum Board, mechanically fastened to the roof deck.	1/2"	1. Metacrylics Acrylic Grey Base 2. Metacrylics Stitchbond Polyester Fabric 3. Metacrylics Acrylic Grey Base 4. Three Coats Metacrylics Acrylic White	3 — 2 4 total (1 1/3 gal/coat)	27 — 18 36 total (12 per coat)	1/2:12
3	A	Min. 15/32" plywood or No. 22 gauge steel deck	DensDeck Roofboard over glass fiber, wood fiber, perlite or Polyisocyanurate insulation. Insulation to be hot mopped or mechanically fastened in combination with the cover board to the roof deck.	DensDeck -1/4" Insulation – minimum 1-inch-thick	1. Metacrylics Acrylic Grey Base 2. Metacrylics Stitchbond Polyester Fabric 3. Metacrylics Acrylic Grey Base 4. Three Coats Metacrylics Acrylic White	3 — 2 4 total (1 1/3 gal/coat)	27 — 18 36 total (12 per coat)	1/2:12
4	A	Min. 15/32" plywood with Class A cap sheet un-insulated BUR (reroofing)	None	None	1. Metacrylics Acrylic Black Primer 2. Metacrylics Acrylic Grey Base 3. Metacrylics Stitchbond Polyester Fabric 4. Metacrylics Acrylic Grey Base 5. Three Coats Metacrylics Acrylic White	1 3 — 2 4 total (1 1/3 gal/coat)	3 27 — 18 36 total (12 per coat)	1/2:12
5	A	Min. 15/32" plywood with Class A gravel surfaced un-insulated BUR (reroofing)	None	None	1. Metacrylics Acrylic Black Primer 2. Monsey Products Asphalt Emulsion 3. Metacrylics Acrylic Grey Base 4. Metacrylics Stitchbond Polyester Fabric 5. Metacrylics Acrylic Grey Base 6. Three Coats Metacrylics Acrylic White	1.5 7-15 5 — 2 4 total (1 1/3 gal/coat)	4.5 23-50 45 — 18 36 total (12 per coat)	1/2:12
6	A	Min. 15/32" plywood with Class A or B gravel surfaced un-insulated BUR (reroofing)	DensDeck Roofboard mechanically fastened to the roof deck.	Min. 1/4"	1. Metacrylics Acrylic Grey Base 2. Metacrylics Stitchbond Polyester 3. Metacrylics Acrylic Grey Base 4. Three Coats Metacrylics Acrylic White	3 — 2 4 total (1 1/3 gal/coat)	27 — 18 36 total (12 per coat)	1/2:12

For SI: 1 inch = 25.4 mm, 1 mil = 0.0254 mm, 1 gallon per 100 square feet = 0.41 L/m².

¹See Section 4.2 for combustible and noncombustible roof deck materials.

²The existing roofing must be a Class A or B un-insulated built-up roof covering system with a mineral-surfaced cap sheet.

³See Section 4.4.2 for insulation board and cover board materials. Polyisocyanurate insulation board must be UL classified, comply with ASTM C1289, and have a flame-spread index of 75 or less when tested in accordance with ASTM E84 or UL 723 at the maximum thickness intended for installation.

⁴Optional No. 30 washed sand may be broadcast on top of second coat of the wet Acrylic White. After drying to the touch and all loose unadhered sand is removed, an additional third Acrylic White topcoat must be applied over the sand.

⁵See Section 3.2.4 for Metacrylics Stitch Bond Polyester Fabric.

⁶Metacrylics Acrylic White is to be applied in three coats at 1 1/3 gallons per 100 ft² per coat.

ICC-ES Evaluation Report

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DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 56 00—Fluid Applied Roofing

REPORT HOLDER:

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EVALUATION SUBJECT:

METACRYLICS ACRYLIC POLYESTER ROOF SYSTEMS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that Metacrylics Acrylic Polyester Roof Systems, recognized in ICC-ES master evaluation report ESR-3994, have also been evaluated for compliance with CBC Chapter 15 and CRC Chapter 9 of the code editions shown below.

Applicable code edition(s):

- 2016 California Building Code (CBC)
- 2016 California Residential Code (CRC)

2.0 CONCLUSIONS

2.1 CBC:

The Metacrylics Acrylic Polyester Roof Systems, described in Sections 2.0 through 7.0 of the master evaluation report ESR-3994, comply with CBC Chapter 15, provided the design and installation are in accordance with the 2015 *International Building Code*® (IBC) provisions noted in the master report and the additional requirements of CBC Chapter 15, as applicable.

The Metacrylics Acrylic Polyester Roof Systems have not been evaluated under CBC Chapter 7A for use in the exterior design and construction of new buildings located in any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland–Urban Interface Area.

2.2 CRC:

The Metacrylics Acrylic Polyester Roof Systems, described in Sections 2.0 through 7.0 of the master evaluation report ESR-3994, comply with CRC Chapter 9, provided the design and installation are in accordance with the 2015 *International Residential Code*® (IRC) provisions noted in the master report.

The Metacrylics Acrylic Polyester Roof Systems have not been evaluated under CRC Section R337 for use in the exterior design and construction of new buildings located in any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland–Urban Interface Area.

The products recognized in this supplement have not been evaluated for compliance with the *International Wildland–Urban Interface Code*®.

This supplement expires concurrently with the master report, issued November 2017.

ICC-ES Evaluation Report

ESR-3994 FBC Supplement

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DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 56 00—Fluid Applied Membrane

REPORT HOLDER:

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EVALUATION SUBJECT:

METACRYLICS ACRYLIC POLYESTER ROOF SYSTEMS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the Metacrylics Acrylic Polyester Roof Systems, recognized in ICC-ES master report ESR-3994, have also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2017 *Florida Building Code—Building*
- 2017 *Florida Building Code—Residential*

2.0 CONCLUSIONS

The Metacrylics Acrylic Polyester Roof Systems, described in Sections 2.0 through 7.0 of the master report ESR-3994, comply with the *Florida Building Code—Building* and the *Florida Building Code—Residential*, provided the design and installation are in accordance with the 2015 *International Building Code*® provisions noted in the master report.

Use of the Metacrylics Acrylic Polyester Roof Systems described in the master evaluation report for compliance with the High Velocity Hurricane Zone provisions of the *Florida Building Code—Building*, and the *Florida Building Code—Residential* has not been evaluated and is outside the scope of this supplement.

For products falling under Florida Rule 9N-3, verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official, when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the master report, issued November 2017.